Exploring how fishermen respond to the challenges facing the fishing industry: A study of diversification and multiple-job holding in the English Channel fishery

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Abstract

Fishermen in the UK face a range of administrative, socioeconomic and environmental challenges that affect the financial performance, and ultimate viability of their businesses. These challenges are particularly salient within the ‘inshore sector’; those vessels of less than ten metres in length which account for over-three quarters of the domestic fleet. While diversification of fishing activity is a well-established response to such challenges, the opportunity to exploit alternative fishing grounds and stocks is increasingly constrained by management controls. An alternative response is to develop strategies that are not subject to restrictions on fishing effort and output. These strategies include diversifying into activities that maintain a link with fishing (i.e. fisheries diversification), and seeking complementary employment outside of the fishing industry (i.e. multiple-job holding).

Despite the potential contribution of such strategies to the sustainability of individual fishing businesses and fishing communities, this remains an area that has received limited academic attention to date. This thesis seeks to make an original contribution to knowledge by examining how fishermen in the English Channel respond to challenges upon financial performance; and exploring the practices, motivations and constraints of engaging in fisheries diversification and multiple-job holding.

The research design adopted in this study comprises a mixed-method approach formed of three distinct phases: an inventory of existing fisheries diversification activities; a survey of fishermen and industry stakeholders; and a qualitative phase of research with fishermen. The results of the inventory reveal that fisheries diversification is historically well-established among fishermen in the Channel and is currently practised in a range of forms. The type of diversification practised is found to be subject to a range of factors, including geographical location; market demand; and the characteristics of individual fishermen. Additionally, a number of key constraints were identified that may deter fishermen from adopting this strategy. The relative importance of these constraints was examined in a survey of fisherman and non-fishing stakeholders using the Analytic Hierarchy Process. The results revealed that respondents attributed similar levels of importance to administrative, economic and social constraints, and lack of opportunities; but considered lack of information to be relatively unimportant.

Through the analysis of qualitative data, a conceptual framework is developed to understand the main challenges faced by Channel fishermen and the strategies they adopt in response. The framework demonstrates that the challenges faced by fishermen, the impact upon their businesses and the types of response developed are shaped by the
interaction of three environmental 'contexts'. These relate to attributes of the individual fisherman; the characteristics of their fishing business; and the external environment within which they operate. The model indicates that the strategies adopted in response to challenges upon financial performance follow a hierarchical structure: fishermen are most likely to respond by adapting their fishing practices, prior to considering a strategy of fisheries diversification. In contrast, multiple-job holding is not widely practised nor regarded by fisherman as a viable response strategy. To this end, a recommendation is made to support fishermen in both improving the profitability of their fishing businesses, and developing complementary sources of income where viable.
# Contents

Abstract ........................................................................................................................................... ii  
Declaration ........................................................................................................................................ ix  
List of Tables ................................................................................................................................. x  
List of Figures ................................................................................................................................. xii  
Abbreviations ................................................................................................................................. xiv  
Acknowledgements ......................................................................................................................... xvi  
Dedication ......................................................................................................................................... xvii  
Dissemination ..................................................................................................................................... xviii  

## 1. Introduction ................................................................................................................................. 1  
1.1 Context ......................................................................................................................................... 1  
1.2 Identifying the research questions .......................................................................................... 4  
1.3 Thesis structure ....................................................................................................................... 5  

## 2. An overview of the English Channel Fishery ............................................................................. 8  
2.1 Introduction ................................................................................................................................ 8  
2.2 Biogeography of the English Channel ..................................................................................... 8  
2.3 Historical development of the English Channel Fishery ....................................................... 9  
   2.3.1 Development of commercial fishing in the UK ............................................................ 9  
   2.3.2 Development of the English Channel Fishery ............................................................. 14  
2.4 The present English Channel Fishery .................................................................................... 17  
2.5 Management of the English Channel Fishery .......................................................................... 20  
2.6 Socioeconomic importance of the English Channel Fishery ................................................ 23  
   2.6.1 Employment .................................................................................................................. 23  
   2.6.2 Value ............................................................................................................................ 26  
   2.6.3 Contribution to GDP ..................................................................................................... 28  
   2.6.4 Sociocultural value ........................................................................................................ 29  
2.7 Summary ..................................................................................................................................... 30  

## 3. Literature review .......................................................................................................................... 31  
3.1 Introduction .................................................................................................................................. 31  
3.2 Challenges facing fishermen in the English Channel ............................................................ 32  
   3.2.1 Administrative challenges ............................................................................................ 32  
   3.2.2 Environmental challenges ............................................................................................ 34  
   3.2.3 Socioeconomic challenges ............................................................................................ 35  
   3.2.4 Impact upon financial performance ............................................................................. 37  
3.3 Intra-sectoral response strategies ............................................................................................. 40
3.3.1 Effort-based responses .................................................................40
3.3.2 Increase efficiency......................................................................43
3.3.3 Perseverance.............................................................................43
3.3.4 Retrenchment & Withdrawal......................................................44
3.4 Diversification ..............................................................................46
3.4.1 A conceptual overview of diversification ........................................46
3.4.2 Fisheries diversification .................................................................51
3.4.3 Supporting evidence........................................................................57
3.4.4 Diversification, innovation and entrepreneurship .............................61
3.5 Multiple-job holding .....................................................................67
3.5.1 A conceptual overview of multiple-job holding .................................67
3.5.2 Multiple-job holding within the fishing industry ...............................71
3.5.3 Supporting evidence........................................................................73
3.6 Understanding why fishermen fish ..................................................75
3.6.1 Segmented labour markets ..............................................................75
3.6.2 Opportunity incomes ....................................................................76
3.6.3 Non-pecuniary benefits of fishing ....................................................77
3.7 Summary ........................................................................................79

4. Methodology ..................................................................................81
4.1 Introduction ..................................................................................81
4.2 Research approach and design ..........................................................81
4.2.1 Methodological design .................................................................81
4.2.2 Definition of terms ......................................................................86
4.3 Inventory of fisheries diversification .................................................89
4.3.1 Research design ..........................................................................89
4.3.2 Data collection ............................................................................90
4.3.3 Data analysis ................................................................................93
4.4 Surveying stakeholders and fishermen ..............................................93
4.4.1 Research design ..........................................................................93
4.4.2 Questionnaire development ............................................................94
4.4.3 Exploring constraints upon diversification .......................................96
4.4.4 Sampling and recruitment ..............................................................99
4.4.5 Piloting .......................................................................................103
4.4.6 Data collection ...........................................................................104
4.4.7 Data analysis .............................................................................105
4.5 Qualitative research .......................................................................108
4.5.1 Research design ...................................................................................... 108
4.5.2 Interview guide development............................................................... 109
4.5.3 Sampling and recruitment..................................................................... 111
4.5.4 Piloting ................................................................................................. 112
4.5.5 Data collection ..................................................................................... 113
4.5.6 Data analysis ........................................................................................ 113
4.6 Validity and Reliability ............................................................................. 116
4.6.1 Basic principles .................................................................................. 116
4.6.2 Quantitative research .......................................................................... 116
4.6.3 Qualitative research ............................................................................ 118
4.7 Ethical considerations ............................................................................. 119
5. Results ......................................................................................................... 122
5.1 Introduction ............................................................................................. 122
5.2 Inventory of existing fisheries diversification activities............................... 122
5.2.1 Overview of diversification activities .................................................... 122
5.2.2 Description of activities by type .......................................................... 124
5.2.3 Key characteristics of diversification .................................................. 128
5.2.4 Towards a typology of diversification ................................................ 132
5.3 Survey of stakeholders and fishermen ...................................................... 134
5.3.1 Profile of respondents ......................................................................... 134
5.3.2 Current opportunities for diversification ............................................. 137
5.3.3 Perceived likelihood of diversification ................................................. 140
5.3.4 Perceived motives for diversification .................................................. 143
5.4 Constraints upon diversification ............................................................... 144
5.4.1 AHP results by all respondents............................................................ 144
5.4.2 AHP results by respondent sub-groups .............................................. 147
5.4.3 AHP results for economic sub-criteria ................................................. 148
5.4.4 Correlation ........................................................................................ 150
5.4.5 Cluster analysis .................................................................................. 153
5.5 Preferred response strategies of fishermen .............................................. 157
5.6 Summary ................................................................................................. 159
6. Examining the challenges and response strategies of Channel fishermen ....... 161
6.1 Introduction ............................................................................................. 161
6.2 Establishing a typology of challenges ..................................................... 162
6.2.1 Administrative challenges ................................................................. 162
6.2.2 Economic challenges ......................................................................... 167
6.2.3 Biological challenges ................................................................. 172
6.2.4 Environmental challenges ............................................................. 173
6.3 The impact of challenges upon financial performance ......................... 176
   6.3.1 Experiences of profitability ............................................................ 176
   6.3.2 Understanding how challenges impact upon profitability ................ 177
6.4 Responses to challenges upon financial performance .......................... 181
   6.4.1 Intra-sectoral response strategies .................................................... 182
   6.4.2 Fisheries diversification ................................................................. 187
   6.4.3 Multiple-job holding and alternative employment ........................... 198
6.5 Sociocultural Attributes ..................................................................... 204
   6.5.1 Perceptions of fishing as an occupation .......................................... 204
   6.5.2 Sociocultural attributes and multiple-job holding ......................... 206
   6.5.3 Sociocultural attributes and fisheries diversification ...................... 207
6.6 Summary ............................................................................................ 210
7. Discussion ............................................................................................. 212
   7.1 Introduction ...................................................................................... 212
   7.2 Relationship with existing research and theory .................................... 212
      7.2.1 Intra-sectoral responses ............................................................... 212
      7.2.2 Diversification ............................................................................. 214
      7.2.3 Multiple-job holding ................................................................. 223
   7.3 Emerging concepts ............................................................................. 227
      7.3.1 Contextual environments ............................................................ 227
      7.3.2 Attitudes to risk ......................................................................... 230
      7.3.3 Innovation and Entrepreneurship ............................................... 233
   7.4 Summary ............................................................................................ 244
8. A Conceptual Framework to understand how fishermen respond to challenges upon financial performance ............................. 246
   8.1 Introduction ...................................................................................... 246
   8.2 Constructing the framework .............................................................. 246
   8.3 Conceptual Framework ..................................................................... 248
      8.3.1 External context ......................................................................... 248
      8.3.2 Business context ........................................................................ 251
      8.3.3 Individual context ...................................................................... 254
      8.3.4 Response strategies .................................................................. 257
      8.3.5 A visual representation of the framework .................................. 259
   8.4 Application of the framework ............................................................ 262
8.5 Implications for the future of the Channel fishery and wider fishing industry 265
8.6 Summary ........................................................................................................... 270

9. Conclusions and Recommendations ........................................................................ 272
   9.1 Introduction ..................................................................................................... 272
   9.2 Summary of key findings ............................................................................. 272
   9.3 A critique of the research approach ............................................................. 277
   9.4 Recommendations ...................................................................................... 279

References .............................................................................................................. 283
Appendix A: A conceptual framework of factors affecting diversification .......... 302
Appendix B: Stakeholder’s Questionnaire .............................................................. 303
Appendix C: Fishermen’s Questionnaire ............................................................... 307
Appendix D: Participant Information Sheet .......................................................... 317
Appendix E: Participant Consent Form ................................................................. 320
Appendix F: In-depth Interview Guide ................................................................. 322
Appendix G: Non-psychological characteristics among entrepreneurs .......... 325
Appendix H: Summary of Tree Nodes and Free Nodes ........................................ 326
Declaration

 Whilst registered as a candidate for the above degree, I have not been registered for any other research award. The results and conclusions embodied in this thesis are the work of the named candidate and have not been submitted for any other academic award.

Word count: 97,205 (excluding ancillary data)
List of Tables

Chapter 1

None

Chapter 2

2.1 Total employment generated by fisheries sector in 2005 by NUTS-2 region ........ 25
2.2 Summary of landings at English Channel Ports (2009) ................................. 27

Chapter 3

None

Chapter 4

4.1 Summary of competing philosophical paradigms ........................................ 82
4.2 Inventory data collection framework ............................................................ 90
4.3 Hierarchy of constraints upon fisheries diversification ................................. 98
4.4 Sampling plan for stakeholder survey ....................................................... 101
4.5 Sampling plan for fishermen’s survey ......................................................... 102

Chapter 5

5.1 Summary of diversification activities by type ............................................. 123
5.2 Typology of diversification activities ......................................................... 133
5.3 Respondent profile for stakeholder survey ............................................... 135
5.4 Respondent profile for fishermen’s survey ............................................... 135
5.5 Comparison of normalised priority weights derived from geometric mean and
    eigenvalue method ..................................................................................... 145
5.6 Comparison of normalised priority weights by consistency ratio ................... 146
5.7 Comparison of normalised priority weights by respondent type ................... 147
5.8 Comparison of economic normalised priority weights by consistency level ....... 148
5.9 Comparison of economic normalised priority weights by respondent type ....... 149
5.10 Correlation matrix of normalised priority weights: all respondents ............... 150
5.11 Correlation matrix of normalised priority weights by respondent type ........... 152
5.12 Correlation matrix of normalised priority weights by region .................................. 153
5.13 Logistic Regression predicting likelihood of continuing fishing.............................. 158

Chapter 6
None

Chapter 7
None

Chapter 8
None

Chapter 9
None
List of Figures

Chapter 1
None

Chapter 2
2.1 Highest value landings by species at Brixham, Plymouth and Newlyn combined (2011) ................................................................. 18
2.2 Distribution of registered vessels by Channel homeport ........................................ 20
2.3 Quantity and value of landings in the English Channel (2002-2011) ...................... 27

Chapter 3
3.1 Number of fishermen in the UK (1970-2011) ...................................................... 37
3.2 Comparative mean gross weekly pay within UK: All employees (2012) .................... 39
3.3 Competency approach to diversification .............................................................. 47
3.4 Scope for horizontal diversification within the fisheries sector .............................. 48
3.5 Scope for vertical diversification within the fisheries sector .................................. 48
3.6 Distinction of fisheries diversification .............................................................. 55
3.7 Conceptual framework of farm-based tourism ................................................... 59
3.8 Influence of individual attributes upon entrepreneurship ..................................... 65

Chapter 4
4.1 Map of ICES management areas relating to the English Channel fishery ............... 88
4.2 Example of 9-point pairwise comparison scale ................................................ 97

Chapter 5
5.1 Distribution of diversification activities by type .................................................. 123
5.2 Geographical distribution of diversification activities by type .............................. 129
5.3 Age-profile of fishermen interviewed .............................................................. 136
5.4 Highest level of educational attainment among fishermen interviewed ............... 137
5.5 Perceived diversification opportunities: all respondents .................................... 138
5.6 Perceived diversification opportunities: eastern Channel ................................... 139
5.7 Perceived diversification opportunities: western Channel ................................. 139
5.8 Perceived likelihood of diversification: all respondents .................................... 141
5.9 Perceived likelihood of diversification: eastern Channel ................................. 141
5.10 Perceived likelihood of diversification: western Channel ............................... 142
5.11 Perceived motives for diversification: all respondents .................................... 143
5.12 Dendrogram of hierarchical cluster analysis .................................................... 156
5.13 Preferred response strategies of fishermen ..................................................... 157

Chapter 6
6.1 Summary of administrative challenges ............................................................ 163
6.2 Economic challenges upon fishing inputs ...................................................... 168
6.3 Economic challenges upon fishing outputs .................................................... 170
6.4 Environmental challenges ............................................................................. 174

Chapter 7
7.1 Competency approach to diversification ....................................................... 218

Chapter 8
8.1 Summary of contextual environments ......................................................... 248
8.2 A Conceptual Framework to understand how fishermen respond to challenges upon financial performance ........................................................ 261

Chapter 9
None
Abbreviations

AHP     Analytic Hierarchy Process
ASHE    Annual Survey of Household Earnings
BHPS    British Household Panel Survey
CFP     Common Fisheries Policy
CHARM   Channel Integrated Approach to Marine Resource Management
CPUE    Catch Per Unit of Effort
CR      Consistency Ratio
DEFRA   Department for Environment, Food and Rural Affairs
EC      European Commission
EEZ     Exclusive Economic Zone
EFF     European Fisheries Fund
ERDF    European Regional Development Fund
EU      European Union
FAO     Food and Agriculture Organization of the United Nations
FLAG    Fisheries Local Action Group
FQA     Fixed Quota Allocation
FTE     Full Time Equivalent
GDP     Gross Domestic Product
GIS     Geographical Information System
GPS     Global Positioning System
ICES    International Council for the Exploration of the Sea
IFCA    Inshore Fisheries and Conservation Authority
IUU     Illegal, Unreported and Unregulated
LFS     Labour Force Survey
MAFF    Ministry of Agriculture, Fisheries and Food
MAIB    Marine Accident Investigation Branch
MCA     Maritime and Coastguard Agency
MCZ     Marine Conservation Zone
MFA     Marine and Fisheries Agency
MLS     Minimum Landing Size
MMO     Marine Management Organisation
MPA     Marine Protected Area
MSC     Marine Stewardship Council
NGO     Non-Governmental Organisation
NUTFA   New Under Ten Fishermen’s Association
NUTS    Nomenclature of Territorial Units for Statistics
ONS     Office for National Statistics
PO      Producer Organisation
RBS     Registered Buyers and Sellers Scheme
SAIF    Sustainable Access to Inshore Fisheries Project
SFC     Sea Fisheries Committee
STECF   Scientific, Technical and Economic Committee for Fisheries
SWIFA   South West Inshore Fishermen’s Association
TAC     Total Allowable Catch
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On a more personal note, I would like to thank my family for their continuous support during my studies. And last, but by no means least, a big thank you to Frances Morton for encouraging me to change direction and return to university.
Dedication

This thesis is dedicated to the memory of Professor David Whitmarsh, who gave me the inspiration to study fisheries and the encouragement to embark on a PhD.
Dissemination


In addition to the above, two articles have been submitted to academic journals.
1. Introduction

1.1 Context

The last forty years represents a period of significant change for the UK’s sea fishing industry. Over the period 1970-2011 the volume of fish being caught and landed into the UK by domestic vessels fell by more than half: from 975,100 tonnes to 376,000 tonnes. The level of employment in the harvesting sector witnessed a similar decline: from 21,443 full-time fishers in 1970 to 12,405 in 2011 (Marine Management Organisation, 2012a). Modernisation of the fishing industry has played a key role in this decline; technological innovation has improved the efficiency of the fleet, resulting in overcapacity and the subsequent overfishing and depletion of commercially valuable fish stocks. The oft-cited adage of ‘too many boats chasing too few fish’ remains relevant for many of the UK’s species-fisheries. However, this process of modernisation has occurred within a wider socioeconomic context characterised by rising operating costs, changing consumer preferences, increased imports of fish products, and the revision of access agreements and management controls following entry to the European Commission’s (EC) Common Fisheries Policy (CFP) in 1972. These factors have combined to create an environment within which many fishermen are finding it increasingly difficult to operate profitably. These difficulties are particularly notable within the ‘inshore’ sector (comprised of vessels under ten metres in length) – due in part to differences in management compared with the over ten metre sector. Given that the inshore sector accounts for over three-quarters (78%) of the UK’s registered fishing fleet (Marine Management Organisation, 2012b); the implications for the future of the domestic industry are significant.

Despite its relatively minor contribution to GDP at a national level, the UK fishing industry remains important to regional employment and wealth creation – especially in local economies where alternative opportunities are limited (Symes, 2001, p.7). The socioeconomic contribution of fishing at the regional and local level has not gone unnoticed by policymakers. The importance of safeguarding coastal areas dependent on fishing was identified as an objective of reform of the Common Fisheries Policy in 2002 (Brookfield, Gray & Hatchard, 2005); and a subsequent report by the Prime Minister’s Strategy Unit (2004) acknowledged that for some fisheries-dependent areas in the UK, “maintaining access to fishing opportunities is one of only a few viable ways of sustaining local employment and income generation” (p.79). In their subsequent publication of Fisheries 2027 – a long-term vision for sustainable fisheries, the UK Government Department for Environment, Food and Rural Affairs (Defra) acknowledged that small-scale fishing can make a significant economic and social contribution to coastal
communities which includes job creation, attracting tourists and maintaining the character and cultural identity of small ports (Defra, 2007, p.6).

When faced with challenges that impact upon financial performance, fishermen may adopt a range of response strategies. The inherent uncertainty associated with harvesting a wild resource means that fishermen have historically diversified their fishing activity as conditions dictate. Typically this involved targeting different species and/or fishing grounds in response to variables such as season, species distribution and market price. However, the ability of fishermen to adopt this strategy has become increasingly constrained by management practices which influence the locations where fishermen may operate, the types of fish and shellfish they target, and the quantities they are permitted to land. When faced with such constraints, an alternative solution may be found by developing complementary sources of income that are not subject to restrictions on fishing effort and output.

One approach is to adopt a strategy of multiple-job holding to complement earnings from fishing with those of onshore employment. This ‘pluriactive’ approach to working is well-established in the UK, particularly in rural areas such as the south west of England where fishing was historically combined with onshore employment in agriculture and industry (Gray, 2000). This practice was typically conducted on a seasonal basis: fishermen would work onshore during the winter when weather conditions prevented them from going to sea; or during unproductive fishing periods while awaiting the arrival of seasonal shoaling species such as pilchard and herring. An alternative strategy to seeking secondary employment is for fishermen to diversify into activities that maintain a link with fishing – enabling them to utilise their existing skills, knowledge and social networks without having to leave the industry. This strategy of ‘fisheries diversification’ can take a number of forms, including horizontal diversification into new products and/or markets; and vertical integration into preceding or succeeding stages of production. As with multiple-job holding, fisheries diversification is not a recent phenomenon and evidence suggests that fishermen in the UK are historically adept at exploiting new opportunities. One such example is found among fishermen on the south coast, who capitalised on the growth of tourism at the turn of the twentieth century by providing boat trips to holidaymakers (Walton, 2000)

The present-day relevance of fisheries diversification and multiple-job holding to fisheries policy is reflected in the current round of structural funding for the European fishing industry: the European Fisheries Fund (EFF). Introduced in 2007, this six-year programme identifies four priority ‘axes’: (1) adjustment of the fishing fleet; (2)
aquaculture, processing and marketing; (3) collective actions; and (4) sustainable development of fisheries areas. Axis 4 has particular relevance because it advocates a community-led decentralised approach in which “preference will be given to the involvement of private actors on the ground and a bottom-up approach” (European Commission, 2006, p.2). More specifically, Council Regulation (EC) No 1198/2006 on the European Fisheries Fund identifies a key objective of Axis 4 as the maintenance and development of jobs in fisheries areas, “through support for diversification or the economic and social restructuring of areas facing socio-economic difficulties as a result of changes in the fisheries sector” (Article 43.2b).

The UK received an Axis 4 funding allocation of around £3.9 million which is coordinated by the Marine Management Organisation (MMO) – acting as the managing authority on behalf of Defra in addition to delivering the scheme nationally within England. Implementation of Axis 4 within the UK occurs through the formation of Fisheries Local Action Groups (FLAGs) in coastal regions that are able to meet two of the following criteria: low population density; fisheries in decline; and small fishing communities (FARNET, 2011). A competitive selection process resulted in six areas in England receiving FLAG designation in 2010: Hastings; North and West Cumbria; East Riding of Yorkshire; North Norfolk; Cornwall and the Isles of Scilly; and Northern Devon.

In light of the above developments, it is clear that the strategies of fisheries diversification and multiple-job holding have a potentially valuable contribution to the sustainability of both individual fishing businesses and the communities in which fishing retains socioeconomic importance. These response strategies are particularly salient given the challenges currently facing the UK fishing industry and the restrictions fishermen face in developing more profitable fishing practices. However, despite their relevance, diversification and multiple-job holding have received limited attention from researchers and academics in this specific context. While historical evidence confirms that fishermen in the UK have previously engaged in these strategies, knowledge of their present-day application is limited largely to anecdotal accounts. As such, there exists a gap in knowledge of the current practices of diversification and multiple-job holding, their contribution to fishing businesses, and the motives and characteristics of the fishermen who adopt them.
1.2 Identifying the research questions

In identifying the questions that this research seeks to address, it is necessary to commence by acknowledging the role and influence of the research funding body. Funding was provided as part of the project: CHARM 3 (CHannel integrated Approach to marine Resource Management), selected within the scope of the INTERREG IV A France – England cross-border European cooperation programme, co-financed by the European Regional Development Fund (ERDF). The main objectives of the CHARM project is to provide decision makers with a multidisciplinary status report of the English Channel ecosystem, and a range of tools for the sustainable management of living marine resources. The University of Portsmouth received funding under CHARM Action 9.2: *Diversification of fisheries activities* to assess and analyse existing diversification activities in the Channel; investigate the likelihood of fishermen engaging with these activities; and determine the factors that affect the development of diversification strategies in this region.

To fully investigate diversification among fishermen in the English Channel it is necessary to situate this practice within a wider context, based upon the following assumptions:

- Fishermen face a range of challenges in their occupation, which influence the financial performance and ultimate viability of their fishing businesses;

- Fishermen may respond to these challenges by adopting a range of different strategies; including those developed within the catching sector, and those developed outside this sector i.e. fisheries diversification and multiple-job holding;

- It is anticipated that the viability and consequent uptake of these response strategies is subject to a range of economic, social and administrative factors.

In light of these assumptions, a decision was taken to extend the scope of this research beyond the diversification focus stipulated by the CHARM project, by addressing the following research questions:

1) What are the key challenges facing fishermen in the English Channel; what impact do these have upon fishing businesses; and how do fishermen respond to these challenges?

2) What opportunities exist for Channel fishermen to diversify into related activities; which factors influence the development of these activities and the likelihood of their adoption?
3) To what extent do fisheries diversification and multiple-job holding represent viable response strategies for fishermen in the English Channel and wider UK fishing industry?

In order to answer these research questions it is necessary to develop a research approach that satisfies the following objectives:

1) To establish the origins and impact of challenges that Channel fishermen encounter in their day-to-day working practices;

2) To undertake a comprehensive audit of fisheries diversification activities in the English Channel which includes data on activity type, structure and location;

3) To investigate the opportunities for fisheries diversification in the Channel; explore the motives and likelihood of fishermen exploiting these opportunities; and determine the importance of key constraints upon diversification;

4) To explore the practices and experiences of multiple-job holding among Channel fishermen, and investigate the attitudes of fishermen towards this strategy;

5) To develop a framework that conceptualises the type and impact of challenges faced by fishermen, and the strategies they adopt in response.

1.3 Thesis structure

In addition to this introductory chapter, this thesis consists of eight chapters. A brief overview of each chapter is provided below:

Chapter 2 provides an overview of the English Channel fishery and establishes the context within which this research is conducted. Following a brief description of the biogeography of the English Channel, the chapter outlines the development of commercial fishing in the Channel – situated within a wider UK context. An overview of the present-day Channel fishery is then provided, which includes management practices and the socioeconomic importance of the fishery.

Chapter 3 consists of a comprehensive review of literature relating to the research questions that this thesis seeks to address; including both key theoretical principles and empirical findings. The chapter consists of five sections: the first section examines literature on the challenges facing commercial fishermen and their impact upon financial
performance. This is followed by a review of the strategies that fishermen may develop within the catching sector in response to these challenges. The emphasis then shifts towards diversification and multiple-job holding, which are reviewed in the third and fourth sections respectively. Given that the focus of this thesis is upon strategies that enable fishermen to continue fishing, it is necessary to examine the reasons why individuals facing financial difficulty choose to remain within the industry. This forms the basis of the final section which reviews relevant literature on segmented labour markets, opportunity incomes and the non-pecuniary benefits of fishing.

Having established a theoretical and empirical foundation for this study, Chapter 4 outlines the methodology used to inform the research design and implementation. The chapter commences with a discussion of the main philosophical approaches to research, from which an appropriate philosophical paradigm is identified. This paradigm is used to inform the research design, which is outlined in the subsequent section together with the terms of reference. The third section of the chapter focuses specifically upon the methods used to implement three distinct phases of research: an inventory of fisheries diversification; a survey of stakeholders and fishermen incorporating the Analytic Hierarchy Process (AHP); and a series of in-depth interviews with key informants. The final section discusses the importance of validity and reliability, and outlines the steps taken to incorporate these requirements into the research design.

Chapter 5 details the results of the first two stages of research: the inventory of fisheries diversification activities, and the survey of stakeholders and fishermen (including the AHP component). In addition to providing a descriptive account of the findings, statistical tests are used to explore relationships within and between variables – including differences between respondent type and location.

Chapter 6 focuses upon the results of the qualitative phase of research with key informants. The first section of the chapter provides a descriptive account of the challenges facing Channel fishermen and the contexts within which they occur, prior to examining the impact of these challenges upon financial performance. In the second section, the responses of fishermen to these challenges are examined; commencing with strategies developed within the catching sector, followed by multiple-job holding and fisheries diversification. The final section of the chapter explores the influence of social characteristics upon the response strategies adopted by fishermen.

Chapter 7 discusses the key findings of the three phases of research, with the aim of developing a conceptual framework to understand how fishermen respond to challenges upon financial performance. The chapter consists of two sections: the first section
examines research findings with respect to their relationship with existing empirical research and theory. This is followed by a discussion of the key concepts that emerged from this research study, namely contextual environments; attitudes to risk; and innovation and entrepreneurship. These concepts form the foundation upon which the conceptual framework is developed.

Chapter 8 proposes a framework to conceptualise the challenges faced by fishermen, their impact upon financial performance, and how fishermen respond to these challenges. The chapter commences with a descriptive overview of the process by which the framework was constructed. The resultant framework is presented in the second section, and is followed by a discussion of the applicability of this framework to fisheries outside the study area. In the final section of the chapter, this discussion is extended to consider the implications of the framework for the future of the UK fishing industry.

Finally, Chapter 9 concludes the thesis by drawing together the key outcomes of the research and providing a number of recommendations for future consideration. The chapter consists of three sections: the first section provides a summary of key research findings and explores the contribution of this study to existing knowledge. This is followed in the second section by a brief critique of the research approach with identifies both strengths and limitations. In the final section of the chapter, a number of recommendations are proposed with respect to future research and fisheries policy.
2. An overview of the English Channel Fishery

2.1 Introduction

In order to investigate the challenges faced by commercial fishermen in the English Channel and the strategies they adopt in response to these challenges, it is necessary to establish an underlying context to this study. The Channel represents just one of many fisheries that support the UK fishing industry, and even within its own boundaries considerable diversity may be observed. This diversity encompasses the marine habitats and commercially valuable species that are found within them; the range of fishing vessels and methods used in their exploitation; and the individual fishermen making their living from this process. The aim of this chapter is to provide an overview of the English Channel that encompasses these various characteristics. The chapter commences with a descriptive account of the Channel's biogeography, prior to exploring the development of commercial fishing. Given that the Channel fishery does not exist in isolation from the wider UK industry, this section examines the development of fishing at both the national and regional level. The third section provides a general outline of the present-day Channel fishery, followed by a discussion of the framework through which it is managed. Finally, the fifth section examines the importance of the fishery with respect to its economic, social and cultural value.

2.2 Biogeography of the English Channel

The English Channel is the body of water that connects the Atlantic Ocean and the North Sea, separating the southern coast of England from the northern coast of France. Covering an area of approximately 75,000 km², the Channel narrows in width from around 180 km in the west to 34 km in the east. Average depths vary accordingly, ranging from just over 100 m in the west to 40 m in the east (Pascoe, 2000, p.3), with the deepest area being the Hurd Deep – a trench lying north west of the Channel Islands with a maximum depth of around 170 m.

Tidal movement occurs in a westerly to easterly direction, with high tide in the western Channel resulting in low tide in the eastern Channel. Pawson (1995, p.6) notes that tidal circulation constitutes a ‘river’ between the Atlantic Ocean and North Sea, carrying in the region of 17,000 cubic metres of water per second during an average tide. Areas of the Channel can experience strong tidal flow, particularly during spring tides with currents so strong that it is not possible to leave static fishing gear in the water (Pascoe, 2000, p.3).
The Channel is also subject to tidal anomalies such as the ‘double high water’ observed in the Solent area between the Isle of Wight and the Hampshire coastline, and strong tidal races such as those found off Portland Bill in Dorset and Start Point in south Devon.

The geological characteristics of the Channel are varied and include rugged cliffs with minimal erosion in the west, steep cliffs with ongoing erosion and offshore stacks – such as those found in the counties of Dorset and Kent, and areas of low-lying land subject to rapid erosion – such as the Hampshire coastline (Hamblin et al., 1992). Similarly, the Channel seabed itself is varied in its composition; consisting predominantly of sediments, with rocky areas more common in the western Channel and large offshore sandbanks more common in the east (Williamson, 1959). As a result of these characteristics, the Channel contains a rich diversity of marine habitats and species, giving rise to a valuable mixed commercial fishery.

While most species display seasonality in their distribution, as reflected by commercial landings, a distinction may be made between highly migratory species that move through the Channel to spawning and feeding areas (e.g. mackerel, pilchards); and those that are present throughout the year, albeit moving within the Channel (e.g. cod, plaice). Due to its location with respect to the Atlantic Ocean and North Sea, the majority of species found in the Channel are not endemic to this environment. However, the topography of the Channel does provide important spawning grounds and nursery areas for species such as bass and plaice. Pascoe (2000, p.4) notes that the Channel represents the southern range for some cold water species (e.g. herring, sole) and the northern range for some warm water species (e.g. cuttlefish, red mullet). As a result, small changes in water temperature may lead to notable shifts in species composition. In addition to climate-based distribution, Pawson (1995, p.6) observes that the distribution of benthic organisms (i.e. those living on or near the sea floor) is determined by sedimentary texture, with a greater diversity of these organisms observed in the western Channel.

2.3 Historical development of the English Channel Fishery

2.3.1 Development of commercial fishing in the UK

In order to place the development of the English Channel fishery in context, it is necessary to briefly examine the history of commercial fishing in the UK. As a temperate island nation, the inland waterways and coastline have long provided residents with a plentiful food source. Following the Roman conquest of Britain in the First Century AD, harvesting of shellfish such as oysters, whelks and mussels became common, with the former being
highly prized and even exported to Rome. However, it was not until the 11th century that a widespread shift from the consumption of freshwater fish to sea fish took place. Roberts (2007, p.18) attributes this “sea-fishing revolution” to a number of factors, including: a rapidly rising population; the growing influence of Christianity and its restrictions on eating meat; and the prestige associated with eating fish. Facilitated by the establishment of larger settlements that became centres for the trade in goods and services, this period may be viewed as the origin of the UK’s commercial sea fishing industry. Fundamentally, it marks the point at which fishing became a specialised occupation, and those working within it began catching fish as a commodity to sell to others.

In the following centuries, the commercial fishing industry continued to grow, stimulated by increased demand and the introduction of new fishing techniques. A number of key milestones can be identified in the development and growth of commercial fishing in the UK. The first of these was the introduction of trawling, in which a net is towed by a moving vessel along the seabed. The first trawl nets, believed to have been invented by fishermen from the Devon port of Brixham, were ‘beam trawls’ – where the mouth of the net was kept open by a wooden beam, thereby allowing the net to operate when being towed at variable speeds. The earliest description of a trawl net can be traced to 1376 (Robinson, 1998, p.16), and while initially slow to develop, this practice was becoming widespread by the late eighteenth century. Prior to the adoption of trawling, the principal methods of catching fish were less-mobile and included gill nets, purse-seining, and fixed lines with baited hooks. While seining remained the method of choice for catching valuable pelagic fish such as herring and pilchard which congregate in large shoals in the middle and upper layers of the water, trawling replaced line fishing as the principal method of catching white fish such as cod, haddock and sole. The trawl net allowed fishermen to harvest greater quantities of fish than previously possible, and combined with larger sailing vessels enabled them to travel greater distances in search of prolific fishing grounds.

Despite the growth of trawling witnessed during the latter half of the eighteenth century, the development of the domestic fishing industry was subject to the high costs and slow pace of transportation – with these factors effectively creating a “bottleneck” upon expansion (Robinson, 1998, p.10). Fresh fish was transported upon foot, boat, or by horse and cart, and while transportation improved with the introduction of turnpike roads during the early-eighteenth century, the supply of large quantities to inland populations remained infeasible – despite increasing demand. As a result, supply was restricted mainly to local communities and regional centres. This situation was to change markedly with the development of the rail network during the nineteenth century which linked
previously isolated fishing communities with urban markets. The use of ice to preserve fish became widespread and by the 1860s, over 100,000 tonnes of fish were being transported annually by rail (Roberts, 2007, p.142). These developments in transportation enabled the large-scale supply of fresh fish to become profitable, and the trawling sector responded accordingly. By 1860, the British trawling fleet had expanded to over 800 vessels, from around 130 vessels twenty years previously (Roberts, 2007, p.144).

Inevitably, steam power began to be utilised as a means of powering fishing vessels, commencing with the adaptation of steam tugs during the late 1870s, followed by the construction of purpose-built steam trawlers (Robinson, 1998, p.83). Steam power revolutionised the trawling industry, reducing the impact of weather and tidal conditions that heavily influenced sail-powered vessels. The ability to trawl at a steady speed also gave rise to the widespread application of the ‘otter trawl’ where instead of a beam, the net is kept open at each side by an otter board or ‘trawl door’; thus facilitating the use of larger nets and subsequently greater catches. Even prior to the introduction of steam power, fishermen were becoming increasingly concerned over the negative impact that trawling had upon fish stocks, resulting in protests during the 1850s. However, these concerns became widespread following the substantial increase in fishing effort that resulted from the introduction of steam power. The depletion of fish stocks around the British coastline led to the growth of distant-water fishing during the early twentieth century – particularly on the east coast where the overfishing of the North Sea resulted in vessels travelling to arctic waters to exploit the prolific whitefish stocks.

The next milestone in the development of the UK fishing industry occurred in the period following the Second World War with the widespread adoption of diesel-powered vessels. In addition to increased efficiency, reliability and range; these vessels also benefitted from a number of war-time technological developments; most notably in navigational equipment and the introduction of the echosounder. The resultant increase in fishing effort upon many fish stocks was unsustainable, leading notably to the collapse of the historically significant herring fishery off the coast of East Anglia in 1955, followed by a moratorium on all herring fishing in the North Sea in 1977 (Roberts, 2007, p.198). The post-war period was also characterised by a number of significant political developments that shaped the development of the UK fishing industry. The dramatic increase in fishing effort, coupled with changing political structures saw many fishing nations keen to extend their claim over traditional fishing grounds. Iceland was one of the first nations to engage in this process, extending their limit in 1952 to four nautical-miles, from the three-mile limit accepted by many nations as an international consensus. Following the first United Nations Conference on the Law of the Sea in 1958 it became clear that many nations considered
the three-mile limit untenable and extension to a twelve-mile limit was the most favourable alternative (Ashcroft, 2000, p.225). Iceland’s adoption of a twelve-mile limit in 1958 had a notable impact upon the British fleet of distant-water vessels targeting valuable cod and haddock stocks off the Icelandic coast. Britain’s refusal to acknowledge this extended limit resulted in the first ‘Cod War’; however, following a second United Nations conference in 1960, acceptance for a twelve-mile limit became widespread. By 1964, 38 countries, including Britain, had established twelve-mile territorial limits (Ashcroft, 2000, p.226). In 1972, Iceland further extended its territorial limit to fifty-miles, resulting in a second cod war which lasted until 1973 when an agreement was reached to grant Britain restricted access within this limit.

During the early 1970s, the increasing importance of securing access to biological and mineral resources led to discussion among coastal nations of introducing 200-mile Exclusive Economic Zones (EEZs). This concept received considerable backing during the third United Nations conference in 1973, and in 1975 Iceland established a 200-mile limit. Britain again challenged this decision on the basis of legality – resulting in a third cod war, however, by 1976 a settlement was reached that British vessels would no longer fish within Icelandic waters. The widespread adoption of EEZs during the mid-1970s had a considerable impact upon the British fishing industry in a number of ways. The exclusion of British vessels from their traditional cod and haddock grounds off Iceland, Norway and the Faroes facilitated a rapid decline in the distant-water fleet, exacerbated by the rising price of fuel which tripled between 1973 and 1975 (Robinson, 1996, p.244). This was particularly notable on the east coast where landings at ports such as Grimsby, Hull and Fleetwood fell dramatically. For example, the real value of landings in Hull decreased from £118 million to just £10 million between 1977 and 1987 (Whitmarsh, 2000, p.230). Although Britain had declared its own 200-mile EEZ in 1976, the establishment of EEZs by all members of the European Union effectively created a combined exclusion zone within which all member states had access to a common resource, managed through the framework of the Common Fisheries Policy (CFP).

The developments of the 1970s had a profound impact upon the British fishing industry; the loss of distant-water fishing grounds led to an increase in fishing effort upon domestic fish stocks, which following Britain’s membership of the CFP, was exacerbated by pressure from other EU member states. The resultant overexploitation, coupled with the introduction of restrictive management measures saw the value of landings fall as the British fleet struggled to supply the domestic market. Demand was met by a significant increase in imports, and between 1977 and 1987 the real value of imports rose from £710 million to £1,173 million (Whitmarsh, 2000, p.228). A number of structural changes
resulted from these developments: notably a decline in the number and tonnage of fishing vessels – facilitated by the failure of prices to increase accordingly with operating costs; and the changing status and hierarchy of fishing ports (Whitmarsh, 2000, p.229). A number of these trends are evident within the present-day industry, particularly with respect to declining vessel numbers which fell by 17% between 2001 and 2011 in the UK (Marine Management Organisation, 2012a, p.9). Fishing firms have responded to declining catch rates and administrative constraints by modernising vessels and investing in technology such as satellite navigation and plotting, three-dimensional seabed imaging systems, and larger and more efficient fishing net designs. While this process of ‘technological creep’ has undoubtedly improved the efficiency of the fishing process, landings in the UK have continued to decline.

A concise overview of the present UK fishing industry can be gained from the UK Sea Fisheries Statistics Annual Report published by the Marine Management Organisation (MMO) (2012a) – an executive agency of the Government Department for Environment, Food and Rural Affairs (Defra). A summary of the main indicators has been provided below:

- In 2011, the UK fishing fleet consisted of 6,444 vessels, of which 5,056 (78%) were under 10m in length, and 1,388 (22%) were over 10 metres in length (p.1);

- There were around 12,400 fishermen – the majority of whom were based in England (5,800) and Scotland (5,000). Over four-fifths (81%) of this total were full-time fishermen. (p.1);

- UK vessels landed 600,000 tonnes of fish and shellfish with a value of £828 million (p.2). Demersal fish and shellfish constituted the greatest proportion of landings by value (35% respectively); followed by pelagic fish (30%) (p.3);

- With regards to quantity, over half (55%) of all landings were caught from ICES management areas IVa (Northern North Sea) and VIa (West of Scotland) (p.4);

- The largest ports by quantity landed are Peterhead (106,600 tonnes), Lerwick (51,800) and Fraserburgh (25,300) in Scotland; followed by Plymouth (14,300), Brixham (13,700) and Newlyn (10,300) in England (p.6);

- The UK imports more fish (720,000 tonnes) than it lands – with the main imports being cod, tuna, shrimps, prawns and haddock. 437,000 tonnes of fish were exported, with the main species being salmon, mackerel and cod (p.8).
2.3.2 Development of the English Channel Fishery

The historical development of the British fishing industry has been characterised by the exploitation of a series of distinct regional fisheries. This pattern remains applicable to the English Channel where marked differences are observed, particularly between the eastern and western Channel. The productive resources of the Channel have long provided an important food source for local populations, with the first records of commercial fish trading dating from the eleventh century (Trewin & Woolfitt, 2006, p.34). The growth of the domestic Channel fishery was fuelled during the sixteenth and early seventeenth centuries by a number of factors, including Catholic restrictions on eating meat, and an increasing population. Seafood also provided an important substitute to agricultural produce, particularly in the south west where harvest failures occurred on average once per decade (Gray, 2000, p.82). During this period, the Channel also developed a sizeable distant-water fleet to exploit the rich fishing grounds off Newfoundland; by 1631 Plymouth had a fleet of 60 ships and Dartmouth 80 ships (Dickinson, 1987, p.7).

Given the abundance of fish and shellfish throughout the Channel, the sites from which fishing was conducted were widespread. In the eastern Channel, the presence of productive seasonal fisheries led to the development of sizeable fishing fleets at locations such as Hastings, Eastbourne, Rye and Brighton during the eighteenth century. Although not so abundant as on the east coast, herring remained a key species during the autumn and winter months, with vessels switching to the productive mackerel fishery during spring and summer. As shoaling pelagic species, both herring and mackerel were targeted using drift-nets, with larger vessels following the large schools as they migrated seasonally. By the mid-eighteenth century, Hastings had a fleet of over twenty ‘luggers’ – large sail-driven vessels that moved up the east coast as far as Scotland in pursuit of herring and along the length of the Channel for mackerel (Hastings Fishermen’s Protection Society, n.d). However, fishermen in the eastern Channel employed a range of other methods throughout the year; including line fishing for white fish, dredging for oysters and pot-fishing for shellfish.

In contrast to the eastern Channel, the herring fishery was less prevalent in the south west where the warmer waters marked the southern range of the herring’s migration – although this species was still targeted during the winter months. Instead, the south west had a prolific seasonal fishery for pilchard, a southerly species that migrated northwards to spawn during the summer months off the Cornish and west Devon coastline where they were targeted principally with seine-nets. By the late eighteenth-century, the pilchard industry had exceeded the herring fishery in importance (Pawlyn, 2000, p.85), giving rise
to large seine fleets in locations such as Mevagissey, Looe and Hope Cove. As with the eastern Channel, fishermen in the west also exploited the productive mackerel fishery during spring and summer, and targeted other fish and shellfish species as the seasons dictated. The late-eighteenth century also witnessed the growth of trawling in the Channel, particularly the Devon trawl fishery centred upon the ports of Brixham and Plymouth. Brixham had a fleet of 100 sail trawlers by 1786 (Robinson, 1998, p.18), facilitating the construction of a new landing quay in 1795. However, as local fish stocks became overexploited, Channel trawlers moved further afield to the North Sea, Irish Sea, and Bristol Channel, often landing their catches at other ports.

The nineteenth century witnessed a number of further developments in the Channel fishery. The trawling industry continued to grow during the first half of the century, with the Brixham fleet doubling in size between 1833 and 1850 (Corin, 1980, p.12). This growth in the domestic sector contrasted with that of the distant-water Newfoundland fleet which diminished during this period and had disappeared by 1844 (Dickinson, 1987, p.73). The south west pilchard industry also continued to grow during this period, with the volume of fish being caught and processed creating considerable employment. In 1822, an estimated 6,000 fishermen were employed in the Cornish pilchard fishery, with up to twice as many women and children employed onshore (Noall, 1972, p.55). Pilchards were processed primarily by salting, pickling or smoking; and although consumed regionally, a lucrative market developed for the export of pilchards to mainland Europe – particularly Italy which accounted for as much as 90% of all salt-cured pilchards (Pawlyn, 2000, p.85). The development of the rail network had a considerable impact in opening up new markets for the Channel fishery, especially in the south west. Plymouth was connected to the rail network in 1848, with Brixham following in 1867. The completion of the Royal Albert Bridge over the River Tamar in 1859 was one of the most significant developments during this period, and brought London markets within 12 hours of the Cornish fishery (Pawlyn, 2000, p.86). During the latter-half of the nineteenth century the south west pilchard industry began to decline as the seasonal shoals failed to arrive in their previous numbers. In contrast, the mackerel fishery became increasingly important in the western Channel, centred around the Cornish port of Newlyn. By 1873, Newlyn had around 400 vessels targeting mackerel and pilchard and its importance as a fishing port continued to grow following the construction of a new harbour in 1884 (Corin, 1980, p.15). Together with Plymouth, Newlyn also gained prominence as a trawling port during this period as Brixham declined due to the large proportion of its trawl fleet landing its catch elsewhere.
The cyclical pattern of growth and decline in the fisheries of the English Channel continued into the twentieth century. As with the fisheries of the North Sea, fishing activity was disrupted during two world wars. In addition to area restrictions, fishing vessels were requisitioned by the Government and fishermen were encouraged to apply their knowledge and experience to naval service. These periods of reduced fishing activity allowed depleted fish stocks to recover, however, this rejuvenation was short-lived and stocks were soon overexploited to their previous levels. In the south west pilchard fishery, reductions in seasonal shoals were exacerbated by depressed exports during the inter-war years, resulting in the introduction of modern canning methods in an attempt to stimulate domestic demand (Pawlyn, 2000, p.197). Demand for canned pilchards during the Second World War was high, but issues of sporadic supply and changing consumer tastes saw the fishery continue to decline in the following decades. The mackerel fishery followed a similar pattern; declining during the post-war period as fishermen targeted other more profitable species.

Although the political developments of the post-war period did impact upon fishing in the English Channel, the magnitude of this impact was not as great compared to other parts of the UK. This was due in part to the characteristics of the Channel fleet; having a much smaller distant-water fleet than the east coast, and a larger adaptable inshore sector that was able to exploit the valuable mixed fishery. The extension of the British territorial seas to twelve nautical miles in 1964 rejuvenated many fisheries in the Channel, including the Brixham fleet – facilitating the construction of a new quay in 1974. Landings in the English Channel increased steadily between 1967 and 1997; including considerable growth in pelagic landings between 1967 and 1977 from around 5,000 tonnes to nearly 130,000 tonnes per annum (Whitmarsh, 2000, p.230). This was driven principally by a boom in the south west mackerel fishery, attracting trawlers from eastern and Scottish ports that had lost access to distant-water grounds, together with factory ships from the Soviet Union. This boom was relatively short-lived and by the early 1980s the focus of mackerel fishing had shifted to the west coast of Scotland. Nonetheless, while the status of large east coast ports such as Hull, Grimsby and Fleetwood has declined significantly since the 1970s, landings at the Channel ports of Newlyn and Brixham have increased. For example, between 1977 and 1997, the real value of landings at Newlyn doubled from £11.7 million to £23.4 million (Whitmarsh, 2000, p.231).
2.4 The present English Channel Fishery

The present English Channel Fishery retains a number of characteristics of its historical development, as outlined in the previous section. Fishing activity remains widespread throughout the Channel, with the majority of established landing sites still in use – the location and type of which has been dictated by local topography. Landing facilities may be found in small coves and river inlets, such as those typical of South Devon and Cornwall, as well as within larger natural harbours such as Poole and Christchurch in Dorset, and Portsmouth in Hampshire. Where the topography does not provide naturally sheltered and accessible landing sites, the construction of artificial harbours/marinas may be observed, including those at Newlyn and Brixham – which remain two of the largest fishing ports in the Channel. Where such harbour facilities are absent, vessels continue to land their catch on the beach, such as the Hastings fleet in East Sussex. The Marine Management Organisation lists 71 active homeports in the Channel – of which 5 are administrative ports: Hastings and Poole in the eastern Channel, and Newlyn, Brixham, and Plymouth in the western Channel (2012b).

The Channel contains approximately eighty commercially-caught species of fish, shellfish (crustaceans and molluscs), and seaweed (Boncoeur et al., 2000, p.106), although the majority of landings are dominated by a smaller number of higher-value fish and shellfish species. Annual statistics of the Marine Management Organisation list in the region of forty commercial species, with a distinction between abundant lower-value species and those of higher value and lower abundance (Ulrich et al., 2002, p.386). The most valuable species landed at the three largest Channel homeports include scallops, monkfish, cuttlefish and sole (figure 2.1).
The diversity of species found in the Channel is reflected in the vessels and gear used to target them. In their case-study of the English Channel fishery, Mardle et al. (2002, p.416) note that boats range in size from 5m to over 30m, employing 7 main types of mobile and static gear: beam trawl, otter trawl, mid-water trawl, dredge, line, nets and pots. The seasonal distribution of many commercially valuable species means that it is not uncommon for fishermen to target different species, using a range of gear types, as conditions dictate. This practice is particularly common among the inshore fleet comprised of vessels under 10m in length. As a result, the Channel may be viewed as a multi-country, multi-activity and multi-species fishery, rather than a collection of smaller geographically-defined fisheries (Ulrich et al., 2002, p.381). Pascoe (2000, p.1) estimated that approximately 4,000 vessels operate within the fishery, consisting predominantly of English and French vessels but including Belgian beam trawlers, Scottish pelagic trawlers, and a small fleet of boats from the Channel Islands engaged primarily in potting. A review of literature to date reveals a number of similarities between the English and French components of the fishery. Mardle et al. (2002, p.416) observed that in 1995, just under 5,000 people were employed in the UK fishery, with a similar number in France. Furthermore, the number of French boats working primarily in the Channel fishery constitutes around 25% of the entire French fleet – a figure comparable with that of the UK.

The most reliable information on the size and structure of the English fleet can be obtained from the listings of registered and licensed vessels compiled by the Marine Management Organisation (2012a).
Management Organisation. Vessels are listed according to length (under 10m; over 10m), administrative port and homeport. A number of considerations must be noted when examining this data: these include vessels registered to an English Channel administrative port but operating from a homeport outside of the Channel (and vice-versa); the fact that vessels registered with neither a Channel administrative port or homeport may fish within the Channel; and that vessels may be registered but not actually engaged in fishing activity (Ota & Just, 2008). Nonetheless, such data provides a valuable overview of the composition of the fleet. When examined by Channel administrative port, a total of 1,897 vessels are registered as of 1st December 2012 (Marine Management Organisation, 2012b), with this figure dominated by vessels under 10m in length (1,619 = 85%). Significantly, in relation to total vessel listings for the United Kingdom, the English Channel represents around one-third (35%) of the combined United Kingdom fleet (representing 39% of under 10m vessels, and 22% of over 10m vessels respectively).

The distribution of vessels across the 71 Channel homeports is summarised in figure 2.2 and shows that while distribution is widespread, around one-third (34%) operate from the five largest ports of Newlyn, Brixham and Plymouth in the western Channel; and Hastings, Poole and Portsmouth in the eastern Channel. Examining distribution with respect to the International Council for the Exploration of the Sea (ICES) management areas VIIId (eastern Channel) and VIIle (western Channel) reveals that nearly two-thirds of vessels (65%) are registered at homeports in the western Channel (accounting for 62% of under 10m vessels and 81% of over 10m vessels respectively) (Marine Management Organisation, 2012b).
In addition to the capture fishing industry, marine aquaculture is also practised within the Channel. Unlike the Scottish aquaculture industry which is dominated by salmon farming, aquaculture in the English Channel is confined to the production of shellfish – principally oysters and mussels which are cultivated on estuarine and foreshore beds. These sites are generally leased from the Crown, or operated under Several Fishery Orders issued by Defra (Bannister, 2006, p.5). At the time of writing, aquaculture was being practised at a number of locations in the Channel, albeit on a relatively limited scale; including Poole Harbour and Weymouth in Dorset, the River Exe in Devon and the Helford River in Cornwall.

2.5 Management of the English Channel Fishery

As with all marine fisheries of the UK, the management of the Channel fishery is conducted at three distinct levels: international; national; and regional/local. At the international level, the Channel fishery is managed within the framework of the EC’s Common Fisheries Policy (CFP), which was created in 1983 and the current legal framework settled in 1993 (Mardle et al., 2002, p.420). One of the founding principles of the CFP was to avoid conflict as fishing nations extended their territorial waters and established EEZs to 200 miles. In order to protect traditional fishing grounds and
practices, member states of the EC agreed to grant mutual access to their waters, thus creating a unified zone of jurisdiction.

The aim of the CFP consists of three complementary goals (European Commission, 2009, p.8):

1) Sustainable fisheries and aquaculture;
2) A healthy marine environment; and
3) An economically viable industry providing employment and opportunities for coastal communities.

The CFP stipulates a number of management measures intended to exploit fish stocks at sustainable levels. All vessels that fish for financial gain must be licensed and registered, and are subject to controls on both inputs (gear restrictions, days at sea restrictions) and outputs (minimum landing sizes (MLS), total allowable catches (TACs) and quotas). The system of TACs constitutes a principal management tool of the CFP (Mardle et al., 2002), established with the initial purpose of allocating access to commercially valuable species among the member states. While this function remains, the system has an additional objective of protecting key species from overexploitation. TACs are set annually by the EU Council of Fisheries Ministers based on recommendations from the Scientific, Technical and Economic Committee for Fisheries (STECF) – an advisory group of independent scientists. The STECF utilises scientific advice provided by ICES which undertake stock assessments using a series of spatially-defined management areas or ‘rectangles’. As previously noted, the English Channel fishery falls principally within two of these areas: VIId in the east and VIIe in the west.

The TAC is shared among the member states in the form of a quota, with proportional allocation based upon historical catches under a principal known as ‘relative stability’. Quota is allocated to UK fishing vessels in one of three ways:

1) Among regional Producer Organisations (POs) which manage quota on behalf of their members – composed of both over 10m and under 10m vessels. Membership is voluntary and unlike other fishing organisations POs are an institution of the EC (Hatcher, 1997);

2) Among the ‘inshore fleet’ of vessels: as defined by those vessels under 10 metres in length. These vessels fish against an ‘inshore pool’ managed by Defra and allocated to individual vessels in the form of monthly catch limits;
3) Among vessels that are not members of a PO, referred to as the ‘non sector’. For these vessels quota is allocated on the basis of Fixed Quota Allocations (FQAs) held by individual vessels within a fishing group, or the group collectively.

Historically, quota allocation and monitoring was conducted by Defra on behalf of England, Scotland, Wales and Northern Ireland. However, under a recently agreed concordat each of these nations will be given devolved power to manage quotas and vessel licensing (Defra, 2012a). In accordance with the CFP, each member state is responsible for monitoring the uptake of quota, and all vessels over 10m are required to record catch data in a logbook and submit catch reports after each trip. Vessels under 10m are not required to keep a logbook but their landings are also monitored through the submission of catch returns.

In addition to the management framework of the CFP, each member state has the ability to impose additional measures for the management of its coastal waters. Until April 2011, this responsibility was undertaken in England and Wales by twelve regional Sea Fisheries Committees (SFCs) – constituted under the Sea Fisheries Regulation Act (1966) for the purpose of managing inshore fisheries within 6 nautical miles of baselines. This framework allowed SFCs to respond to regional/local issues within their area of jurisdiction and take appropriate action. Typically this included increasing the MLS for certain species above those stipulated by the CFP; and introducing byelaws upon the gear type, geographical area and fishing season for certain species. Six SFCs were responsible for managing the inshore fisheries of the Channel from east to west: Kent & Essex; Sussex; Southern; Devon; and Cornwall and the Isles of Scilly. The Channel Islands did not have a formal SFC to manage their inshore waters – instead this role was undertaken by the respective fisheries departments of Jersey and Guernsey. In April 2011, the twelve SFCs were replaced by ten regional Inshore Fisheries and Conservation Authorities (IFCAs) with the aim of modernising inshore fisheries management under the Marine and Coastal Access Act (2009). The range of responsibilities for IFCAs was extended beyond fisheries to include the wider management of the marine environment, securing a balance between social, environment and economic benefits (Defra, 2010). The geographical boundaries of each IFCA remain similar to those of SFCs but were adjusted to align with local authority boundaries, including river estuaries which previously came under the management of the Environment Agency.
2.6 Socioeconomic importance of the English Channel Fishery

In order to understand the socioeconomic importance of the English Channel fishery it is necessary to first identify the range of associated sectors that enable the fishing industry to function (Brookfield, Gray & Hatchard, 2005). The fishing industry may be viewed as three distinct sectors: the catching sector – where the actual practice of ‘fishing’ is conducted; an upstream sector supplying the goods and services required for fishing; and a downstream sector utilising the products of the catching sector. From an economic perspective, a measure of the relative importance of these sectors can be derived by examining data relating to employment, added value and contribution to GDP. However, the fishing industry clearly has a sociocultural value that manifests itself through concepts of social capital, sense of identity and sense of place. While difficult to quantify, the sociocultural value of fishing in the UK is widely accepted, and the oft-quoted description of fishing as a ‘way of life’ rather than merely a profession remains applicable to many fishermen.

The issue of data availability is particularly salient when examining the socioeconomic importance of the fishing industry. Data collated nationally is limited with respect to the level of regional disaggregation – an issue compounded by a shifting focus on the themes of data collection over time. At the European-wide level, the application of data may be limited by non-standardised measurement approaches, and the level of dependence upon fishing concealed by data sets compiled at a macro-regional level – such as the NUTS-2 level used by the EU (Symes, 2000, p.4). With respect to the English Channel fishery, data on employment, value and contribution to GDP can be obtained from three main sources: national statistics compiled by UK Government agencies and industry bodies (e.g. Marine Management Organisation, Seafish Industry Authority); output from research commissioned at an EU level; and the results of ad-hoc regional research studies. These sources have been used to provide an overview of the Channel fishery in the following sections.

2.6.1 Employment

In their annual report on sea fisheries statistics, the Marine Management Organisation (2012a, p.22) estimate that in 2011, 12,405 fishermen were employed throughout the UK in the catching sector. Around half (55%) of these fishermen were employed in England and Wales; the majority of which (80%) were in regular rather than part-time employment. With regards to the English Channel Fishery, the MMO estimate that a total of 3,593 fishermen were employed across the five administrative ports covering the Channel, comprised of: Newlyn (872); Poole (847); Plymouth (767); Hastings (618); and Brixham.
(489) (p.26). While not all of these fishermen will be working specifically within the Channel fishery, this figure nonetheless demonstrates the national significance of the Channel-based fishing industry.

In addition to employment on a full-time or part-time basis, fishing may also be practised on an annual or seasonal basis. Fishing on a part-time and/or seasonal basis is not uncommon among the UK inshore sector, where fishermen may undertake other forms of employment during unprofitable fishing periods. Therefore, a distinction exists between active and inactive fishermen that is not reflected in annual fisheries statistics due to difficulties of measurement. This issue was addressed in a study of the south west fishing industry conducted by Ekos Consulting and Nautilus Consultants (2003). Using data from a range of sources, including Defra Sea Fisheries Statistics and discussions with the Seafish Industry Authority, the authors estimated that there were 1,686 active fishermen in the region in 2001. From this figure, an estimate of 1,332 Full-Time Equivalent (FTE) employees was proposed; of which 354 were inshore fishermen (2003, p.26). Over half of these employees (56%) were based within Cornwall and the Isles of Scilly – the majority working from the port of Newlyn. It should be noted that the counties of Devon and Cornwall include coastlines outside of the English Channel and therefore these figures represent an overestimation of those actually employed within the Channel fishery.

Additional data on employment can be obtained from a study on the regional dependence on fisheries published by the European Parliament (2007), which includes data for each sub-sector of the fishing industry at the NUTS-2 level (table 2.1). Employment in the catching sector is estimated at 3,000 persons (full-time and part-time), although this data is again restricted by the fact that a number of these regions (Devon, Cornwall, Kent) have coastlines outside of the English Channel. Nonetheless, this data still provides an indication of regional variation – most notably the higher number of fishermen employed in the western Channel compared to the eastern Channel, which is supported by recent data on the distribution of registered fishing vessels (figure 2.2).
Table 2.1: Total employment generated by fisheries sector in 2005 by NUTS-2 region ('000 persons)

<table>
<thead>
<tr>
<th>Region</th>
<th>Total fisheries sector</th>
<th>Fishing Sub-sector</th>
<th>Catching</th>
<th>Processing</th>
<th>Ancillary activities</th>
</tr>
</thead>
<tbody>
<tr>
<td>Devon</td>
<td>1.5</td>
<td>0.9</td>
<td>0.5</td>
<td>0.1</td>
<td></td>
</tr>
<tr>
<td>Cornwall, Isles of Scilly</td>
<td>1.2</td>
<td>1.0</td>
<td>0.1</td>
<td>n.d</td>
<td></td>
</tr>
<tr>
<td>Surrey, E-W Sussex</td>
<td>1.1</td>
<td>0.3</td>
<td>0.7</td>
<td>n.d</td>
<td></td>
</tr>
<tr>
<td>Hampshire, Isle of Wight</td>
<td>0.3</td>
<td>0.2</td>
<td>n.d</td>
<td>n.d</td>
<td></td>
</tr>
<tr>
<td>Dorset, Somerset</td>
<td>0.4</td>
<td>0.3</td>
<td>0.1</td>
<td>n.d</td>
<td></td>
</tr>
<tr>
<td>Kent</td>
<td>0.3</td>
<td>0.2</td>
<td>n.d</td>
<td>n.d</td>
<td></td>
</tr>
</tbody>
</table>


The upstream sector in the fishing industry provides the goods and services required by the catching sector to operate, including: fuel; ice; fishing gear; boat building, repairs and maintenance; insurance; and port/harbour services. Estimating the number of employees within this sector who are supported by the fishing industry is inherently difficult as many of these providers do not operate solely within the fishing industry. In their study of the south west fishing industry, Ekos Consulting and Nautilus Consultants (2003) observed that the south west fishing fleet is reliant upon a strong network of upstream supply industries, supporting an estimated 373 FTEs – with the majority of employment provided by repairs (93); market services and vessel agents (67); fishing gear (65); harbour staff (50); and shore labour (50). Although comparable data for the eastern Channel is not available, these findings do provide some indication of the type and magnitude of upstream employment within the Channel fishery.

The downstream sector consists of businesses which form the link between producer (i.e. the catching sector) and consumer, namely processors, merchants/wholesalers and retailers – with the latter including the restaurant and catering industry. At a national level, the most recent survey of the UK processing industry published by Seafish identified 325 sea fish processing units providing 11,864 FTE jobs (2012, p.11). The processing industry is characterised by a small number of large multi-unit businesses and a large number of small single-unit businesses – with the former making a significant contribution to employment. For example, companies employing 101 or more FTEs represent only 7% of business units yet account for nearly 50% of industry employment (2012, p. 13). As with the upstream sector, data on downstream activities at the English Channel level is limited in availability. In the south west, Ekos Consulting and Nautilus Consultants (2003) estimated employment in downstream sectors at 1,640 FTEs, although this figure includes
mariculture (35 FTEs). Of these employees, the majority worked within processing (911); retail & catering (335); and merchants (301). With regards to processing, this figure exceeds the more recent estimate of 600 employees for Devon, Cornwall and the Isles of Scilly proposed by the European Parliament (2007) (table 2.1); but remains in line with the 1,086 FTEs estimated in the south west by Seafish (2012).

Employment in downstream activities in the eastern Channel is more difficult to ascertain, due to a combination of incomplete data (see table 2.1) and estimates being agglomerated with other regions. An example of the latter is provided in the processing survey conducted by Seafish, which estimates 1,292 FTEs in the South, Midlands and Wales regions combined. Despite these difficulties, it may be assumed that as in the western Channel, the relative contribution of downstream activities to employment in the eastern Channel represents a significant component of the regional fishing industry.

2.6.2 Value

The availability of data on the quantity and value of landings in the English Channel is relatively comprehensive – which may be explained by the fact that the collection of such data is a necessity of the current fisheries management framework. In 2011, 59,500 tonnes of fish and shellfish were landed in the English Channel with a value of £101.6 million – the majority of which comprised of shellfish (£55 million) and demersal species (£41.7 million). In relation to the English fishing industry, the Channel accounts for nearly two-thirds (65%) of landings by quantity, and over half (57%) by value. Furthermore, analysis of the annual fisheries statistics published by the Marine Management Organisation (2012a) reveals that while the quantity of fish and shellfish landed in the English Channel has remained relatively stable over the last ten years, the value of landings has increased steadily from £59.3 million in 2002 (figure 2.3).
Figure 2.3: Quantity and value of landings in the English Channel (2002-2011)

Source: Marine Management Organisation (2012a)

Data on the value of landings collated by the MMO is not provided separately for the eastern and western Channel; however, an indication of the relative value of landings can be derived from data recorded for the largest ports in these respective regions (table 2.2). As may be expected, the value of landings is greater in the western Channel – reflecting the greater concentration of registered vessels in this region (figure 2.2) and the presence of large fleets at Newlyn, Brixham and Plymouth which collectively account for 60% of all English Channel landings by value.

Table 2.2: Summary of landings at English Channel ports (2009)

<table>
<thead>
<tr>
<th></th>
<th>Quantity (tonnes)</th>
<th>Value (£’000)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Eastern Channel</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Shoreham</td>
<td>1643.14</td>
<td>2,215</td>
</tr>
<tr>
<td>Eastbourne</td>
<td>995.15</td>
<td>1,454</td>
</tr>
<tr>
<td>Rye</td>
<td>565.37</td>
<td>1,171</td>
</tr>
<tr>
<td>Newhaven</td>
<td>779.38</td>
<td>1,135</td>
</tr>
<tr>
<td>Selsey</td>
<td>794.29</td>
<td>746</td>
</tr>
<tr>
<td>Hastings</td>
<td>267.45</td>
<td>645</td>
</tr>
<tr>
<td><strong>Western Channel</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Brixham</td>
<td>10,665</td>
<td>17,349</td>
</tr>
<tr>
<td>Newlyn</td>
<td>8,377</td>
<td>16,503</td>
</tr>
<tr>
<td>Plymouth</td>
<td>13,949</td>
<td>11,258</td>
</tr>
</tbody>
</table>

Source: Eastern Channel: Dapling et al. (2010)
Western Channel: Marine Management Organisation (2010a)
With respect to the value of upstream and downstream sectors, Ekos Consulting and Nautilus Consultants (2003, p.53) estimated the turnover of the upstream sector in the south west during 2001 to be £40.1 million with the most valuable industries being fuel and oil suppliers (£12.3 million); gear providers (£10.4 million); and repairers (£9.2 million). In contrast, the estimated value of the downstream sector is significantly higher. The most recent data published by Seafish estimates the total sales value of seafood processors in the UK at £2.6 billion in 2008, although this figure is not broken down regionally (Seafish, 2009, p.31). In the case of the south west, Ekos Consulting and Nautilus Consultants identify processing as the most valuable downstream sector (£115.4 million); followed by merchants (£31.7 million); and retail and catering (£22.9 million). When raw material purchases are subtracted from turnover, the gross value added is approximately £49.4 million in the processing sector; £7.3 million in the merchant sector; and £11.5 million in retail and catering (2003, p.99).

2.6.3 Contribution to GDP

At an international level, the value of the EU fisheries sector in 2005 was €10.6 billion – equating to 0.1% of the total GDP, and thus may be seen to constitute a small, almost insignificant sector of the EU economy (Symes, 2000, p.5). In the UK, an input-output analysis of the economic impacts of the catching and processing sectors was conducted by the Seafish Industry Authority (Seafish) in 2008, based primarily upon Type-2 multipliers. Using data from 2002, it was estimated that UK GDP would decrease by £672.7 million (0.07%) if the fish catching sector was removed entirely, with the regional impact being greater in Scotland (0.39%) than in England (0.02%). In all regions, the relative impact of removing the fish processing sector would be greater than that of the catching sector: 1.01% of GDP in Scotland and 0.3% in England (2008, p.7). This may be explained by the larger value of this sector and the degree to which it relies upon imports.

Despite its relatively minor contribution to GDP at a national level, the fishing industry remains important to regional employment and wealth creation – especially in local economies where opportunities to engage in alternative employment are limited (Stead, 2005; Symes, 2001). The peripherality of many fisheries dependent regions is reflected in their structural characteristics, including a narrow employment base – sometimes supplemented by agriculture and tourism; high levels of self-employment in small scale/family businesses; seasonal variations in employment/unemployment; and weak economic, social and institutional infrastructure (Symes, 2000, p.7). As noted in the introductory chapter, the importance of fishing to these areas has not gone unrecognised and is reflected in policy rhetoric at the domestic and European level.
The relative contribution of the English Channel fishing industry is difficult to ascertain due to the lack of disaggregated data, however, it is logical to assume that it will be reflective of the economic status of this fishery to the national industry (see section 2.4). In their study of the south west industry, Ekos Consulting and Nautilus Consultants estimate that the total value of the catching sector accounted for 0.11% of regional GDP, and when combined with the processing sector increased to 0.38% of regional GDP. Significantly, the contribution of fishing was notably higher in Cornwall and the Isles of Scilly where the catching and processing sectors accounted for 2% of regional GDP (2003, p.28). The contribution to employment in this region is also notable: in the Cornish ward of Penzance South which includes the port of Newlyn, it was estimated that 84% of the workforce were employed within the various sectors of the fishing industry (2003, p.63).

2.6.4 Sociocultural value

In addition to the economic contribution of the fishing industry with respect to employment and wealth creation, it is evident that fishing has profound social and cultural importance to fishermen, the coastal settlements they are based in and wider communities (CCRI, 2011). Brookfield et al. (2005, p.56) propose that in communities dependent upon fishing, the industry represents: “the forum through which community bonds, values, knowledge, language and traditions are established, confirmed and passed on”. Similarly, Symes and Phillipson (2009, p.2) note that: “fishing communities are reservoirs of knowledge, experience and understanding of local fisheries that cannot be replicated in any other form”.

Given the long-history of fishing in the UK and its unique characteristics as an employment industry, it is inevitable that fishing has developed a strong identity which persists in the present industry. In addition to drawing income from fishing, fishermen gain a strong sense of pride, social identity and solidarity from their occupation (CCRI, 2011, p.5). This is particularly true of the English Channel fishery, where despite its notable contraction over time, fishing activity remains widespread and continues to be practised from the same harbours and beaches as it has been for centuries. As a result, many communities in the Channel have developed strong historical links with the fishing industry which are maintained not only through the presence of fishing vessels, but through aspects such as architecture, street names, and their accepted identity as ‘fishing ports’ or ‘fishing villages’. Even though the presence and economic contribution of fishing itself has declined significantly in many of these locations, the sociocultural value of the industry remains. However, this value is similarly in danger of decline. Jentoft (2000) argues that the community level has long been ignored in fisheries management which
focuses instead upon economic efficiency and the conservation of fish stocks. The author notes that removing the community from management has led to the erosion of social bonds and traditional values, and the weakening of social responsibility among fishermen (2000, p.55)

The sociocultural attributes of fishing are also found to have a value that extends beyond the industry in which they are formed. In some parts of the Channel – most notably Cornwall, the image and identity of fishing communities has been successfully exploited by the tourism industry to promote the region and its local destinations. Given that many of these destinations are visitor destinations in their own right, it is difficult to ascertain the relative contribution of the fishing industry to the regional tourism economy. Nonetheless, it is clear that fishing can add distinctiveness and character to coastal resorts, in addition to its contribution to the importance of food in the tourism 'offer' of an area (CCRI, 2011, p.55).

### 2.7 Summary

The English Channel has a well established fishing sector, which remains a significant component of the national fishing industry. Although the fishery has been subject to cyclical variations throughout its history, there has been a clear and steady decline in fishing activity from the post-war period onwards. The political developments of the 1970s, culminating in Britain’s entry to the Common Fisheries Policy did not have the direct impact upon the Channel fishery that was observed elsewhere in the UK; however, the management framework of the CFP has undoubtedly shaped the development of the industry.

The present-day Channel fishery shares a number of characteristics with the wider UK fishing industry. Despite fishing being practised from a wide range of locations along the Channel coastline, the number of active vessels and fishermen continues to fall – resulting in the concentration of fishing activity around a number of key ports. In recent years, the quantity of landings shows signs of levelling off, and the economic contribution of fishing to regional employment and GDP remains marginal. However, given the localised aspect of much fishing activity, there is a risk of underestimating the importance of the Channel fishery. The true value of this fishery lies not only in the provision of local employment opportunities, but in the social and cultural contribution that it provides to coastal communities.
3. Literature review

3.1 Introduction

In the previous chapter, an overview of the English Channel fishery confirmed the importance of fishing to this region with respect to its economic, social and cultural value. The Channel fishery continues to represent a key component of the UK industry – accounting for over one-third of the UK’s registered fishing fleet; however, the number of fishermen working in this industry continues to decline. While fishermen in the Channel have been less-affected by the constraints encountered in other regions (e.g. the loss of distant water grounds to fleets on the east coast), it is evident that these individuals now face a multitude of administrative, environmental and socioeconomic challenges that influence the financial performance and ultimate viability of their businesses. Fishermen may adopt a range of strategies in response to these challenges. Preliminary investigation reveals that these strategies may be categorised into three main types: (1) those where fishermen develop responses within the catching sector i.e. ‘intra-sectoral’ responses; (2) those where fishermen seek to diversify into related activities; and (3) those where fishermen seek complementary employment outside of the fishing industry i.e. multiple-job holding.

The aim of this chapter is to review existing literature on the challenges faced by fishermen and the strategies they develop in response. The chapter consists of five main sections. The first section examines the administrative, environmental and socioeconomic challenges faced by fishermen, and their impact upon financial performance. The second, third and fourth sections examine potential response strategies with respect to intra-sectoral responses, diversification and multiple-job holding. Given that the latter two strategies have clear theoretical foundations within the field of economics, these sections commence with a review of conceptual principles – prior to exploring empirical findings from the fishing industry and other supporting evidence. The section on diversification includes a concise review of key principles relating to innovation and entrepreneurship due to its relevance to this strategy.

While intra-sectoral responses, diversification and multiple-job holding represent three distinct strategies, they share a common goal in enabling fishermen to remain within the fishing industry. However, it is necessary to understand the reasons why many fishermen facing financial challenges choose not to leave fishing altogether in search of alternative employment. The fifth section of this chapter examines three key explanations on this
subject, relating to segmented labour markets; opportunity incomes; and the non-pecuniary benefits of fishing.

3.2 Challenges facing fishermen in the English Channel

3.2.1 Administrative challenges

The administrative restrictions imposed by the EC’s Common Fisheries Policy are widely cited by fishermen in the UK as one of the main challenges facing the industry; effectively governing where, when and how they fish, and the species and quantities that they are able to land. Significantly, the majority of the most valuable species landed in the Channel (figure 2.1) are subject to TACs, including monkfish, sole, megrim, pollock, and mackerel. Shellfish species and cuttlefish are not subject to TACs, but the former are subject to a number of conservation measures such as EU minimum landing sizes and local byelaws.

The main challenges facing Channel fishermen with regards to the CFP concern the setting of TACs and their allocation through quotas at the regional/individual level. TACs are set annually by the European Commission and may be seen to represent a trade-off between independent scientific advice and the economic interests of member states. Although one of the principal objectives of TACs and quota regulation is to ensure ecological sustainability, the main criticism of this process is that independent scientific advice is consistently disregarded – resulting in the continued overfishing and depletion of key fish stocks. This issue is acknowledged by the Commission itself who state that: “TACs continue to be set well above the levels which scientists advise to be sustainable…” (European Commission, 2009, p.7).

Conversely, the TAC system has been criticised, particularly amongst fishermen themselves, for not accurately reflecting the regional abundance of certain fish stocks and thus being overly restrictive. While it may be argued that setting conservative TACs may create longer-term ecological benefits, the reality is more complex due to the problem of ‘discarding’. When quota for a given species has been exhausted, fishermen are not permitted to land any further catches and must dump these fish or ‘discards’ overboard. Discarding also occurs when fish are below the legal Minimum Landing Size, not the target species (also referred to as bycatch), or rejected in favour of other more valuable fish. Discarding is common throughout the English Channel, although the extent to which it occurs is governed by vessel size, type and location. Not only does this practice have significant ecological implications for the future of the fishing industry, but it also creates a
negative perception of fishermen among the wider public. Despite being a by-product of the CFP, this practice is cited by the European Commission itself as "one of the greatest scandals of contemporary fishing" (European Commission, 2009, p.17).

In addition to the availability of quota, fishermen in the English Channel may find themselves further constrained by the process by which it is allocated. The decision to allocate TACs annually has been criticised by fishermen for introducing uncertainty which restricts the longer-term planning of their business activities (Rossiter & Stead, 2003). However, the key issue regarding quota allocation concerns the distinction that exists between the over 10m and under 10m sectors – in that the latter receives around 4% of available annual quota despite representing 75% of the UK fishing fleet (NUTFA, n.d). The impact of these discrepancies upon the Channel’s sizeable inshore fleet is notable – albeit dependent upon location and species. In the eastern Channel, vessels targeting whitefish stocks have been greatly constrained in their ability to fish. For example, in 2008, the cod quota for the Hastings and Rye inshore fleet was reduced to 100kg per month – equating to one cod per boat per day and resulting in local fishermen applying for a judicial review of the allocation (BBC News, 2008a). In response to the issue of limited quota availability for the inshore sector, Defra introduced a scheme in 2008 to allow inshore vessels fishing against the ‘under 10m pool’ to lease quota from Producer Organisations. However, quota leasing is too expensive for many inshore fishermen (Gray et al., 2011); and raises moral questions with respect to whether those holding quota should benefit financially from providing access to a common resource.

Fishermen may also find their activity limited by additional control measures implemented by the Marine Management Organisation, notably the designation of species recovery zones for pressured stocks. These zones are subject to area closures and restrictions on gear type and ‘days at sea’ for vessels targeting specific pressured stocks. At the time of writing, area closures had been implemented for cod in the eastern Channel (VIIId); and days at sea restrictions were in place for vessels targeting sole in the western Channel (VIIe) using beam trawls and static nets.

The framework of fisheries management through the CFP can be seen to represent an administrative constraint upon European fishermen with respect to both the inputs and outputs of the catching process. Within this framework, fishermen in the UK are subject to further controls imposed nationally by the Marine Management Organisation, and regionally by IFCAs. One of the most significant controls upon fishing input is the requirement that all fishing vessels are licensed to fish. The licensing of UK fishing vessels was introduced in 1977 and only applied to vessels over 40ft in length fishing in
certain areas. Following entry to the CFP, the Government introduced a restrictive licensing scheme for vessels targeting certain stocks that were designated as under pressure. Restrictive licensing was extended in 1990 to cover all vessels over 10m in length, and again in 1993 for vessels of 10m and under. The purpose of the licensing system is to control fishing opportunities in order to meet the EU regulations for sustainable fisheries management (Defra, 2006, p.2), therefore no new licences are issued. Instead, vessel owners wishing to acquire a licence must purchase or obtain one from an existing licensed vessel that has been sold, scrapped or deregistered. In a further attempt to limit the capacity of the inshore fleet, Defra introduced a capped licensing scheme in 2008 in which quota entitlement was reduced for English registered vessels that failed to meet their previous entitlement.

3.2.2 Environmental challenges

In recent years, a shift in emphasis of the management of marine resources has occurred in the UK – exemplified by the Marine and Coastal Access Act (2009) which was developed “to provide enhanced protection of the marine environment and biodiversity, improved management of freshwater and migratory fisheries in England and Wales and improved access to the English coast” (Defra, 2009, p.1). A number of key developments of the act relate directly to the fishing industry, including the transfer of national management responsibilities from the now defunct Marine and Fisheries Agency (MFA) to the newly formed Marine Management Organisation (MMO); and responsibility for regional fisheries management from Sea Fisheries Committees (SFCs) to Inshore Fisheries and Conservation Authorities (IFCAs) (see section 2.4). However, one of the main environmental challenges faced by the fishing industry is the proposed extension of the marine protected area network.

At the time of writing, only 2.2% of UK waters are protected for marine conservation – consisting of Special Areas of Conservation for habitats of European importance; Special Protection Areas for seabirds of European importance; and Marine Nature Reserves for habitats and species of national importance (Defra, n.d., p.8). Through the Marine and Coastal Access Act (2009), the Government has proposed to establish an ‘ecologically coherent network’ of marine protected areas. A key component of this network will be the formation of Marine Conservation Zones (MCZs) around the UK to protect habitats and species considered to be of national importance (Defra, n.d., p.12). Significantly, the type and level of marine activity within each zone will be governed in relation to its ecological status. The first tranche of MCZs are scheduled to be designated in 2013, and while the planning process has been designed to ensure that the needs of all users are taken into
account, it is highly likely that fishermen (including those in the Channel) will find their fishing activity restricted in certain areas.

While the true impact of MCZs upon the Channel fishery is currently unknown, there is concern among fishermen of the negative implications – particularly in light of previous experiences in Lyme Bay, Dorset. In 2008, Defra closed an area of around 60 square miles to scallop dredging and bottom trawling to limit ecological damage to the marine environment, despite strong opposition from the fishing industry. A subsequent impact assessment found that the majority of fishermen (73%) using towed gear reported a decrease in income immediately after the closure, and had consequently experienced an increase in their operating costs and working hours to compensate for the loss of fishing grounds (Mangi, Rodwell & Hattam, 2011). The relocation of fishing effort by these respondents led to increased conflict with static gear fishermen outside the closed area, who also attributed this conflict to falling incomes. However, static-gear fishermen who remained within the closed area were found to benefit from the ban on towed gear by increasing the number of crab and whelk pots they use (2011, p.465). Furthermore, the designation of MCZs through the Marine and Coastal Access Act (2009) is linked to a wider European initiative: the Marine Strategy Framework Directive. Adopted by the European Union in 2008, the Directive requires all member states to develop strategies to achieve ‘good environmental status’ in the marine environment by 2020. In order to achieve this goal, it is possible that further conservation measures will be introduced to restrict fishing activity in areas of significant ecological importance.

In addition to measures to protect the marine environment, fishermen may find their activity restricted by the development of the renewable energy sector. In January 2010, The Crown Estate announced the successful bidders for nine offshore wind farm zones in the UK, two of which will be located within the English Channel at Hastings and the Isle of Wight (The Crown Estate, 2010). However, as with the establishment of MCZs, the extent to which this will impact upon the English Channel fleet is currently difficult to ascertain.

3.2.3 Socioeconomic challenges

It is clear that some of the socioeconomic challenges faced by fishermen stem directly from the administrative and environmental developments discussed above. For example, Brookfield et al. (2005, p.57) observe that the programme of measures introduced through the CFP to curb overfishing and reduce capacity has led to the significant contraction and concentration of the European fishing fleet. This observation is particularly notable in the English Channel, where vessel numbers have declined steadily over the last forty years and over half of all fish caught are landed at one of three ports in the western Channel
(figure 2.1). However, the economic constraints of fisheries policy are compounded by a number of other factors, including rising operating costs; conflicts in access to marine resources; and a competitive globalised food industry.

Operating costs have been identified as having a significant impact upon UK fishermen – particularly with respect to the increasing gap between fuel prices and fish prices in recent years. Abernethy, Trebilcock, Kebede, Allison and Dulvy (2010, p.1079) observed that fuel prices for fishermen in Newlyn increased by 359% between 1998 and 2008, while fish prices remained relatively stable over this period. Fishermen have limited control over these factors: the rising cost of diesel reflects price of crude oil on the global market; whereas the institutional set-up of fish markets in the UK means that buyers typically have price-setting power (Abernethy et al. 2010). The price that fishermen receive for their catch is further affected by increased competition in the global seafood industry due to the volume of fish imported by the UK. Recent data on the commercial fishing industry reveals that the UK imported 720,000 tonnes of fish and shellfish in 2011 and exported 437,000 tonnes: both figures exceeding the 376,000 tonnes landed by UK vessels into the UK during this period (Marine Management Organisation, 2012a, p.82). The position of the UK as a net importer of fish strengthens the buying power of wholesalers and processors, making it difficult for domestic fishermen to improve their prices – as demonstrated in the following quotation from an inshore fisherman in the Cornish port of Mevagissey:

“I phoned a buyer to find out the price of hook and line mackerel and he said ‘I’m not interested, we’re having it in Spain cheaper than we can buy it off of you’” (Creative Research, 2009, p.53).

It is important to acknowledge that the impact of these challenges will be subject to the characteristics of individual fishing enterprises – particularly the size and type of vessel and its target species. While the impact of operating costs may be less significant upon smaller vessels and those using static fishing methods, fishermen in the inshore sector may find themselves unable to compete with large-scale fishing operations (Brookfield et al., 2005, p.58). Irrespective of their size, fishing businesses have responded to these challenges accordingly; by modernising and rationalising their business activities, or by leaving the industry altogether. The resultant impact upon employment has been notable, with the number of fishermen in the UK declining by over 40% since 1970 (figure 3.1).
The trend of fishermen leaving the industry has been accompanied by a corresponding decrease in new entrants, which may be explained by a number of factors. For individuals wishing to enter the profession as vessel owners, the capital outlay required for purchasing a vessel and appropriate licence represents a considerable financial risk. Traditionally, many fishermen entered the profession at a young age as crew members upon a family-owned or privately owned vessel, before graduating to become skippers/owners. However, as noted by Symes and Phillipson (2009) fishing has become less attractive to young people in recent years. Fishing is a physically demanding profession involving long and irregular hours of work, and variable earnings. Despite ongoing improvements in vessel technology and safety, fishing remains the most hazardous occupation in the UK with a fatality rate 115 times higher than the general workforce (Roberts, 2010, p.47). These challenges are further compounded by job insecurity resulting from the administrative, environmental and economic issues present within the industry.

3.2.4 Impact upon financial performance

The fishing industry is unique in that very few fishermen are paid a fixed wage; instead incomes are typically determined on a trip-by-trip basis in relation to the value of the catch. As a result, earnings can be highly variable and heavily influenced by a range of factors including season, location, the size of the vessel and the type of fishing practised. Additionally, these factors determine the extent to which fishermen are affected by administrative, environmental and socioeconomic challenges. The outcome of this
relationship has a direct bearing upon the financial performance of fishing businesses, which in turn influences their profitability and the resultant wages received.

The allocation of wages in fishing is dominated by share systems, where each crew member receives a share of the gross sales value of the catch after the deduction of fishing costs. Through this process, the vessel owner is able to shift some of the financial risk burden to the crew (Platteau & Nugent, 1992). Following the deduction of costs, the actual share received by a fisherman will reflect their individual role, as exemplified by the following quotation relating to the share system onboard a 38.5m Scottish-based trawler:

“Half the gross goes on the boat...The remainder of the gross – it’s split into shares. The skipper gets two shares. A crewman gets one share – or three-quarters if he’s a trainee. A crewman ashore on his time off – around one week in three – gets half a share” (O’Hanlon, 2003, p.17).

While the share allocation system described above is quite typical, it is by no means universal. Indeed, when conducting the 1996/7 Costs and Earnings Survey of the UK fishing fleet on behalf of the Sea Fish Industry Authority, Nautilus Consultants (1998) identified eleven different systems used to calculate and allocate crew share. With respect to individual earnings, two key observations emerge from this survey. Firstly, the average crew wage (including skipper, mate and engineer) varies considerable by location, vessel type and fishing method – being highest among North Sea & West of Scotland Trawlers >24m (£29,987) and lowest among North Sea & West of Scotland Nephrops Trawlers (£14,086). Secondly, earnings are reflective of the position held: deckhands typically earn between 40%-68% of the income received by skippers, with mates and engineers receiving a wage between these two.

While providing a valuable insight into the wage structure of fishermen, the estimates provided by Nautilus Consultants (1998) are limited with respect to the English Channel fishery as they only distinguish two types of practice: beam trawlers and gill netters operating in the south west. Of these, earnings are notably higher among the former, with an average crew salary of £23,900 compared with £16,256 for gill netters. In contrast to the study by Nautilus Consultants, subsequent economic surveys of the UK fleet conducted by Seafish do not estimate average earnings per individual crew member. Instead, average crew share per vessel is estimated for each fleet ‘segment’ – from which it is possible to calculate a crude estimate of individual earnings based upon estimates of average crew numbers per vessel. Estimates from the most recent 2010 survey reveal that individual earnings vary considerably in relation to the type of fishing practised: ranging from £33,127 among beam trawlers in the south west to as little as £6,852 among
under 10m vessels using drift/fixed nets. Average crew earnings are notably lower among inshore (under 10m) segments; however, given that many of these vessels are owner-operated it may be assumed that these individuals also derive a proportion of their earnings from vessel profits.

In addition to the earnings estimated provided by Seafish, data on earnings may also be derived from UK Annual Survey of Household Earnings (ASHE). The most recent dataset from 2012 estimates mean gross weekly pay of £297.40 in marine fishing and £495.50 in marine aquaculture: equivalent to annual earnings of £15,465 and £25,760 (based on a 52 week year) (ONS, 2012). For the marine fishing industry, this estimate falls within the range of earnings estimated for the eleven fleet segments discussed above. When compared to employment sectors with similar attributes (i.e. jobs that require physical outdoor work and/or the exploitation of natural resources); mean earnings in marine fishing are similar to those of farming but notably lower than those in the construction and the energy sectors (figure 3.2).

**Figure 3.2: Comparative mean gross weekly pay within UK: All employees (2012)**

<table>
<thead>
<tr>
<th>Industry</th>
<th>Gross weekly pay (£)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Extraction of crude petroleum &amp; natural gas</td>
<td>1200</td>
</tr>
<tr>
<td>Mining of coal &amp; lignite</td>
<td>900</td>
</tr>
<tr>
<td>Construction of buildings</td>
<td>600</td>
</tr>
<tr>
<td>Marine aquaculture</td>
<td>300</td>
</tr>
<tr>
<td>Forestry &amp; logging</td>
<td>300</td>
</tr>
<tr>
<td>Growing of non-perennial crops</td>
<td>200</td>
</tr>
<tr>
<td>Animal production</td>
<td>200</td>
</tr>
<tr>
<td>Mixed farming</td>
<td>200</td>
</tr>
<tr>
<td>Marine Fishing</td>
<td>100</td>
</tr>
</tbody>
</table>

Source: ONS (2012)

Despite the variation in earnings noted above, a review of existing literature and anecdotal evidence indicates that commercial fishing is a relatively poorly-paid occupation. The problem of low incomes in fishing is highlighted by Cunningham (1994, p.241) who observes a “widespread failure to achieve a sustainable improvement in fishermen’s incomes”, despite it being commonly identified as a key objective of fisheries management. This observation remains valid to the UK fishing industry, although the objective is seldom stated explicitly but rather alluded to in recognition of the need to
ensure the economic sustainability of fishing as an occupation. The strategy report: Net Benefits, produced by the Prime Minister’s Strategy Unit (2004) to explore the long-term profitability and sustainability of the UK fishing industry is one such example:

“A sustainable UK fleet must make long-run profits adequate to invest in new boats, improve safety levels, pay good wages for skilled staff and be able to survive years when stocks are poor. This implies that profits per vessel must increase well above current levels in order to be sustainable” (p.47).

More recently, the issue of earnings was explored by Creative Research (2009) in a focus-group study of English fishermen conducted on behalf of Defra. The authors noted that fishermen were reluctant to openly discuss financial aspects of their occupation; and while a proportion of respondents admitted making a ‘reasonable living’, others revealed that they were struggling financially (p.48). However, it is also evident that a proportion of fishermen in the UK have made considerable earnings from their occupation – most notably those who own and operate successful vessels or multi-vessel enterprises. The direct correlation that exists between catch and revenue means that knowledge and expertise is a key component of financial success in fishing. In line with this observation, Cunningham (1994, p.242) suggests that superior resources such as highly-skilled skippers will be costed at their opportunity cost to prevent them being bid away by competitors. Similarly, Whitmarsh (1998, p.425) identifies a group of ‘highliner’ fishermen who utilise superior technology, skills and knowledge to earn high intra-marginal rents.

3.3 Intra-sectoral response strategies

3.3.1 Effort-based responses

Fishermen have always faced uncertainty in their occupation: the seasons of the year influence both the ability of fishermen to go to sea, and the type of species that they encounter. When faced with unproductive periods of fishing, a logical response is to fish for the same species in a different location, or to target an alternative species altogether. Cunningham et al. (1985, p.130) identify the relocation of effort both geographically and biologically as one of the ‘classic responses’ to economic problems in fishing. In the present-day industry, the practice of targeting different species according to their seasonal distribution is still widespread – particularly within the inshore sector. Symes (2001, p.7) notes that the flexibility observed in this sector is not unexpected, given the polyvalent nature of inshore fishing. However, it is also surprising because traditional small-scale activities are generally noted for entrenchment rather than innovation when faced with
difficult conditions – thus it is resilience that forms the basis of survival for this sector (2001, p.8).

While the examples provided above involve the relocation of fishing effort in response to reduced or declining stocks, fishermen are not reluctant to target more profitable species in response to changing market demand. Again, this strategy is historically well-established and continues to be widely practised – particularly with respect to the development of export markets. In the English Channel, examples include targeting cuttlefish for export to mainland Europe; whelks for export to Korea and Taiwan; and the development of a lucrative anchovy fishery in the western Channel due to unseasonably warm sea temperatures in recent years. In October 2009, two Brixham-based vessels that usually target sprats were reported to land 36 tonnes of anchovies between them – attracting a market price of around £72,000 due to shortages elsewhere (de Bruxelles, 2009).

The feasibility of fishermen relocating their effort geographically and/or biologically is subject to a number of factors. From an economic perspective, the decision to target different fishing grounds is likely to result in increased fuel costs, although fishermen will also be restricted in their travelling range by the size and type of their vessels. Similarly, shifting effort to alternative species may require investment in new fishing gear and post-catching processes such as processing and distribution. As a result, the feasibility of this strategy is dependent upon fishermen having access to capital and being willing to accept the risk associated with its investment. However, these conditions are based on the assumption that actual opportunities for effort relocation exist; it may be argued that the administrative restrictions imposed through existing fisheries legislation represent a far greater constraint upon effort relocation. At an international level, the operations of UK fishermen were restricted significantly with the establishment of 200 mile Exclusive Economic Zones (EEZs) from the mid 1970s – resulting in the loss of valuable distant-water grounds (see section 2.3.1). Within national waters, the main constraints take the form of licensing, days-at-sea restrictions, and most significantly the availability and allocation of quota. Writing over twenty-five years ago, Cunningham et al. (1985, p.132) noted that greater regulations on effort relocation were making it increasingly difficult for fishermen to adopt this type of “supply-orientated response”. Over the ensuing time period the constraints of fisheries regulation have increased further – a trend that is expected to continue under the existing management framework.

An alternative strategy to relocating fishing effort is to increase effort with respect to the amount of time spent at sea. The rationale of this approach is based upon the
assumption that longer hours will result in greater catches and hence higher incomes. In reality this strategy is subject to two key limitations: firstly, the existence of quotas on many commercially valuable species; and secondly, the physical capabilities of fishing vessels and the individuals working onboard. Thus, the strategy of increasing fishing effort may take an alternative form. Pettersen (1996) observed the expansion of fishing effort among Norwegian cod fishermen and found that while fishermen with larger vessels were able to relocate their effort to alternative fishing grounds, fishermen on smaller vessels where this response was not feasible sought additional work as crew members – resulting in longer working hours and greater time spent away from home (p.239). Alternatively, fishermen may seek to reduce the costs of fishing effort. In some parts of the UK this has been achieved by employing migrant workers who are paid a fixed wage rather than on a share basis. However, a more common approach is to increase fishing effort per individual i.e. to continue existing fishing practices but reduce costs by using fewer workers. This strategy is well documented within the UK, including the English Channel, as demonstrated in the following quotation from a Newlyn-based offshore fisherman:

“It’s a lot harder these days as well because generally everyone is shortening crew and everyone is working a lot harder and a lot of people are two handed now, aren’t they?” (Creative Research, 2009, p.37)

The viability of this strategy is clearly dependent on the size of the vessel and its crew; however, where practised the implications for fishermen’s safety are significant. A recent report by the Marine Accident Investigation Branch (MAIB) identified 335 grounding accidents involving UK-registered vessels over 15m between 1992 and 2009, of which 45 were attributed to sleeplessness or fatigue (2010, p.24). Significantly, the report makes a direct link between profitability, hours of work and fatigue by noting that: “...the trend for self-employed crew, with their earnings effectively based on a share of the catch, contributes to a culture of long working hours and limited rest” (2010, p.26).

In the inshore sector, the practice of reducing costs by cutting crew numbers may result in an increase in lone-working. While lone-working is not uncommon in the UK fishing industry – particularly among owner-operators of vessels under 6m in length, the increased risk to safety is evident. In his study of fatal work-related accidents in fishing, Roberts (2010) observed a sharp increase in the mortality rate for lone fishing accidents in the UK since the 1970s. Furthermore, the author notes that the decision of fishermen to resort to this practice is reflective of “increased financial pressures in the UK fishing industry in recent years” (2012, p.47).
3.3.2 Increase efficiency

In addition to reducing costs by increasing fishing effort per individual, cost savings may be achieved through efficiency improvements. One of the principal methods of increasing efficiency in fishing is to invest in technology that enables fishermen to increase their Catch Per Unit of Effort (CPUE). Examples include electronic navigation and fish-finding systems, and more efficient net designs. However, where efficiency savings are sought in response to falling profitability, further investment appears paradoxical. As such, it may be argued that depressed economic conditions will impede rather than encourage technological progress (Cunningham et al. 1985, p.137).

Cunningham et al. (1985) propose an alternative argument in favour of efficiency improvements, in that fishermen are forced to adopt new technology in order to ensure the survival of their business – resulting in a process of ‘technological creep’ where continued investment is necessary to compete with others. There is a limit as to how far this can be developed though, as the physical characteristics of the vessel will limit the efficiency savings that can be made through technological investment. Given that one of the main variable costs of fishing is fuel, an alternative response may be to seek efficiency savings by reducing inputs rather than increasing output. An obvious example of this is to shift from active fishing methods such as trawling, towards less energy-intensive methods such as net and pot fishing. However, fishermen may find such responses increasingly restricted by the administrative challenges discussed in section 3.2.1.

3.3.3 Perseverance

Many fishermen are accustomed to annual variations in productivity, and may adopt a strategy of perseverance in favour of changing their established practices during unproductive fishing periods. During such periods, fishermen may offset their loss of earnings with an increased reliance upon other forms of household income, including savings (possibly accrued from more profitable fishing periods) and the earnings of other household members. Given that fishing was historically widely-practised as a seasonal occupation, fishermen were accustomed to combining fishing with other forms of employment. This strategy of developing dual economies was common within the English Channel, particularly in the South West where fishermen supplemented their income from seasonal fisheries with agriculture and industry (Gray, 2000).

In the contemporary UK fishing industry, the viability of persevering with unproductive periods of fishing will ultimately depend upon their magnitude and perceived duration. For example, a fisherman experiencing a short-term reduction in CPUE may prefer to continue
fishing unchanged, rather than take the risk and uncertainty of investing capital in effort relocation. This approach is clearly more feasible if the individual is not the sole earnings provider in the household. However, if the reduction in earnings is symptomatic of longer-term challenges, then fishermen may be forced to adopt alternative strategies in order to continue making a living from their occupation.

3.3.4 Retrenchment & Withdrawal

Pettersen defines retrenchment as: “survival on the basis of stable or reduced activity” (1996, p.242). In a study of Norwegian cod fishermen in the Lofoten region, Pettersen observed that fishing households responded to reduced incomes by restructuring existing patterns of activity and expenditure. Fishing activity was reduced, and both fishermen and their wives sought to make up the resultant financial deficit through alternative forms of paid employment and social security payments. Invariably, this strategy was adopted in conjunction with a reduction in household consumption.

In the UK, evidence of fishermen reducing their activity in response to falling profitability is relatively limited. Cunningham et al. (1985) cite the practice of multi-vessel firms withdrawing less-efficient vessels from service in the British fishing industry during the 1970s, although such firms represent only a minority of the UK fleet. Given the prevalence of single-vessel enterprises, the opportunity cost of reducing fishing activity in favour of alternative income sources is potentially high: regardless of the level of activity, owning and maintaining a vessel incurs a range of fixed costs. Furthermore, for fishermen targeting quota species, the introduction by Defra in 2008 of capped licences for under 10m vessels that fail to meet their allocation represents a deterrent against this strategy. Instead, it is more feasible that fishermen will continue to fish but reduce their activity with respect to operating costs – particularly fuel. Abernethy et al. (2010, p.1081) identified a number of strategies adopted by fishermen to reduce fuel consumption, including fishing with the flow of the tide; fishing closer to port; and devote less time to exploratory fishing. The authors note, however, that these strategies invariably decreased the amount of fish that were caught on each trip.

Ultimately, where fishermen find themselves unable to make a reasonable living from fishing they may respond by withdrawing from the industry – on a temporary or permanent basis. Pettersen (1996) observed the permanent withdrawal of fishermen in Lofoten, Norway, in response to strict regulations on cod output imposed during the late 1980s/early 1990s. The author notes that this response was effectively imposed upon many fishermen by the contraction of the labour market: both older fishermen unable to
withstand the work pressure and younger fishermen with insufficient experience were forced out of the industry into unemployment.

In the UK, the practice of temporary withdrawal is not uncommon among part-time fishermen in the inshore sector who fish during certain months of the year and find alternative sources of income at other times. In the Channel, this approach typically involves fishing in the summer months to exploit seasonal inshore stocks such as bass and mackerel, while benefitting from longer days and more settled weather conditions. However, examination of industry data over the last forty years indicates a notable trend of permanent withdrawal from the catching sector – as previously noted in figure 3.1. In recent years, the decision of fishermen to withdraw from the industry has been incentivised through a series of decommissioning schemes aimed at reducing overcapacity. These have included a UK-wide scheme for vessels over 10m in length and more than 10 years old which ran from 1993-1998 (NIAO, 2006); a scheme aimed at beam trawlers in the western English Channel in 2007; and most recently a scheme for the under 10m sector in 2009. Under this most recent scheme, sixty-five under 10m vessels were scrapped in the UK of which around one-third (23) were registered within the Channel: four vessels from ports in the eastern Channel and nineteen vessels from ports in the western Channel. These vessels comprised both trawlers and netters, and decommissioning grants ranged from £9,466 to £171,986 (Linkie, 2010, p.16).

A number of observations are notable with respect to vessel decommissioning schemes in the UK: firstly, their effect upon regional fishing sectors has been variable. For example, in the case of the recent decommissioning scheme for under 10m vessels, the 23 successful applications within the Channel represent less than 2% of inshore vessels in this fishery. Secondly, although one of the conditions of decommissioning is that the vessel is removed from the fishery, it cannot be assumed that those working onboard will also leave the fishery. The decommissioning grant may be used to fund the purchase of a new vessel, or alternatively fishermen may continue working as skippers or crew onboard another vessel. Even where vessels are eligible for decommissioning, there is no guarantee that they will be successful in their application: for example, in the period 1993-1996 only 41% of applicants were awarded grants (Nautilus Consultants, 1995). The alternative approach of ‘selling up’ may also be infeasible because fishermen are unable to recoup the value of their investment, due to the decline in the industry (Creative Research, 2009).
3.4 Diversification

3.4.1 A conceptual overview of diversification

Definition and forms

Andreosso and Jacobson (2005, p.273) define diversification as referring to: “...the movement of a firm into new, related or unrelated product areas (product extension), and/or, less frequently, to the movement of a firm into a different geographical market (geographical extension)”. Moschandreas (2000, p.265) also places emphasis upon the product, by defining diversification as: “...the extent to which a range of products is produced by the same firm. It can be accompanied by internal (de novo) or external (merger or takeover) expansion into unrelated products”. Barthwal (1984, p.170) provides a wider definition that encompasses products and markets, but also technological operations: “In the process of diversification a firm makes significant changes in its ‘areas’ of operations related to technological base, market areas and productive activities in which it has acquired experience or knowledge in the past”. Diversification is distinguished from differentiation – in that the latter involves distinguishing a product from those offered by competitors by altering one or more of its non-price characteristics (Andreosso & Jacobson, 2005). However, where a firm diversifying horizontally produces a product with similar characteristics to those in its current range, “it may be difficult in practice to draw a sharp distinction between product differentiation and product diversification” (George, Joll & Lynk, 1992, p.77).

A review of conceptual literature reveals that while diversification can take many forms, activities are commonly classified according to their structure and direction. These two approaches are explored below, with emphasis placed upon their relevance to the UK fishing industry. It should be acknowledged at this point that the different ‘types’ of diversification are not mutually exclusive and a firm may adopt a number of strategies simultaneously.

Lipczynski, Wilson and Goddard (2009) identify three principal types of diversification based on structure: product extension; market extension; and pure diversification. Product extension occurs when a firm provides a new product that is related to its existing ones. Given that the majority of firms produce more than one product or service, the authors argue that this form of diversification should be viewed as part of a continuous process rather than a series of discrete steps. The relationship of the new product with those already in production may take a number of different forms – including related markets, inputs and/or technology (Douma & Schreuder, 2002). Where a firm chooses to
diversify the market for its existing products on a geographical basis – for example from domestic to international markets, this constitutes a strategy of market extension. In contrast to product and market extension, pure diversification involves a movement into unrelated activities. Lipczynski et al. (2009) suggest that pure diversification is relatively unusual, as most firms diversify by moving into adjacent markets rather than unrelated ones – thus pursuing a strategy of “core product specialization” (2009, p.569). In contrast, firms that undertake pure diversification do not specialise their core products, but instead constitute conglomerates that provide unrelated products to unrelated markets.

The issue of specialization is addressed in greater detail by Rickard (2006), who argues that the principle of unrelated diversification conflicts with the neoclassical theory of the firm – as an organisation that benefits from the specialization of resources. The author proposes a more subtle definition of specialization, based upon the ‘competency school’ which emphasises the fungible nature of specialized resources. Rickard demonstrates this relationship graphically; where the type of diversification pursued depends partly on perceived market opportunities, but primarily upon the nature of available resources (figure 3.3). Thus, a single product firm with a high degree of asset specificity is unlikely to consider diversification as a viable strategy. In contrast, a multi-product firm with fungible knowledge resources is more likely to consider a strategy of unrelated diversification because resources such as managerial knowledge, while firm specific (i.e. heterogeneous), may be utilised as common inputs (2006, p.121).

Figure 3.3: Competency approach to diversification (Rickard, 2006)
The classification of diversification based upon direction assumes that a firm can diversify in one of three directions: horizontally, vertically, or diagonally. In the case of horizontal diversification, the firm retains its existing role in the production process but diversifies its products and/or the markets within which it operates. Many of the examples cited in academic literature focus upon manufacturing – which is not unsurprising given the potential for firms in this sector to diversify horizontally – but diversification may occur at any stage of the process through which a product is brought to market. In the fisheries sector, a logical strategy for fishermen is to diversify into providing new products to existing markets, rather than diversifying into new geographical markets. The latter is typically practised by firms involved in the wholesale of seafood rather than fishermen themselves, and as such may require resources that fishermen are unable to provide. Alternatively, fishermen may diversify into related products or markets in which the exploitation of fish stocks is not the central activity. The main opportunities for fishermen in the UK to diversify into related activities are outlined in figure 3.4. In each case, fishermen are able to utilise their existing assets – which may include physical and/or human capital depending upon the types of activities developed.

Figure 3.4: Scope for horizontal diversification within the fisheries sector

<table>
<thead>
<tr>
<th>Market-based activities</th>
<th>Environmental activities</th>
<th>Capture / Culture</th>
<th>Tourism / Leisure</th>
<th>Non-fishing contract work</th>
</tr>
</thead>
</table>

Vertical diversification, commonly referred to as vertical integration, occurs when a firm “exercises its activities in two or more industries belonging to various successive stages of the manufacturing process or product” (De Jong, 1993, p.25). A firm may diversify ‘upstream’ into preceding stages of the productive process, or ‘downstream’ into succeeding stages that are closer to the final consumer. In the fishing industry, fishermen are positioned towards the top of the vertical production process and thus may diversify into both upstream and downstream activities (figure 3.5). Opportunities for upstream diversification exist in the form of providing resources...
necessary for the capture or culture of seafood. Such resources may comprise of physical capital (e.g. boat building and repairs, provision of ice or fuel, netmaking); or human capital – such as knowledge and experience that may be traded through liaison, research and training services. In contrast, opportunities for downstream diversification exist within a number of different stages of the production process – including processing, wholesale, and retail. While much of the marketing of seafood products is aimed at the final consumer (as reflected by its position in figure 3.5), it may in fact be conducted at any stage of the vertical process.

Diagonal diversification occurs when a firm develops provision of the “auxiliary goods and services required for the several main processes or lines of production of the organization” (Barthwal, 1984, p.173). Barthwal argues that diagonal diversification is more prevalent in new industries where the provision of auxiliary services may be unavailable, resulting in the firm having to develop this provision out of necessity. The distinction between diagonal diversification and upstream vertical diversification lies in how such ‘auxiliary’ goods and services are defined. The author provides two examples: a firm that develops its own facility to generate electricity; and a firm that constructs a machine-tool making unit to serve its processing activities (1984, p.174). Given that the UK fishing industry is historically well-established, it may be assumed that fishermen do not need to diversify diagonally to secure access to auxiliary inputs. Instead, they are more likely to adopt a strategy of horizontal or vertical diversification which provides greater benefits.

The relationship between diversification and the industry life cycle is explored further by De Jong (1993) who notes that both horizontal and vertical diversification are limited in new industries because firms concentrate on increasing their output of core products. However, as the industry enters the mature phase and markets become saturated, horizontal diversification becomes a more viable strategy in response to the excess capacity which firms experience. Vertical diversification will also increase during this period for two main reasons: firstly, the mature phase may be characterised by rising input prices due to the relative scarcity of some resources; and secondly, a reduction in the number of firms due to competition will restrict the sales possibilities of suppliers who may respond by developing vertical agreements with leading firms (1993, p.18).

*Rationale*

There is no single universal motive for diversification, but rather a range of different motives that reflect the type and/or direction of diversification taken. Lipczynski et al. (2009) identify four key motives of diversification: cost savings; reduction of transaction
Managerial motives for diversification are applicable to large corporations where managers may benefit from prioritising growth over shareholder value. Similarly, large firms may diversify where they find their ability for growth constrained by the slow expansion of markets, or penalties resulting from monopolisation. Diversification may also be employed as a competitive strategy, enabling a new entrant to under-price its competitors by cross-subsidisation from its established base (Howe, 1978, p.141). It may be argued that such motives are less applicable to the UK fishing industry than those which focus upon cost savings and risk reduction, due to the structure of the typical fishing firm. The UK fishing industry is characterised by a minority of firms with limited liability status, with the remainder comprised of vessels run on a sole-proprietary or partnership basis (Cunningham et al., 1985; Symes & Frangoudes, 2001). As a consequence, the majority of fishing firms are too small to achieve any degree of market dominance. The following section therefore reviews those motives of greatest relevance to the domestic fishing industry, namely cost savings and risk reduction.

Diversification may generate cost savings in a number of ways. A firm undertaking related diversification has the potential to gain economies of scope through the utilisation of existing resources. Such resources include raw materials and by-products; production processes; marketing functions; and distribution channels; in addition to the knowledge and expertise held by the firm’s employees. Douma and Schreuder (2002, p.207) argue that economies of scope can always be traced to a common production factor, of which they identify four types: specialized indivisible assets; technological know-how; organizational know-how; and brand-names. Exploiting economies of scope in developing new products and/or entering new markets provides an opportunity for the firm to increase its earnings, or conversely, to maintain earnings in light of falling demand for their existing products. Economies of scope may also be realised when a firm diversifies vertically into preceding or succeeding sectors. In the case of upstream diversification, the firm is able to exert greater control over the supply of resources required for its original areas of operation, whereas downstream diversification offers the firm assurance of a market for its products (Barthwal, 1984). In either scenario, the firm can benefit from increased earnings through the elimination of the ‘middle man’, and may also benefit from economies of scale if successive stages of the productive process are interdependent (De Jong, 1993).

The benefits to a firm of utilising economies of scope is closely aligned to another key motive of diversification – that of risk reduction. Diversifying into alternative products or markets, either horizontally or vertically, can reduce the reliance of a firm upon specific
products and/or markets – thereby making it less vulnerable to fluctuations in demand and increased competition (Lypczynski et al., 2009, p.573). Where a firm diversifies vertically into upstream or downstream sectors, risk reduction may be gained from greater assurance over supply and demand respectively. However, an overreliance of the firm upon upstream or downstream activities could lead to increased risk – especially where the operation of these activities is inefficient. George et al. (1992) identify conditions of risk and uncertainty as an important motive for diversification, particularly among highly specialized firms where “…the general effect of an uncertain future is to cause firms to modify their choice of products towards producing a wider range” (p.77). The authors distinguish between two forms of uncertainty resulting from fluctuations in demand due to foreseen and unforeseen circumstances. Where uncertainty results from unforeseen circumstances, a firm may supplement their main lines of production with secondary products during low periods of demand. Given that the main objective of producing these secondary products is to contribute towards overhead costs and maintain the skilled workforce, the firm may be prepared to sell these products at little above their production costs (George et al., 1992, p.77).

3.4.2 Fisheries diversification

While anecdotal evidence indicates that fishermen have diversified both horizontally into related products and/or markets, and vertically into preceding or succeeding stages of production; the body of academic research on fisheries diversification is notably limited. Early work on fisheries diversification revealed that this strategy was not widely-practised among fishermen in the UK. In their analysis of responses to the problems of fishing, Cunningham et al. (1985) found little evidence of British fishing firms diversifying horizontally in order to realise economics of scale and/or market power. The authors propose two possible reasons for this observation: firstly that economies of scale are non-existent or unimportant to many fishermen; and secondly that the majority of ‘fishing firms’ – being one-vessel enterprises, are too small relative to the size of the market to achieve individual dominance (1985, p.132). Similarly, the authors find limited evidence of fishing firms integrating forwards into processing, marketing and distribution; and where this has occurred, it is invariably a strategy employed by larger fishing firms.

Cunningham et al. (1985) propose four possible explanations for the limited practice of vertical integration among fishermen. The first explanation is that fishermen may find it difficult to acquire the capital required to develop downstream activities, particularly given the prevalence of one-vessel enterprises. The second explanation concerns the relatively short timescale in fishing between inputs and outputs – which is effectively the length of a fishing trip. Fishermen are accustomed to flexibility in their work and may be disinclined to
commit resources in developing downstream activities. The third explanation concerns the polyvalent nature of fishing; as fishermen frequently adopt opportunistic behaviour in targeting different species as their distribution and market value dictates. This approach may conflict with activities such as processing and retail where uniformity of supply is required. Finally, in line with the previous explanation, the transient nature of fishing means that fishermen cannot rule out the possibility of having to relocate their effort in response to declining fish stocks. While it is possible for many vessels to adapt their fishing methods, the adaptability of processing facilities may be less feasible and thus represents a greater financial risk (p.134).

More recent work indicates that horizontal diversification into related activities has increased as a result of increased opportunities in coastal regions – particularly with respect to tourism development. In their study of Stewart Island and Chatham Island in New Zealand, Lovelock, Lovelock and Normann (2010) identified the establishment of a National Park as a key catalyst for fishermen diversifying into the tourism sector. However, the decision to diversify was also linked to increased quota restrictions on key species, and the difficulty of acquiring additional quota by leasing due to its increasing cost. The influence of multiple factors that both ‘push’ and ‘pull’ fishermen into diversification was also identified by Cheong (2003) with respect to Korean fishing communities. In response to declining fish stocks, the Korean Government promoted diversification into tourism during the 1990s as a means of stimulating regional development; supported with the introduction of favourable regulations, loans and subsidies. The author identifies three main types of tourism activities: diversification into accommodation; restaurants; and recreational angling trips. Tourism in fishing communities is typically found to be small-scale and isolated, therefore the ability to attract tourists depends upon a number of factors including transportation links; proximity to other tourism destinations; and the range of “draws” that they offer tourists (p.24). The latter will dictate the type of activities developed: opportunities to diversify into accommodation and restaurant provision are greater in communities with beaches; and recreational angling is more common where beaches are absent.

The development of tourism initiatives in response to declining fisheries is also examined by Chen (2010) with respect to Taiwan. Consistent with Cheong’s (2003) observations in Korea, fishermen were stimulated to diversify into the marine tourism sector by governmental policy. Chen identifies three main types of diversification activity that resulted from these measures: (1) activities related to the fishing boat, such as marine-life spotting, recreational fishing and diving; (2) activities related to the harbour, including the provision of facilities for yacht anchoring, fish markets and catering; and (3) activities
related to the fishing village, such as home-stays, experiencing historical fishing operations, and participating in local festivals. While such activities have undoubtedly created an alternative source of income for fishermen, a number of challenges to their development are found to exist. These include conflict between commercial fishers and recreational users; ineffective investment in construction projects; and a lack of business skills and capacity within fishing communities. The latter is particularly significant because it suggests that fishermen may be ill-equipped to make the transition from fishing to the tourism industry (p.480). To this end, Chen identifies the provision of training programmes and local government support as a key recommendation for future diversification activities.

In Europe, the feasibility of tourism-related diversification is explored by Alban and Boncoeur (2004) in their study of the Iroise Sea in Western Brittany – containing a small-scale, multi-species and multi-gear fishery with similar characteristics to the English Channel which it borders in the north. Given the popularity of the Iroise Sea as a tourism/leisure destination, the study investigates the potential for fishermen to diversify into activities that serve these sectors. A survey of visitors conducted in 1998 found that 75% of respondents expressed an interest in guided boat trips; 41% were interested in tours on commercial fishing boats; and 38% agreed that they would pay a realistic price (in this case around €33) for a half-day guided trip onboard a commercial boat (2004, p.193). The authors note, however, that demand for such activities does not imply that fishermen will supply services to meet this demand. A survey of fishermen revealed that around one-quarter (27%) of respondents expressed potential interest in diversifying into boat-chartering for recreational activities. Attitudes to diversification are found to vary significantly according to vessel size, with over one-third of skippers with vessels under 10m in length expressing an interest, compared with only 5% of those operating vessels of between 16-25 metres. Vessels using static fishing gear (lines, nets and pots) were also more likely to consider diversification than those using mobile gear (41% compared with 11% respectively) (p.195). While vessel size and fishing methods are not unrelated (e.g. the dominance of trawling in the 16-25m sector); the authors note that vessels utilising static gears are more adaptable to boat chartering activities – with respect to both technical and safety reasons. Fishing methods are also found to influence the financial viability of diversification during the tourist season, when summer fisheries (such as seaweed harvesting) may be more lucrative. In exploring the individual characteristics of fishermen, the authors observe a notable difference in attitudes between young skippers and older ones; with 57% of skippers under 30 years old declaring an interest in diversification, compared with only 11% of those aged over 50 (p.196). Two possible explanations are proposed for this observation: firstly that older skippers are less prone to
change their habits with age; and secondly that these results are indicative of a shift in attitudes between generations of skippers.

Despite the potential interest among fishermen in the Iroise Sea to develop tourism activities, Alban and Boncoeur identified a number of obstacles to diversification. A financial simulation of boat chartering within the under 10m Iroise fleet revealed diversification to be unprofitable for the average fisherman due to its high opportunity cost. This is supported by the finding that only 30% of skippers earning less than €15,000 per year expressed an interest in diversification (p.196). The authors note, however, that there will be exceptions to this observation; for example, during unproductive periods of fishing in the summer months. In addition to economic constraints, French administrative and fiscal rules were considered to be particularly restrictive to diversification, given the different laws applying to commercial and charter vessels. For example, a fisherman wishing to take passengers onboard their vessel must purchase civil responsibility insurance and satisfy regional safety rules. Difficulties relating to the tax system were also identified as a potential obstacle, together with a more general “difference of culture” which exists between fishing and tourism (p.197).

The study of diversification among Breton fishermen is developed further by Merrien, Lesueur, Boude and Folliard (2008) who identify a range of activities being practised, including tourism, ecological activities and adding value to products. Interestingly, nearly three-quarters (72%) of the fishermen interviewed believed that fishing businesses would diversify in the future, although a number of obstacles to diversification are cited – most notably technical issues and hesitancy to take risks. The work of Merrien et al. is particularly noteworthy because the authors propose an explicit definition that addresses the range of nuances and associated dimensions of diversification in fisheries (Brugere, Holvoet & Allison, 2008, p.6):

“Complementary activities to production, in link with the product, the profession or the business that fishers practice to have an additional income but also to promote products, profession or territory” (Merrien et al., 2008, p.11).

This definition makes three important distinctions: firstly, that fishermen undertake such activities *in addition* to fishing; secondly, that these activities maintain a link with fishing in some form; and thirdly that they may be practised for reasons other than immediate financial gain. These distinctions are noteworthy because they distinguish fisheries diversification from pluriactivity – where individuals diversify into activities that are unrelated to fishing or fishing businesses (i.e. multiple-job holding). Similarly, the widespread practice of fishermen diversifying their catch with respect to species and/or
methods merely constitutes diversification within production, rather than an activity that
complements it (figure 3.6).

**Figure 3.6: Distinction of fisheries diversification (Merrien et al., 2008)**

In the UK, there is clear evidence that fishermen have diversified into complementary
activities to production, although this is a subject area that remains largely unexplored. In
some cases, examples of fisheries diversification are historically well-established –
particularly with respect to tourism. For example, in his account of living with a Sidmouth
fishing family during the early twentieth century, Reynolds (1982) observes the practice of
fishermen supplementing their income by providing boat trips to summer visitors. The
symbiotic relationship between fishing and tourism (Salmi, 2005) means that such
activities continue to be practised today in locations where tourism remains a significant
component of the economy. This is notable within western channel regions such as
Devon and Cornwall, where in addition to boat trips, examples may be found of fishermen
utilising their vessels for recreational angling charters.

Consistent with the findings of Merrien et al., evidence of fisheries diversification in the UK
is not confined to the tourism sector. Other examples include fishermen utilising their
vessels for environmental surveying and contract work in the construction,
telecommunications and energy sectors. In Scotland, the practice of fishing vessels
working within the North Sea oil and gas industry has become common over the last
twenty years. Fishermen are paid to guard pipeline construction sites from other vessels,
which represents a valuable supplementary income source in light of quotas and days-at-
sea restrictions (Ross & Harrell, 2006). However, Stead (2005) notes that the declining
value and role of the oil and gas industries in Scotland means that this approach is unlikely to be viable in the long-term. The author suggests that the marine aquaculture, leisure and tourism sectors may instead provide more sustainable opportunities; although successful diversification will require the commitment, involvement and support of the wider community (p.690).

Evidence also exists of fishermen in the UK diversifying both horizontally and vertically within the seafood production process. The former includes the marketing of products, of which the rebranding of the pilchard as a Cornish sardine is perhaps the most widely recognised example. Examples of vertical diversification include fishermen moving into the processing and direct selling of seafood to the public or trade, rather than the traditional route of selling through fish auctions or wholesalers/processors. At a small-scale, this strategy can be an effective means of adding value to the raw product, and a number of examples are found throughout the Channel. In contrast, evidence of larger-scale vertical diversification is notably less prevalent. One explanation for this, as observed by Cunningham et al. (1985, p.135) is that strategies involving research and development and product transformation can be costly to implement, with uncertain and long-term outcomes. Consequently, they tend to be practised by larger firms with existing forward linkages into processing marketing and distribution. The relatively limited presence of such firms in the UK may explain why these strategies are not more widespread.

The studies by Alban and Boncoeur and Merrien et al. are significant because they identify a framework of constraints that influence the decision of fishermen to diversify. Fundamentally, in some coastal regions the demand for diversified activities may be sufficiently high to make them economically viable, yet individuals may still be deterred from adopting this strategy. In the case of the Iroise Sea study, the existence of administrative constraints in the form of maritime regulations and tax laws was identified as a key obstacle to fishermen diversifying into tourism. While these constraints represent fixed legal obligations that fishermen are required to adhere to, it may be argued that the actual process of diversifying into new activities creates an additional administrative burden with respect to the bureaucracy associated with meeting such obligations. Given that educational attainment among fishermen may be highly variable (Creative Research, 2009), the influence of the latter should not be overlooked.

In contrast to administrative obstacles, the presence of what Alban and Boncoeur (2004, p.197) refer to as a “difference of culture” represents an arguably more complex, yet potentially significant constraint upon the development of fisheries diversification activities.
Indeed, Symes (2000, p.9) suggests that the strategy of diversifying into the leisure and tourism sector has limited appeal because many fishermen would consider it to be a debasement of their skills. Similarly, Salmi (2005) questions why diversification into tourism has not been developed further in the Finnish Archipelago Sea region and identifies the strong ethos of independence among fishermen as a possible constraint. In summary, it may be argued that the decision to diversify will be subject to a range of economic, administrative and social factors that influence individual fishermen in a manner of different ways.

3.4.3 Supporting evidence

As noted in section 3.4.1, the structure of the typical fishing business in the UK means that some theoretical principles have limited applicability to understanding diversification among fishermen. While this observation also applies to empirical studies, an exception is noted with respect to diversification within the agricultural sector. At an individual level, it may be argued that the principal roles and motivations of the farmer and fisherman are not dissimilar. In many cases these individuals work as self-employed business owners in the production and harvesting of natural resources. Furthermore, the widespread development of farm diversification from the 1980s onwards is linked with a post-productivist shift towards reduced food output, the withdrawal of state subsidies, and increasing environmental regulation of agriculture” (Ilbery, Chiotti & Rickard, 1997, p.2). To this end, the contemporary agricultural industry in the UK may be viewed as a dual system: consisting of intensive high-input high-output agriculture that emphasises quantity and low costs; complemented by extensive low-input low-output agriculture that emphasises quality and sustainability (Ilbery et al., 1997a, p.2). It may be argued that a similar shift is occurring within the commercial fishing industry, albeit at a slower pace, as policy-makers and consumers alike become increasingly aware of the negative issues associated with fish and shellfish production.

Consistent with the fishing industry, agricultural diversification – defined by Defra (2011, p.5) as: “the entrepreneurial use of farm resources for a non-agricultural purpose for commercial gain”, is not a new concept. For example, Shucksmith et al. (1989) analysed the National Farm Survey of 1941-43 and found that over a quarter (26%) of respondents reported having additional sources of income and employment. More recently, Ilbery, Healey and Higginbottom (1997, p.143) surveyed 1,250 farmers in three study areas across England and found that 28% of households had some form of business diversification – dominated by on-farm businesses. Of these, the provision of accommodation was the dominant activity (42%), followed by retailing (21%), services (17.5%), and recreation and leisure (13%). The most recent results of the Farm Business...
Survey (2009/10) conducted by Defra revealed that 50% of surveyed farms in England had a diversified activity – a figure that has remained stable since 2006/07. In contrast to the findings of Ilbery et al. (1997b), the renting of farm building was the dominant activity: being practised by 36% of farms and accounting for 73% of total diversified income (Defra, 2011, p.2).

Rationale

It is rational to assume that one of the primary motives for engaging in diversification is financial – particularly where structural incentives serve to increase the inputs available to the farm business i.e. the provision of financial support, coupled with the freeing up of resources resulting from stricter regulations on farming practices. This assumption is supported by a number of studies, for example, Ilbery (1991, p.214) identified income as an overwhelming reason for diversifying, with 80% of respondents citing it as the single most important factor. Similarly, Sharpley and Vass (2006, p.1042) identify the main benefits to accrue from farm-based tourism as additional income and longer-term security gained from the provision of tourism services, experiences or products. The relative contribution of diversification to farm income is explored by Ilbery et al. (1997b) in their study of diversification in the North Pennines region of northern England where they concluded that diversification into tourism did not transform the economic situation of relatively low farm business profits but nonetheless did appear to ensure their survival. A similar finding was observed by McNally (2001) who found that despite the prevalence of certain types of diversification activities, they generally provided a relatively small contribution to farm income. However, the author does acknowledge the importance of such activities to the farm business – particularly as a means of spreading risk.

Constraints

Given the aforementioned similarities between fishermen and farmers, understanding the factors that influence agricultural diversification has potential value to the study of fisheries diversification. Of particular relevance is the conceptual framework developed by Evans and Ilbery (1989) to investigate farm-based accommodation and tourism in Britain. This model is based upon a political economy perspective in which the behaviour of individuals in agriculture is constrained by wider political and macroeconomic forces; while recognising that these individuals are ‘active agents’ in farm business change (p.259). The authors propose that diversification is the outcome of three distinct elements: an external environment; an internal environment; and an interactive dimension (figure 3.7).
The external environment consists of institutions and organisations that exert influence on farms (in a capitalist economy) via external finance — of which the authors identify three main types: sources of capital; technological developments; and marketing organisations. In contrast to the external environment, the internal environment consists of attributes that are specific to individual farms, and exist independently of outside institutions and organisations. These include the land, labour and capital relations of the farm business; but also the motives, attitudes and social relations of the farm family. External and internal farm environments are interrelated through an interactive dimension which varies with geographical location and socioeconomic conditions. Evans and Ilbery note that the external environment influences the internal through attempted capital penetration of farm business structures; to which farm businesses respond by implementing internal adjustments — thereby creating a process of "continuous reciprocal modification" (p.260).

The principle of a conceptual framework to explain diversification is further developed by Ilbery et al. (1997b). The authors maintain the concept of diversification as: “...the outcome of a range of factors working ‘externally’ and ‘internally’ to the farm household” (p.139), but extend the domains of these environments (Appendix A). External factors are seen to operate on three hierarchical levels: a macro-scale context within which decisions are made by external agencies and farm households; a series of local, regional and national institutions that provide information, advice and funding; and a more informal information environment within which the exchange of ideas takes place. Similarly, a model of internal decision making is proposed consisting of three stages: the perceived stimulus to make a decision; the search for a satisfactory solution to the problem; and the choice of the final solution from the different pathways available. Fundamentally, this model will not be activated unless a stimulus to change exists. However, once activated,
the resultant outcome will reflect the interaction that takes place between internal and external factors.

The influence of ‘internal’ characteristics upon diversification has been explored in a number of studies within the UK. As may be expected, the location, size and type of agriculture practised on the farm will influence both the feasibility of particular activities, and their likely success once implemented (Gasson, 1998; Ilbery & Bowler, 1993). Of particular relevance to the study of fisheries diversification, however, is the influence of sociocultural characteristics upon the decision-making process:

“In the final instance, the pattern of farm diversification will depend upon the location of the farm, the facilities on the farm, and most important of all the personality and commitment of the farmer, his wife and the family” (Ilbery, 1991, p.211).

Ilbery and Bowler (1993, p.165) found that diversifiers tended to be younger, have continued full-time education after school and have received formal education training – conditions that appear to predispose these individuals to innovation. The authors also found that a greater proportion of diversifiers had children who wished to continue the farm business. However, given that diversification may well involve the development of activities that do not conform to traditional farming practices, it is not unexpected to find that some farmers will be resistant to this strategy. For example, in an attitudinal study of tourism diversification in north-east England, Sharpley and Vass (2006, p.1046) found that over half of the farmers interviewed reported that they unsure, or would have preferred not to diversify into tourism. Furthermore, the majority of respondents indicated that they would wish farming to remain their core business; not only was their identity as farmers important to them, but they also saw their role as providing food for the nation. Where diversification activities are interdependent upon the working farm (as in agritourism), farmers may struggle to accommodate these two roles together due to the absence of defined boundaries (Di Domenico & Miller, 2012, p.290).

The attitudes of the farmers to diversification may manifest itself in a number of ways. One outcome is that farmers will resist diversification on the grounds of an anticipated loss of identity and sociocultural rewards gained from traditional farming activities (Burton, 2004, p.196). An outcome of perceived loss of identity is that diversification takes the form of satellite activity involving different participants – rather than a restructuring of the farm business (Halliday, 1989). The involvement of different participants is explored by a number of authors with respect to gender-roles. For example, Ilbery and Bowler (1993, p.166) found that one-third of farmers reported that their spouse played an active role in
the running and decision making of the farm business. Similarly, Ilbery et al. (1997b, p.145) identify a clear distinction between on-farm and off-farm diversification activities with respect to gender; with 40% of on-farm enterprises being run by farmers’ wives. Despite these findings, studies of farm identity suggest that farmer’s identities remain entrenched in productivism and resistant to change – even among those participating in post-productivist initiatives (Burton & Wilson, 2006, p.111). Furthermore, it is possible that diversification activities such as tourism will reinforce rather than weaken identity because the identity of the farm/farmer is central to the product being offered (Brandth & Haugen, 2011, p.41).

Diversification into non-traditional farming activities also requires the application of different skills and approaches to work, which some farmers may lack or be unwilling to apply. Indeed, it the case of customer-focused activities, it may be argued that agricultural values and guest-service values are frequently incompatible (Fleischer & Pizam, 1997, p.368). The decision to develop and utilise new skills is closely aligned to farmers’ attitudes regarding diversification as a strategy, and their role within the farming industry. As such, some farmers will be deterred from developing new skills if they believe that it detracts from their principle status as farmers. Additionally, where such skills have historically been provided by other agencies or individuals, farmers may be unwilling to challenge this pre-defined role structure (Ilbery, 1991, p.217). Although the absence of relevant skills evidently represents a barrier to farmers diversifying, it will also determine the success of those who choose to adopt this strategy. A recent study of agritourism in the UK concluded that whilst farmers are increasingly developing these activities, many lack the business competencies required to make them successful (Phelan & Sharpley, 2011, p.133). This observation corresponds with findings in the fishing sector, with respect to transferable skills and working practices (e.g. Alban & Boncouver, 2004; Chen, 2010).

3.4.4 Diversification, innovation and entrepreneurship

Given that diversification, by definition, involves movement into new product areas and/or markets; it is assumed that innovation and entrepreneurship are key components of this process. In order to understand this behaviour among fishermen it is necessary to briefly define these concepts – particularly with respect to the relationship between innovation and entrepreneurship.

Despite entrepreneurship being a well-established concept, its definitions are wide-ranging. Stokes, Wilson and Mador (2010, p.7) suggest that definitions of entrepreneurship can be categorised into three main dimensions; according to the
processes undertaken by entrepreneurs, the behaviours that entrepreneurs exhibit through these processes, and the outcomes that result. In discussing the first of these three dimensions, the authors cite the definition provided by Hisrich and Peters (2002) in which entrepreneurship represents:

"...the process of creating something new of value by devoting the necessary time and effort, assuming the accompanying financial, psychic and social risks, and receiving the resulting rewards of monetary and personal satisfaction and independence" (2002, p.7).

The representation of entrepreneurship as a process with tangible inputs and outputs gives rise to the commonly-made association between entrepreneurship and the creation of new business ventures by self-employed entrepreneurs. Kirby (2003, p.10) argues that while entrepreneurship may exhibit these principles it is not confined to them; entrepreneurship may well occur within large organisations and among employees in the private, public and not-for-profit sectors. To this end, the author stresses that entrepreneurship is not about the act of founding a business, but rather a pattern of behaviour or a set of behavioural characteristics. This concept of entrepreneurship as a behavioural trait is typified in the definition provided by Bessant and Tidd (2011, p.10) who identify entrepreneurship as a ‘human characteristic’, comprising of:

"...a potent mixture of vision, passion, energy, enthusiasm, insight, judgement and plain hard work which enables good ideas to become a reality" (2011, p.10).

Finally, definitions of entrepreneurship as an outcome emphasise the ‘value’ that results from this process, rather than the process itself or the individual characteristics of entrepreneurs. The value created from entrepreneurial activity can take a number of forms, including new business ventures; new products and services; and innovative practices (Kirby, 2003, p.8).

If entrepreneurship is identified as a process in which individuals exhibit behavioural characteristics in creating something of value, then innovation represents a means of facilitating this practice. For example, Drucker (1997) defines innovation as:

"...the specific tool of entrepreneurs, the means by which they exploit change as an opportunity for a different business or a different service" (1997, p.17).

The notion of innovation as a tool of entrepreneurs is shared by Bessant and Tidd (2011) who argue that innovation is driven by entrepreneurship and “...the ability to see connections, to spot opportunities and to take advantage of them” (p.7). The association
of the entrepreneur as an innovator was popularised by Schumpeter (1934) whose theory of entrepreneurship came to dominate this field of study; and has particular relevance to understanding the role of opportunities in the entrepreneurial process. Where previous theories of entrepreneurship focused upon the supply-side by emphasising the role of the entrepreneur in the production and distribution of goods and services for which demand is independently determined, Schumpeter developed a demand-side theory in which the entrepreneur changes the nature of demand by introducing new goods and services, or new combinations of existing goods and services (Link & Siegel, 2007, p.20). As such, entrepreneurship is seen to represent a disequilibrating activity in which the entrepreneur disrupts existing markets and causes new ones to be formed (Kirby, 2003, p.50). This perspective was challenged by Kirzner (1973) who stressed that the important feature of entrepreneurship is the ability to perceive new opportunities that have gone unnoticed, rather than the ability to break from routine.

The key distinction between these two perspectives concerns the role of information: Schumpeter identifies the introduction of new information as a central aspect of creating entrepreneurial opportunities, and argues that changes in technology, political forces, regulation, macro-economic factors and social trends create new information that is used by entrepreneurs to exploit opportunities (Shane, 2003, p.20). In contrast, Kirzner proposes that entrepreneurial opportunities do not arise from new information, but rather from differential access to existing information. This information is used by the entrepreneur to combine resources in a way that addresses the shortages and surpluses that give rise to market disequilibrium. On the basis of these underlying differences, the Schumpeterian perspective is found to place greater emphasis upon innovation – in that the discovery and exploitation of opportunities arises through the disruption of established knowledge and practices. In contrast, the Kirznerian entrepreneur seeks to replicate these established practices using differential access to existing information which requires perceptive but not necessary innovative behaviour (Link & Siegel, 2007, p.26). Consistent with this observation, Samuelsson and Davidsson (2009, p.232) highlight the distinction between innovative ventures where individuals with entrepreneurial ability enter a new product-market arena that others have not sought to actively exploit, and imitative ventures that occur within an existing product-market arena and thus vary only marginally from similar ventures.

**Conceptualising entrepreneurship**

While the study of entrepreneurship is well established, the field has historically lacked a comprehensive conceptual framework through which this phenomenon could be
empirically explained. Shane (2003, p.4) attributes the failure of academics to provide an adequate framework to their tendency to focus upon one dimension of the entrepreneurial process in isolation. In building upon previous work that acknowledges the wider context of this process (e.g. Shane & Venkataraman, 2000), the author proposes an interdisciplinary framework in the form of the ‘individual-opportunity nexus’ – which is founded upon five key principles (2003, p.6):

1) Entrepreneurship requires the existence of opportunities or situations in which people believe they can generate profit.

2) Entrepreneurship relies upon variation between individuals in accessing or recognising information about opportunities, and deciding to act upon these opportunities.

3) Risk is an inherent aspect of entrepreneurship because the exploitation of an opportunity is inherently uncertain.

4) Entrepreneurship requires ‘organising’ – with respect to creating a new approach to exploiting an opportunity that previously did not exist.

5) Entrepreneurship requires some form of innovation because the entrepreneur is recombining resources into a new form that did not exist before.

On the basis of these assumptions, Shane identifies entrepreneurship as a process consisting of three key stages: 1) the perceived existence of profitable opportunities or situations; 2) the discovery of these opportunities by entrepreneurs; and 3) the development of strategies through which opportunities can be exploited (2003, p.10). Importantly, each of these key stages is influenced by factors operating at an individual, industry and institutional level. Individual factors relate to both psychological and non-psychological characteristics that influence the propensity of individuals to entrepreneurial behaviour (figure 3.8). However, the decision to exploit opportunities is situated within an industry context that shapes both the nature of these opportunities and the ability of the entrepreneur to exploit them. These attributes are themselves influenced by a wider institutional dimension, comprised of the economic, political and cultural environment in which the entrepreneur finds themselves (Shane, 2003, p.145).
Entrepreneurship and innovation in fishing

Despite the theoretical principles of entrepreneurship being well-examined, the application of these principles to the commercial fishing industry remains relatively limited – particularly in the UK. One explanation for this lack of research is provided by Smith (2006), who notes that his own study is an attempt to locate entrepreneurship within a fishing community “in which it is not a self-evident phenomenon” (p.40). The author suggests that working class entrepreneurship has escaped the attentions of serious scrutiny because existing research focuses instead upon the “more heroic elements of the enterprise culture and the link with big business” (p.40). Through his ethnographic account of a Scottish fishing community between 1934-2004, Smith identified numerous examples of enterprising behaviour that reinforce the socioeconomic importance of entrepreneurship to fishing communities. Entrepreneurial behaviour among fishermen was found to be driven by economic necessity and the need to support the family, while at the same time being dependent upon the family as a source of labour. Examples included fishermen seeking complementary employment in the agricultural sector when returns from fishing were poor; and relocating temporarily to other more profitable fisheries. Significantly, the author notes that entrepreneurship does not exist in isolation to wider developments – an observation that remains consistent with Shane’s (2003) individual-opportunity nexus.

Entrepreneurship among fishermen was also identified by Creative Research (2009) in their study of the English commercial fishing industry. The authors note while fishermen have many shared beliefs, attitudes and values, they can also differ in their motivations
and behaviours (p.114). To this end, a typology consisting of three groups (‘leaders’, ‘lieutenants’ and ‘followers’) is proposed – on the basis of how fishermen approach and deal with uncertainty in the fishing industry. As may be expected, it is within the group of ‘leaders’ that examples of entrepreneurial behaviour are most prevalent. These individuals are characterised by their proactive business-focused approach and a desire to develop solutions to the problems facing their occupation. The typical attributes of a leader include being an owner-operator; having owned several boats over the course of their career; being computer literate; and being receptive to the increased use of electronic communications in their work (p.115). In contrast to these ‘leaders’, ‘lieutenants’ are less likely to display these characteristics, but are still considered to be more pro-active in responding to change than the ‘followers’ – some of whom may be older fishermen who are “seeing out their time” before retiring (p.117).

Gonzalez-Lopez’s (2001) study of innovation among coastal fishermen in the Spanish region of Galicia remains relevant to the UK context due to the prevalence of small one-vessel enterprises. The author identifies four main fields of innovation in the coastal fishing sector: extractive; manufacturing; commercialisation; and organisational and resource management. Of these, innovative behaviour is most evident in the extractive field through technological improvements in information and communication technology, vessel efficiency and safety (p.188). Notably, much of this innovation is driven by the public sector through the introduction of new regulations and the provision of funding programmes. Although less prevalent, examples of innovation in the commercialisation fields are found to adhere to the principles of fisheries diversification with respect to the development of marketing activities (including product branding) and a shift towards direct selling. The author notes, however, that the latter involves altering the traditional monopoly system of fish buyers (i.e. intermediaries) which still prevails in the industry; and requires information, knowledge and acceptance of financial risk (p.192).

Given that the above studies focus upon entrepreneurial behaviour as a means of sustaining or supporting existing fishing activities, Mumby-Croft and Hackley (1997) provide an alternative perspective in their case-study of new business formation in the UK fishing industry. Using a social constructionist perspective, the authors explore the formation, development and eventual demise of a fish merchant’s enterprise in the Lincolnshire port of Grimsby during the 1980s. Despite being limited to one case, the findings of this study are found to support some of the wider theoretical principles relating to entrepreneurship. Most notably, the decision of the entrepreneur to become a fish merchant is found to be shaped by a range of personal, social, family and cultural influences – thus consistent with the psychological and non-psychological attributes
observed by Shane (2003). The finding that the entrepreneur is both the son and grandson of a fish merchant implies that “the necessary specialist knowledge, skills and contacts were woven into the very discourse of the family...” (1997, p.89). The difficulties encountered by the entrepreneur in obtaining finance, and their willingness to bear the risk associated with its investment are also representative of an “individualistic, asocial character” (p.89). In tracing the changing fortunes of their case-study enterprise, Mumby-Croft and Hackley identify entrepreneurship as a ‘product’ fashioned from local culture, informed by a national cultural history and framed by contemporary economic and social forces (p.87). To this end, these contexts are seen to constitute an ‘institutional’ environment consistent with Shane’s (2003) conceptual framework.

3.5 Multiple-job holding

3.5.1 A conceptual overview of multiple-job holding

Definition and forms

In the literature of economics, the terms ‘multiple-job holding’, ‘dual job holding’ and ‘moonlighting’ are used interchangeably to define the working practice of holding two or more jobs simultaneously. The term ‘moonlighting’ has historically been used to infer individuals working during evenings or weekends in undisclosed occupations to avoid paying tax. However, Dickey, Watson and Zangelidis (2011, p.3767) argue that its present definition makes no implications regarding either the legitimacy of this work, or the time during which it is conducted. For the purposes of this chapter, the definition of multiple-job holding remains consistent with this observation, and is used interchangeably with moonlighting and dual job holding to infer the same practice.

Labour economists propose two main theories of multiple-job holding; both of which are based on utility-maximising behaviour (Dickey et al., 2011, p.3768). The first theory dictates that an individual will take a second job when they are unable to work the desired number of hours in their primary occupation; which may be the result of workweek restrictions, economic conditions, or other institutional factors (Conway & Kimmel, 1998, p.136). Thus, the individual is unable to derive an income from their primary occupation that optimises their utility and so seeks an additional income source. While remaining relevant, this ‘hours- constrained’ motive has been challenged in recent years by research that identifies individuals who are not constrained by hours in their primary occupation, yet still choose to hold a second job. Such behaviour may be explained by the ‘heterogeneous-jobs’ motive, where an individual takes a second job because it provides
them with alternative non-pecuniary benefits. These benefits may be numerous, but typically include developing experience in new sectors; indulging personal interests; increasing job satisfaction; and benefitting from the greater flexibility of holding two part-time jobs over one full-time job. As noted by Dickey et al. (2011, p.3768), individuals who hold a second job for reasons other than the hours-constrained explanation could by definition work more hours in their primary job if desired.

In recognition of the limitations of these two hypotheses, the theoretical basis of multiple-job holding has developed to include two additional explanations. The ‘main job insecurity hypothesis’ proposes that an individual may hold a second job where they perceive a high risk of losing their primary job. The second job therefore acts as a ‘hedge’ against unemployment – particularly if the opportunity exists to increase the hours worked in this second job (Bell, Hart & Wright, 1997, p.2). Alternatively, this hypothesis may be applied to individuals who take a second job as a means of stabilising uncertain incomes in their first job (Wu, Baimbridge & Zhu, 2009). The second explanation proposes that a worker in a primary job associated with non-pecuniary benefits experiences a fall in earnings and chooses to take a second job to increase their income. This contrasts with the rational worker in a primary job which provides limited non-pecuniary benefits, who when faced with a fall in earnings will choose to leave their job altogether in favour of a higher-paying alternative. Wu et al. (2009) refer to this explanation as the ‘target income model’, whereby: “the individual determines their allocation of work on different jobs to reach a certain income level” (p.2752).

In light of the theoretical context examined above, it may be established that the motives for multiple-job holding are diverse and result from an interaction of economic factors over which an individual worker has varying degrees of control. In order to understand these motives in greater detail, it is necessary to review empirical research on this subject – which will be addressed in the following section. Of particular relevance to the study of multiple-job holding in fishing is the extent to which this practice reflects wider economic conditions:

“In many cases, moonlighting reflects the individual’s best choice when faced with the need for a flexible work schedule, but in many others it reflects growing economic hardship that threatens the financial stability of families” (Kimmel, 1995, p.4).

**Rationale**

The body of academic literature on multiple-job holding is relatively recent, with much of this work focussed upon the US and UK. A number of early studies conducted in the US
identify the hours-constrained hypothesis as the principal motive of moonlighting. For example, Shishko and Rostker (1976, p.299) apply the economic principle of utility maximization to moonlighting behaviour, and argue that both the reservation wage for moonlighting and the hours worked in the second job will be influenced by the wage rate and hours offered in the primary labour market. The authors propose that a 10% increase in the moonlighting wage rate results in moonlighters increasing their hours of work by 26% (p.307). Family size was found to have a significant positive relationship with hours worked in the second job, although age was found to have a significantly negative relationship. O'Connell (1979) develops this work further by taking into account the influence of taxes upon secondary job holding, which is found to have a significant effect. As with Shishko and Rostker (1976), the author finds that an increase in the hours worked, or wage, of the primary job will significantly reduce moonlighting. Similarly, family size is found to be positively related to moonlighting behaviour, although this relationship is statistically insignificant.

More recent work has sought to explore the motivations and characteristics of multiple-job holding in greater depth. Paxson and Sicherman (1996) examined the dynamics of dual job holding in the US between 1976-89 and found a number of notable observations. Dual job holding is found to vary considerably across occupations with no clear relationship to the individual's skill level. The majority of dual jobholders (78% of males and 72% of females) were found to take a second job in an alternative occupation – thereby supporting the heterogeneous-jobs hypothesis. However, the authors suggest that this behaviour may also be explained by the ‘portfolio model’ in which individuals seek employment combinations that optimise the mean and variance of their income (p.361).

In a later study by Conway and Kimmel (1998), the authors note that previous research into moonlighting behaviour (including that of Shishko and Rostker (1976) and O’Connell (1979) assumes that the hours worked in the primary job are fixed and determined exogenously for all workers. As a result, these studies are based upon the assumption that only two groups of workers exist: those with constrained hours who choose to moonlight; and those with constrained hours that choose not to (1998, p.142). Conway and Kimmel challenge this assumption by incorporating two further groups of workers into their model: those who are unconstrained in their primary job and choose to moonlight; and those who are unconstrained and choose not to. Of the 211 individuals identified as moonlighting during the survey period, only 14 were found to moonlight all nine time periods – thereby supporting the hours-constrained motive (1998, p.151). However, the authors note that while a significant number of workers face constraints in their primary jobs, support is also found for the heterogeneous-jobs hypothesis. Kimmel and Conway
develop this work further in a study of moonlighting by male workers in the US, in which they hypothesize a relationship between the motives and duration of moonlighting episodes. Given that labour supply constraints are generally considered to be temporary, the authors propose that workers faced with longer-term constraints will develop alternative responses – such as seeking an alternative primary job. Therefore, the constraint motive is expected to contribute to shorter, temporary moonlighting episodes, and the heterogeneous-jobs motive to longer ones (p.103). The authors find some support for this hypothesis, and suggest that the dominant motive for moonlighting is primary job constraints as most moonlighters are found to take short, sporadic episodes of moonlighting in lower-paying second jobs (p.117).

In the UK, empirical data reveals that the practice of multiple-job holding is relatively common – although estimates are seen to vary according to the data sources used. Much of the work in the UK focuses upon two key sources of survey data: the Labour Force Survey (LFS) conducted quarterly by the Office for National Statistics (ONS); and the annual British Household Panel Survey (BHPS). With respect to the prevalence of multiple-job holding, Dickey et al. (2011, p.3767) examined data from the LFS and estimated that since 1995, over 1.2 million people in the UK have held multiple jobs – with this figure increasing by 68% between 1984 and 2001. In contrast, Wu et al. (2009, p.2751) analysed the results of the BHPS and estimated that 2.89 million British workers (10.5%) held second jobs in 2001, which exceeds the estimate of 1.16 million workers for the same period derived from the LFS. This disparity is attributed to differences in the reference period applied by the two surveys, but nonetheless provides some indication of the relative magnitude of multiple-job holding.

Given that much of the academic interest in multiple-job holding in the UK is relatively recent, it may be argued that limited attention has been devoted to understanding the determinants of this practice (Wu et al., 2009, p.2751). Boheim and Taylor (2004) examine the dynamics of second job holding for the period 1991-1998 using data from the BHPS and observe that second job holding is found to be greater among females (12%) than males (9%). Significantly, around 60% of workers who held a second job in one year were found to hold a second job in the following year. As such, moonlighting is seen to be a persistent activity rather than a temporary response to fluctuations in labour supply (p.13). This finding is of interest because it contradicts a number of studies conducted in the US where moonlighting appears to be a sporadic short-term response (Conway & Kimmel, 1998; Kimmel & Conway, 2001). Boheim and Taylor find limited support for the heterogeneous-jobs motive but instead identify evidence of alternative hypotheses: workers who had experienced a positive or negative financial shock were more likely to
hold a second job – providing support for a ‘financial shock hypothesis’. Evidence was also found for the job security hypothesis; the chances of holding a second job are reduced where the individual holds a permanent contract, although this is not supported by other indicators of job security.

A more recent study by Wu et al. (2009) provides further insight into the characteristics of multiple-job holding in the UK through their analysis of 11 waves of the BHPS from 1991 to 2001. The authors identify a significant negative relationship between age and the probability of individuals moonlighting, which may result from financial necessity; a desire to establish themselves in the housing market; or simply having the energy required to hold two jobs. With respect to gender, the likelihood of males taking a second job increases with the number of children they have – while the opposite is observed for females. Most notably, the analysis conducted by Wu et al. finds little support for the hours-constrained hypothesis. Workers satisfied with the hours of their main job are more likely to take second jobs, and over 70% of male moonlighters and 65% of female moonlighters earn more in their second jobs than in their main jobs (p.2760). Furthermore, the authors do not observe a significant relationship between dissatisfaction with job security and moonlighting. Instead, greater support is identified for alternative explanations: the finding that the majority of moonlighters hold second jobs in a different occupation supports the heterogeneous-jobs hypothesis. Additionally, the finding that male workers who are unhappy with the total pay of their main job are more likely to take a second job indicates a response to financial pressures and a desire to raise or secure living standards consistent with the portfolio model (Paxson & Sicherman, 1996).

3.5.2 Multiple-job holding within the fishing industry

To date, the practice of multiple-job holding in the fishing industry has received limited academic attention – despite the presence of employment characteristics that make it worthy of further investigation. The hours-constrained hypothesis is clearly relevant to fishing as an occupation, although its influence will be determined by a number of factors. Fishermen may find their ability to earn a utility-optimising income constrained by environmental and biological factors outside of their control, such as weather conditions, seasonal migration patterns and stock sizes. The impact of such factors will be greater among smaller inshore vessels which face constraints with respect to the conditions and distances within which they can safely operate, and their catching capacity compared with larger vessels. As discussed in section 3.2, the effect of such constraints upon financial performance will vary according to location, vessel size and species targeted. To this end, the extent to which fishermen experience an hours-constraint upon earnings is likely
to be highly variable and reflective of the diversity within the industry. Furthermore, it should not be assumed that the heterogeneous jobs motive is wholly absent among fishermen. Given that the fishing industry is characterised by long working hours and a high risk of injury and fatality, it is feasible that some fishermen may seek to optimise their utility by engaging in contrasting onshore employment. Additionally, the practice of part-time fishing in the UK (figure 3.1.) indicates that fishing may itself be a secondary occupation – practised by individuals for financial or non-pecuniary gain.

Multiple-job holding within European fisheries is historically well-documented and the UK is no exception. The development of pluriactive economies in coastal regions was commonplace as workers combined on-land employment with the exploitation of seasonal fish stocks (Gray, 2000; Smith, 2006). The combination of fishing and agriculture was particularly common given the rural setting of many coastal communities, although over time this practice became increasingly marginalised due to technological progress and the development of fishing and farming into specialised full-time occupations (Symes & Frangoudes, 2001, p.171). Recent studies of European fishermen, while limited, suggest a range of motives for multiple-job holding. In his study of fishing households in the Lofoten region of Norway, Pettersen (1996) identifies the development of non-fishing income sources as a coping strategy in response to restrictions on cod fishing. In addition to seeking alternative paid employment, fishermen were found to increase their reliance upon unemployment compensation, reduce household expenditure and draw upon their savings in order to get by. The coping strategies of fishing households were also explored by Salmi (2005) with respect to the Finnish Archipelago Sea. Four categories of household income were identified: fishing; agriculture; wage work; and service-oriented occupations (i.e. tourism and leisure). Of these four, fishing was found to contribute the highest hourly income (€9.68), although the fishermen interviewed seldom identified economic motivations of fishing. Instead, they emphasised way of life, freedom and independence as the key positive attributes (p.29). Consistent with this finding, 73% of respondents reported that they would not consider leaving the fishing industry. The author notes that in addition to fishing being a way of life, a lack of viable alternatives was identified as a key reason behind this decision.

Multiple-job holding among fishermen and aquaculture workers is also explored by Dickey and Theodossiou (2004) in their study of two coastal communities in the west Highland region of Scotland. Descriptive analysis reveals that on average, aquaculture workers received lower annual incomes and lower hourly earnings compared to fishermen, and displayed a higher level of multiple-job holding. Around one-quarter (27%) of aquaculture workers were found to hold more than one job, compared with 11% of fishermen (p.23).
Moonlighters were found to be older, more likely to be married and better educated than non-moonlighters, although the presence of children was not found to vary significantly. Moonlighters were also found to work less hours in their primary job than non-moonlighters, which suggests that moonlighting is conducted for reasons other than the hours-constrained motive (p.23). The development of estimation models to explore moonlighting behaviour indicates that the primary motive for moonlighting among fishermen and aquaculture workers is not one of survival. The authors find little evidence that lower paid, uneducated individuals are more likely to moonlight; and neither the wage received from the primary job, nor the non-earned incomes were found to have a significant effect upon the likelihood of moonlighting. Instead, they suggest that fishermen and aquaculture workers may adhere to the portfolio model in which they select job packages that optimise the mean and variance of their income (p.34). The focus of this study upon multiple-job holding in rural areas where employment opportunities are restricted has relevance to fishing communities in parts of the English Channel. In such cases, multiple-job holding becomes a survival strategy for low-income households whereby “the sustainability of rural communities may be largely dependent on the ability of individuals to supplement their incomes through an additional source of income other than their primary jobs” (2004, p.4). Furthermore, the finding that education is seen to have a positive influence upon moonlighting leads the authors to conclude that the development of educational opportunities has potentially important implications for the economic sustainability of isolated rural communities.

3.5.3 Supporting evidence

Consistent with the strategy of diversification, the limited exploration of multiple-job holding within the fishing industry means that further insight can be gained from studies in alternative sectors. An example of this is provided in a recent study of offshore workers in the North Sea oil and gas industry, conducted by Dickey et al. (2011). This industry is well suited to examining the determinants of multiple-job holding for two key reasons: employees face a constraint on the number of hours they may work due to governmental legislation. However, the nature of employment in this industry (i.e. living and working offshore) means that employees are typically well paid. The authors identified a number of significant differences between those who moonlight (or would consider moonlighting) for financial reasons, compared with those who do so for non-pecuniary benefits. Most notably, respondents in the former group were found to earn a lower monthly wage, and have a smaller percentage of their partners in work (p.5). Further examination using regression analysis revealed that the larger the household size, the less likely an individual is to take a second job for financial reasons. The presence of children in the
household is also found to be a positive determinant for men taking a second job but a negative one for women – a finding that remains consistent with other studies (e.g. Wu et al., 2009). With respect to age, individuals are more likely to take a second job for financial reasons when they are younger, and for non-pecuniary benefits as they progress in age. The authors also find no evidence that individuals adopt multiple-job holding as a response to job insecurity in their primary occupation.

Given the relevance of agricultural literature to fisheries diversification, it is pertinent to examine a number of key studies of multiple-job holding among farm households. Mishra and Goodwin (2001) explore the relationship between farm income risk (measured by income variability) and off-farm labour supply among a sample of farm households in Kansas. The authors find that income variability has a significant positive effect upon off-farm labour supply – consistent with risk averse behaviour. Further analysis reveals that farmers with greater years of experience are less likely to engage in off-farm employment; and similarly, educational achievement is not seen to increase the off-farm labour supply of farmers or their spouses (p.884). With respect to farm characteristics, farm size is found to be negatively related to the supply of off-farm labour, but no significant relationship is observed between the type of farming practised and off-farm employment. Farmers with more children are more likely to work in off-farm employment – although the authors suggest that this may simply reflect the fact that they need to work more hours in total (p.886).

A later study by Goodwin and Mishra (2004) builds upon these findings by analysing data from a US-wide survey of 7,699 farms conducted in 2001. The authors examine the relationship between farming efficiency (measured by productivity) and off-farm labour and conclude that each variable is endogenous to the other i.e. farm efficiency and off-farm labour supply are jointly determined (p.728). Another key finding is that greater farm experience is negatively correlated with farming efficiency, a result which appears to be counterintuitive, but may be explained by the observation that experience is highly correlated with age. As such, older farmers may be less inclined to adopt new technologies in farming, leading to a consequent decrease in farm productivity. This finding has particular relevance to the study of commercial fishing, where the adoption of new practices and technological developments is clearly related to financial performance.
3.6 Understanding why fishermen fish

3.6.1 Segmented labour markets

The theory of segmented labour markets challenges the neoclassical view of the competitive labour market, by shifting the focus upon issues of labour supply to those of labour demand. Where neoclassical theory assumes that the labour market is a single competitive market in which individuals are able to choose freely between job options – based upon their own tastes, preferences, abilities and skills; the segmentationalist approach argues that the labour market is composed of a number of non-competing segments (Leontardi, 1998, p.64). Within these segments, rewards to human capital are seen to vary because institutional barriers prevent individuals from benefitting equally from education and training. Thus, the segmentation of labour markets results not from differences in skills, but from the existence of institutional ‘rules’ and social influences. Smith (2003, p.173) identifies three principal variants of segmented labour market theory: the ‘job crowding’ hypothesis – focused on wage differentials resulting from worker discrimination among different occupational categories; the ‘insider-outside theory’ which segments the labour market on the basis of employment or union membership; and the ‘dual labour market’ hypothesis which proposes primary and secondary sectors of employment. Of these three variants, the dual labour market hypothesis is considered to have greatest relevance to the fishing industry and will be discussed below.

The dual labour market hypothesis implies that jobs belong to one of two sectors: a ‘primary sector’ characterised by economic security, career development and high wages determined by institutional rules; and a ‘secondary sector’ typified by unskilled employment, limited career progression and low wages determined competitively (Leontaridi, 1998, p.69). One of the key principles of the dual labour market theory is the reward of human capital. In the primary sector, wages are determined by access to internal job structures – reflecting the education, training and experience of workers. In contrast, wages in the secondary sector do not reflect human capital; employers regard the productivity of workers as being equal and have less concern regarding the turnover of employees (McNabb & Psacharopoulos, 1981, p.444). McNabb and Psacharopoulos identify two notable outcomes of this duality: firstly, the age-earnings profiles of workers in the secondary sector are relatively flat because the additional experience gained with age does not increase earnings beyond the first few years of employment – rather it is the variation in hours worked that has greater influence upon income distribution. Secondly, the poorer rewards provided to secondary-sector employees can result in individuals
developing ‘bad working habits’ that are incompatible with the primary sector, and hence restrict their mobility between sectors (1981, p.445).

There is a distinct lack of academic literature relating the dual labour market hypothesis to the fishing industry – despite its apparent applicability. It may be argued that a number of secondary-sector characteristics are evident within the UK industry – most notably low/irregular incomes, high turnover, a lack of formally recognised skills, and limited career progression. Indeed, Symes and Phillipson (2009, p.2) observe that “regular employment and stable incomes are conditions not normally associated with fisheries”. However, the results of research studies on the applicability of this hypothesis to the wider UK labour market are mixed. For example, Bosanquet and Doeringer (1973) examined circumstantial evidence on age-earnings profiles, job tenure, internal labour markets, and discrimination; and concluded that the symptoms of market duality were present in Britain – including a secondary sector characterised by low levels of skill and on-the-job training, low earnings, infrequent opportunities for promotion, and relatively high turnover (p.432). In contrast, McNabb and Psacharopoulos (1981) used data from the General Household Survey to explore the existence of a dual labour market in the UK and found a number of inconsistencies with theory. The authors concluded that the results raise doubts over the relevance of the hypothesis to the UK – but suggest that this may result from difficulties associated with testing the hypothesis due to the variety of economic, sociological and psychological attributes that it encompasses (1981, p.442). Such difficulties of measurement are also noted by Leontaridi (1998, p.96) who argues that while the segmentation of the labour market is an established fact, it is the nature of this segmentation that is unproven.

3.6.2 Opportunity incomes

An alternative explanation for why individuals remain within the fishing industry when faced with financial challenges may be found with respect to opportunity incomes. The basic premise of this theory is that fishermen remain within the industry because their income exceeds that which could be earned in alternative employment. As such, fishermen will leave the industry should the opportunity to increase their earnings arise. Support for this proposition is found in Cunningham’s (1994) study of fishermen’s incomes where the author cites a number of examples of fishermen leaving the industry in favour of higher earnings. These include the work of Panayotou (1982) who observed the movement of fishermen into more lucrative employment opportunities in the oil industry among Red Sea and East African countries; and Heen (1988) who found that Norwegian fishermen cited better alternative job opportunities as a key reason for leaving the industry.
between 1970-1980. Heen notes that labour market conditions had improved for fishermen during their time in the industry, citing three main reasons for this: the labour force had become older and more experienced; employees had acquired increased skills through education and experience in the fishing industry; and the labour market had expanded during this period (1988, p.402).

The common theme of the above studies, however, is one of positive opportunity incomes – which appears to contrast with the situation experienced by fishermen in the UK. While a number of fishermen have moved into more lucrative employment (e.g. the North Sea oil and gas industries), the dominant issue appears to be one of limited alternative opportunities – particularly in peripheral areas (Symes, 2000). Cunningham (1994) acknowledges that the influence of low opportunity incomes in fishing is complicated by a number of factors, including the presence of non-pecuniary benefits and difficulties in distinguishing returns to labour and other services. Nonetheless, having examined the relationship between income and exploitation, he concludes that: “fishermen’s incomes are determined by opportunity incomes rather than by anything that happens within the fishery itself, except perhaps in the short run” (Cunningham, 1994, p.244).

### 3.6.3 Non-pecuniary benefits of fishing

If we accept the existence of labour market segmentation in the UK then fishing may be viewed as a secondary sector occupation given the employment characteristics experienced by many (but not all) fishermen. Consequently, individuals may find their ability to move into primary sector occupations constrained by low levels of education, a lack of formal skills, or the presence of low opportunity incomes – as noted by Cunningham (1994). However, this hypothesis is insufficient in explaining why fishermen choose to remain within the industry, rather than find alternative secondary sector employment offering higher wages and/or better working conditions. While the ability to engage in alternative employment will clearly be determined by the presence of opportunities, an additional explanation may be found with respect to the non-pecuniary benefits of fishing.

The presence of non-pecuniary benefits in fishing has been identified by a number of authors. Cunningham (1994, p.242) notes that the utility of fishermen frequently depends upon a “psychic return to the activity”, termed ‘worker satisfaction bonus’ by Anderson (1980). This issue is also discussed by Smith (1981, p.181) with respect to the omission of ‘cultural factors’ from bioeconomic approaches to fisheries management. In addition to the work of Anderson, Smith cites the findings of Pogge and Gersuny (1974) who studied occupational objectives of fishermen and mill workers in New England, and found that
fishermen optimised independence, challenge, lack of regimentation, and being outdoors; whereas mill workers sought security, regular hours, and steady work (1981, p.181). Smith (1981, p.187) examined the issue of satisfaction in a survey of commercial and recreational fishermen in the Pacific salmon fishery. The results revealed the existence of a satisfaction bonus for commercial fishermen with respect to the factors of occupation, general and personal economic well-being, and identity. The factor of ‘pleasure’ was found to have a negative satisfaction bonus among full-time commercial fishermen, but was positive among those who fished part-time – including those who trolled for salmon. This finding is significant because it indicates the heterogeneity of job satisfaction within fishing i.e. some fishing methods are more enjoyable than others. While Smith’s study does not provide an inter-industry comparison, the author examines indirect evidence and concludes that commercial fishing does have a positive satisfaction bonus relative to other occupations (1981, p.189).

The identification of a worker satisfaction bonus in fishing relates to the principles of social capital theory; introduced to the social sciences during the late 1970s by the economist Glenn Loury, and developed by sociologists Pierre Bourdieu and James Coleman (Aguilera & Massey, 2003, p.671). Portes (1998, p.2) notes that the key underlying concept of social capital theory – that involvement and participation in groups can create positive outcomes for individuals and communities, is historically well established. However, he attributes the first contemporary analysis of social capital to Bourdieu who defines it as:

“…the aggregate of the actual or potential resources which are linked to possession of a durable network of more or less institutionalized relationships of mutual acquaintance or recognition” (Bourdieu, 1985, p.248).

An alternative definition is provided by Putnam (2000), who was influential in popularising the concept through his seminal work on social change in American society:

“Whereas physical capital refers to physical objects and human capital refers to properties of individuals, social capital refers to connections among individuals – social networks and the norms of reciprocity and trustworthiness that arise from them” (Putnam, 2000, p.19).

The empirical application of social capital theory to fisheries has tended to focus upon the interrelationship of social capital and social networks upon fisheries management, rather than financial performance. Furthermore, much of this work has taken place within the context of developing world fisheries (e.g. Bodin & Crona, 2008; Islam, Yew, Abdullah &
Viswanathan, 2011). In a developed world context, Fowler and Etchegary (2008) examine social capital within Canadian fishing communities, following the introduction in 1992 of 2-year moratorium on the Newfoundland and Labrador cod fishery. A range of dimensions of social capital are identified, including help and support; cohesion, equality and trust; perceptions of leadership; and community volunteering and civil engagement. Support programmes introduced in response to the moratorium are criticised for failing to account for the significant historical and cultural importance of the fishery – particularly with respect to the “sense of purpose and identity” derived from fishing (p.321). Furthermore, the study revealed that a number of these dimensions had deteriorated following the closure of the fishery.

In light of the above findings, it is evident that social capital exists within fishing in a number of forms – which are embodied in the non-pecuniary benefits that fishermen derive from their occupation. The value that fishermen place upon social capital will determine how they trade-off these benefits against the disagreeable aspects of fishing, and the opportunity incomes that may be earned in alternative occupations. A notable outcome of this process is that fishermen may be reluctant to leave the fishing industry even when it represents the most economically rational strategy. As such, it necessary to consider the role of cognitive, cultural and socioeconomic factors when exploring the response strategies adopted by fishermen (Daw et al., 2012, p.1).

3.7 Summary

Fishermen in the English Channel currently operate within a framework of administrative, environmental and socioeconomic challenges which have significant influence upon their financial performance. While many of these challenges are historically well-established – or indeed inherent aspects of the fishing industry, evidence suggests that the magnitude of these challenges is increasing. The most notable examples of this include the administrative challenges imposed by domestic and European fisheries managers, and escalating operating costs. The impact of these challenges upon fishing activity, and the ultimate viability of fishing as an occupation, is dependent upon a range of factors; including the size of the vessel, the type of fishing it undertakes, and the location of this activity. However, a notable distinction emerges in the English Channel between the over 10m and under 10m sectors – which suggests that the relative impact of challenges is greater among fishermen in the latter.
The strategies that fishermen may adopt in response to these challenges are diverse and encompass those developed within and outside the catching sector. However, through the examination of these strategies, and a review of the supporting literature, three main observations emerge:

1) Fishermen may adopt a number of strategies in response to falling profitability, but the viability of these strategies is highly variable;

2) Even where opportunities exist, fishermen may be deterred from developing a response strategy by the presence of multiple constraints;

3) The nature and type of response strategies adopted by fishermen is ultimately determined by a range of factors that operate both externally and internally to the individual fishing business.

Through the review of both theoretical literature and empirical research findings, this chapter has sought to provide a foundation to understanding the challenges faced by fishermen, their impact upon financial performance, and the strategies adopted by fishermen in response to these challenges. Having established this context, the following chapters of this thesis focus upon the design, analysis and interpretation of a research study to explore this ‘challenge-impact-response’ process among fishermen in the English Channel.
4. Methodology

4.1 Introduction

Silverman (2005, p.98) defines ‘methodology’ as “a general approach to studying research topics” which encompasses the choices we make about cases to study, methods used to collect data, and forms of data analysis, in planning and executing a research study. Having established the research questions in the opening chapter, the aim of this chapter is to provide a justification of the methodological design of this study, and the resultant methods used in the collection and analysis of data. It is imperative, however, to situate this methodology within a broader philosophical context. The competing paradigms of philosophical inquiry are based upon distinct ontological and epistemological assumptions that shape both the purpose of research, and the methodologies used. Thus, the first section of this chapter commences with a brief discussion of philosophical approaches to research, from which a methodological design is proposed and the key terms of reference established. The second part of the chapter provides a detailed description of the design of this research study, including discussion of the individual methods used in the collection and analysis of data. Because the design of this study consists of three distinct ‘phases’, each phase is addressed within a separate section for the purposes of clarity. The final two sections of the chapter address issues of validity, reliability, and ethical considerations, for each phase of research.

4.2 Research approach and design

4.2.1 Methodological design

Philosophical considerations

Easterby-Smith, Thorpe and Jackson (2008, p.56) identify three key reasons why an understanding of philosophical issues is beneficial to research design: firstly by clarifying the design with respect to the type of data required to answer the questions being investigated; secondly, by allowing the researcher to identify the strengths and limitations of different research approaches; and thirdly by assisting the researcher to identify or create designs that may be unfamiliar to them. At an abstract level, the influence of philosophy upon research design can be traced to an underlying philosophical paradigm that provides the overall framework through which reality is viewed, the basic elements it contains (ontology), and the nature and status of knowledge (epistemology) (Silverman, 2005, p.98). It is these ontological and epistemological assumptions that determine the
role of theory in the research process, and subsequent methodological approaches. Guba and Lincoln (1994, p.105) identify four philosophical paradigms that compete for acceptance as “the paradigm of choice” in informing and guiding inquiry: positivism; postpositivism; critical theory (and its related positions); and constructivism. Each of these paradigms is outlined in table 4.1 with respect to their main ontological, epistemological and methodological foundations.

**Table 4.1: Summary of competing philosophical paradigms (based on Guba & Lincoln, 1994)**

<table>
<thead>
<tr>
<th>Item</th>
<th>Positivism</th>
<th>Postpositivism</th>
<th>Critical Theory et al.</th>
<th>Constructivism</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Ontology</strong></td>
<td>‘Real’ reality but apprehendable</td>
<td>‘Real’ reality but imperfectly and probabilistically apprehendable</td>
<td>Virtual reality shaped by social, political, cultural, economic, ethnic, and gender values</td>
<td>Relativism – local and specific constructed realities</td>
</tr>
<tr>
<td><strong>Epistemology</strong></td>
<td>Findings ‘true’</td>
<td>Findings probably ‘true’</td>
<td>Value-mediated findings</td>
<td>Created findings</td>
</tr>
<tr>
<td><strong>Methodology</strong></td>
<td>Verification of hypotheses; chiefly quantitative methods</td>
<td>Falsification of hypotheses; may include qualitative methods</td>
<td>Dialogic/dialectical</td>
<td>Hermeneutical/ dialectical</td>
</tr>
</tbody>
</table>

The positivist paradigm is commonly linked with the traditional approach or ‘received view’ of conducting research in the natural sciences, and remains influential today – including within the social sciences. However, the development of competing paradigms during the latter half of the twentieth century stems from a growing dissatisfaction with positivism. Critics questioned whether the central ontological and epistemological assumptions of positivism were applicable to human research subjects; particularly the notion of an independent and external reality that is driven by immutable natural laws and mechanisms (Guba & Lincoln, 1994, p.109). Thus, the development of competing paradigms represents a shift towards acknowledging the meaning and purpose that humans attach to their behaviour, and the contexts within which they exist. In line with this stance, the traditional approach of *deductive*ism – in which the researcher deduces a hypothesis on the basis of existing theoretical knowledge and then applies a methodology to test it; is challenged by an emphasis upon *inductive*ism where research findings are used to generate rather than verify theory.
Research design

When considering the influence of philosophy upon the design of this research study, it is important to note that paradigms and their associated methodologies represent different ways of looking at phenomena that cannot be proven to be true or false – only more or less useful (Silverman, 2005). In order to determine the most appropriate paradigm for informing this research design, it is beneficial to re-examine the role of theory. In Chapter 3, a review of literature on diversification and multiple-job holding revealed a number of existing theoretical perspectives relating to these two strategies, which are briefly summarised below:

- The competency approach to diversification dictates that the direction in which a firm diversifies depends partly on perceived market opportunities, but primarily upon the nature of available resources (Rickard, 2006);

- Agricultural diversification can be viewed as the outcome of a range of factors working ‘externally’ and ‘internally’ to the farm household (Ilbery et al., 1997b);

- Multiple-job holding can be explained by two main motives, both of which are based on utility-maximising behaviour: the ‘hours constrained’ motive and the ‘heterogeneous jobs’ motive.

Significantly, these perspectives have not been developed within the context of the fishing industry, but instead relate to general principles or alternative employment sectors. It is possible therefore to develop testable hypotheses based upon the applicability of this theory to fishermen in the English Channel. However, while this approach would undoubtedly contribute to our current understanding of the subject area, the positivist assumptions upon which it is based are arguably restrictive in understanding fishermen’s behaviour. Fishing in the UK is a diverse industry, characterised by a high proportion of individually-owned enterprises which makes generalisation inherently difficult. In order to understand the multiple contexts within which fishermen make decisions it is necessary to acknowledge the meaning and purpose that they attach to their behaviour.

An alternative approach, therefore, is to move towards a position of critical theory or constructivism which acknowledges the respective influence of values or constructions in generating knowledge. Furthermore, the predominance of qualitative methods in these paradigms allows the researcher to develop a more thorough understanding of these issues than would be possible with a traditional positivist design. The main limitation of this approach is that it may be seen to conflict with the principal purpose of the research, which makes a number of pre-defined assumptions with respect to the objectives of being
a fisherman; the challenges they face in meeting these objectives; and the strategies they adopt in response to these challenges. To this end, the main focus of this study is to explain fishermen’s behaviour within the context of this assumed reality, rather than investigate how this reality has been shaped or constructed.

In light of the above considerations, a decision was taken to inform the design of this research study using the postpositivist position of critical realism. Attributed to the work of the philosopher Roy Bhaskar during the 1970s, critical realism assumes that an objective reality exists independently of our thoughts, but proposes that “all description of that reality is mediated through the filters of language, meaning-making and social context” (Oliver, 2011, p.4). Thus, this approach may be seen to adopt a philosophical ‘middle ground’ between the natural and social sciences, providing a model of scientific explanation that avoids both positivism and relativism (Robson, 2002, p. 28). In contrast to deductive or inductive reasoning, critical realism applies a process of retroduction in which the researcher first asks “what must be true for this to be the case?” before abstracting potential causal mechanisms (Oliver, 2011, p.9). Furthermore, the approach is not dominated by a specific methodology but instead bridges quantitative and qualitative approaches without a tendency to favour either (Alvesson & Skoldberg, 2009, p.15) – thereby facilitating the development of mixed-method research. The application of mixed-method research was deemed to be particularly suitable for this study because the research questions identified in section 1.2 contain exploratory, descriptive and explanatory dimensions. As such, a mixed-method approach can enable the researcher to utilise quantitative methods in establishing empirical regularities between objects, in conjunction with qualitative methods to abstract causal mechanisms (Yeung, 1997, p.57).

As a result of these considerations, a research design was developed consisting of three distinct ‘phases’:

1) An inventory of existing fisheries diversification activities in the English Channel;

2) A survey of fishermen and industry stakeholders;

3) A qualitative phase of research with fishermen.

One of the key methodological issues in conducting mixed-method research concerns how different methods of data collection are integrated into the wider research design. Creswell, Plano Clark and Garrett (2009) identify five major designs which they classify according to whether the research seeks to merge quantitative and qualitative data concurrently, or instead uses one type of data to build upon the other sequentially. The design proposed above is consistent with a sequential explanatory design, consisting of...
two quantitative phases followed by a qualitative phase. Each phase is designed to build upon the results of the phase that precedes it by developing knowledge and understanding of key areas of interest. An additional advantage of using this approach is that it enables triangulation, by employing multiple sources that can enhance the rigour and validity of the research (Robson, 2002, p.174). In this context, two forms of triangulation can be achieved: methodological triangulation by combining quantitative and qualitative approaches; and data triangulation through the use of multiple data collection methods e.g. using primary and secondary data to establish existing diversification activities.

Upon establishing the research design, it was necessary to consider how the resultant data would be used with respect to theory. The traditional divide between quantitative and qualitative research methodologies can be seen to reinforce a distinction between theory verification and theory generation – which becomes confused with the design of mixed-method critical realist research. This problem may be overcome by conducting research within the framework of grounded theory – a research methodology developed by the sociologists Barney Glaser and Anselm Strauss (1967) in response to the dominant position of positivism among research in the social sciences. The basic tenet of grounded theory is that theory is grounded in data obtained from studying a phenomena – in the sense that “it is discovered, developed, and provisionally verified through systematic data collection and analysis of data pertaining to that phenomenon” (Strauss & Corbin, 1990, p.23). Robson (2002, p.191) argues that grounded theory is not actually a theory, but instead constitutes a strategy for conducting research and a style for analysing the resultant data – both of which involve explicit procedures. This combination of a naturalistic approach with a “positivist concern for a systematic set of procedures” has been identified as one of the key strengths of grounded theory by allowing the researcher to be both scientific and creative (Babbie, 2007, p.296).

In recent years, the application of grounded theory as a critical realist methodology has been increasingly advocated by social scientists, including Oliver (2011) who examines their compatibility and argues that together they offer an “accessible and congruent research approach” (p.2). The compatibility of critical realism and grounded theory lies in a number of shared core characteristics, including a rejection of the positivist position of deduction and theory verification; and a desire to capture as much of the complexity of the world as possible by focusing upon multiple perspectives (Corbin & Strauss, 2008, p.8). Indeed, in her analysis of the philosophical perspectives of grounded theory, Annells (1997) concludes that the classic mode leans “ontologically toward critical realism and a modified objectivist epistemology” (p.389). In examining the application of critical realist
grounded theory, Oliver (2011) identifies a tension that must be overcome between the use of retroduction in critical theory, and grounded theory’s traditional reliance on induction. The author notes, however, that in their attempts to develop the flexibility of grounded theory, constructivists have placed greater emphasis upon abduction as a key epistemological strategy. Abduction inference is a process in which the researcher considers all possible explanations for the data, from which hypotheses for each explanation are formed and then examined before arriving at the most plausible explanation (Charmaz, 2006, p.104). Consequently, Oliver argues that grounded theory now typically accommodates “researchers’ pre-existing theoretical knowledge, hunches and hypotheses” as the foundation for the development of more abstract theory (2011, p.9). Furthermore, given that critical realists seek to develop “vertical explanations” by linking events and experiences to their underlying generative mechanisms, this vertical analysis represents a distinguishing attribute of critical realist grounded theory.

In summary, this study may be seen to adhere to a critical realist interpretation of grounded theory due to the influence of existing theoretical knowledge in establishing the research aims and objectives. While the research questions identified in section 1.2 do not explicitly seek to verify existing theories relating to diversification and multiple-job holding, they have been shaped by theoretical knowledge. The influence of existing theory upon the development of grounded theory is an area of much debate, particularly as the approach was developed in reaction to the prevailing stance that research studies should have a firm *a priori* theoretical orientation (Robson, 2002, p.191). Corbin and Strauss (2008, p.40) state their preference that grounded theory research does not commence with a pre-defined theoretical framework, but acknowledge that such frameworks can be of value; for example in providing insight, direction and useful concepts. In acknowledging the role of existing theoretical knowledge in the development of this study, a case is made to define this methodological approach as one of ‘quasi-grounded theory’. This term has found increasing favour among social scientists, and has been applied to research that follows the main objectives of grounded theory but diverges from some of its ‘classic principles’. Examples include studies that explore the ‘theoretical fit’ between data and core theoretical concepts (Hamilton, 2011); and those that link emerging themes to wider economic, political and managerial trends (Baines, 2006).

### 4.2.2 Definition of terms

The definition of terms is a key requisite of research design – particularly where these terms may be subject to multiple interpretations. For the purposes of this research, the main terms to be defined relate to the research subjects (fishermen); their behaviour
under study (diversification and multiple-job holding); and the geographical scope of the study (the English Channel). These terms are examined sequentially below:

**Fishermen**

The term ‘fishermen’ has a range of meanings, and is used interchangeably to refer to individuals who catch fish for subsistence, commercial gain, or recreation; in both the marine and freshwater environment. Furthermore, fishermen in the marine environment catch not only fish but also molluscs (e.g. scallops and oysters) and crustaceans (e.g. crabs and lobsters). Capture fishing may be distinguished from fish farming or ‘aquaculture’ with respect to property rights. Unlike the wider marine environment where fish represent a common property resource that is technically ‘owned’ by no-one, aquaculture enterprises are invariably privately owned and thus more closely resemble agriculture (DeSombre & Barkin, 2011, p.116). Consequently, many of the challenges facing commercial fishermen are not applicable to the aquaculture industry. For this reason, individuals working in the aquaculture industry are not included within this research population.

Given that both males and females partake in fishing, a distinction in terminology is sometimes made between ‘fishermen’ and ‘fisherwomen’, or alternatively the gender-neutral term ‘fishers’ is used. In the UK however, ‘fishermen’ remains the term of choice within the industry – which may be explained in part by the profession being male-dominated. In light of these considerations, for the purposes of this research a ‘fisherman’ is defined as an individual who is licensed to catch fish and shellfish from the marine environment for commercial gain.

**Diversification & Multiple-job holding**

As noted in section 3.4.1, diversification is a strategy that can take a number of forms (e.g. related or unrelated) and directions (e.g. horizontal or vertical). When considered in the context of an individual fisherman, diversification into unrelated activities while continuing to fish constitutes a form of multiple-job holding or pluriactivity. In contrast, diversification into related activities (whether horizontal or vertical) is consistent with the definition of ‘fisheries diversification’ provided by Merrien et al. (2008). Both of these strategies are central to this research because they are conducted in addition to fishing – they key distinction lies in whether they maintain a link with the fishing industry or not.

In defining the terms of reference for this study, it is logical to adopt definitions from existing academic studies given their role in shaping the objectives of this research. Diversification will therefore be defined according to Merrien et al. (2008) as:
“Complementary activities to production, in link with the product, the profession or the business that fishers practice to have an additional income but also to promote products, profession or territory” (2008, p.11).

Multiple-job holding will be used to refer to the practice of an individual holding two or more jobs simultaneously, and as noted in section 3.5.1 infers the same meaning as the terms ‘dual job holding’ and ‘moonlighting’. In order to maintain a distinction between fisheries diversification and multiple-job holding, the latter is used to define employment that is unrelated to the fishing industry. Consistent with the definition of the latter provided by Dickey, Watson and Zangelidis (2010), no implications are made regarding the legitimacy of this work or the time during which it is conducted.

Geographical scope

The geographical scope of this research was influenced by the objectives of the research funding body, who stipulated that data on fisheries diversification was collected within the English Channel – as defined by the International Council for the Exploration of the Sea (ICES) management areas VIId (eastern Channel) and VIIe (western Channel) (figure 4.1). While these two management areas cover the bulk of the Channel, it is known that vessels registered at some ports in the neighbouring ICES areas of VIIc and VIIf also operate within this fishery – particularly those in the counties of Kent in the East and Cornwall in the West.

Figure 4.1: Map of ICES management areas relating to the English Channel fishery
While it was possible to extend the geographical scope of this research, there is a strong case for confining the study area of this research within the English Channel. Despite its contraction in recent years, the Channel fishery remains a significant component of the domestic fishing industry – accounting for over one-third (35%) of the UK fleet (Marine Management Organisation, 2012b). The diversity present within the fishery means that it is possible to identify participants utilising a range of different fishing practices within the study area. Furthermore, for the purposes of data collection, the researcher’s base at the University of Portsmouth is within one-day’s travel of each of the 71 Channel homeports.

Given that the Channel fishery is exploited by fishermen from a number of EU member states, in addition to British fishermen whose vessels are registered at ports outside of the Channel, it was necessary to define the target population within this geographic area. For the purposes of this research, this population is defined as fishermen operating their vessels from English homeports within or adjacent to the Channel (including the Channel Islands) who fish within ICES areas VIId and VIIe.

4.3 Inventory of fisheries diversification

4.3.1 Research design

The main objective of creating an inventory was to generate knowledge of the different types of fisheries diversification activities being practised in the Channel, together with their location and prevalence. In addition to improving general understanding, this information could be used to inform the design of the succeeding stages of quantitative and qualitative research. Given that much of the current evidence of diversification in the Channel is limited to anecdotal examples, it is difficult to establish the true nature and extent of this strategy. Thus, the creation of an inventory represents a form of documentary analysis by which secondary data sources are examined in order to derive a quantitative overview of fisheries diversification. However, unlike the analysis of administrative records based on systematic data collection, much of the existing data relating to diversification takes the form of individually unique documents which can make generalisation difficult (Hakim, 2000, p.56). Thus, one of the main considerations of the inventory design was to establish the level of detail that would be recorded – based upon both the availability of data and the resources required for its collection. Given that the main objective of the inventory was to collect descriptive data, a decision was taken to focus upon key attributes of diversification including the nature and location of activities; their origin and structure; and the number of participants. Detailed statistical data, such
as hours devoted or turnover from each activity was not collected, due to both the time required and the sensitive/confidential nature of such information. To ensure that information was collated and recorded in a consistent manner, a data collection framework was designed consisting of fourteen attributes (table 4.2).

Table 4.2: Inventory data collection framework

<table>
<thead>
<tr>
<th>Attribute</th>
<th>Format</th>
</tr>
</thead>
<tbody>
<tr>
<td>Organisation name</td>
<td>Full name</td>
</tr>
<tr>
<td>Organisation type</td>
<td>Governmental / Non-governmental / Quango / Private business</td>
</tr>
<tr>
<td>Activity type/s</td>
<td>Market-based / Leisure &amp; Tourism / Environmental activities / Non-fishing contract work</td>
</tr>
<tr>
<td>Action type</td>
<td>Individual / Collective</td>
</tr>
<tr>
<td>Geographical scope</td>
<td>NUTS-2 level &amp; ICES management area</td>
</tr>
<tr>
<td>Description of activities</td>
<td>Brief summary of activities</td>
</tr>
<tr>
<td>Direct link with fishermen</td>
<td>Yes / No</td>
</tr>
<tr>
<td>Number of fishermen engaged</td>
<td>Number</td>
</tr>
<tr>
<td>Impact on fishing business</td>
<td>Brief summary of impact</td>
</tr>
<tr>
<td>Starting point</td>
<td>Year</td>
</tr>
<tr>
<td>Stakeholders involved</td>
<td>List of individual stakeholders</td>
</tr>
<tr>
<td>Source of data (type)</td>
<td>Direct / Indirect contact</td>
</tr>
<tr>
<td>Source of data (description)</td>
<td>Brief summary of data source</td>
</tr>
<tr>
<td>Contact details</td>
<td>Full details including website</td>
</tr>
</tbody>
</table>

4.3.2 Data collection

Data collection was conducted in two sequential stages. The first stage involved the examination of secondary data sources – consisting of internet data, print-media, non-academic publications and radio/television coverage. While this data provided a foundation for the inventory, it was found to be subject to a number of limitations with respect to its validity. Denscombe (2003, p.212) notes that is naive to assume that all documentary data sources are equally valid – particularly those obtained from the internet. As such, it was necessary to scrutinise each data source with respect to its authenticity, credibility, representativeness, and meaning. Furthermore, a decision was taken to complement this secondary data with a phase of primary data collection in order to generate new records and verify existing ones – thereby constituting a form of triangulation.
In order to maximise the efficiency and accuracy of primary data collection, a decision was made to take a stakeholder-led approach by identifying a sample of key individuals on the basis of their knowledge of the English Channel fishery. To ensure that individuals were drawn from a range of backgrounds, four stakeholder groups were identified according to their roles and responsibilities within the Channel fishery, as follows:

1) **Individual fishermen operating within the English Channel**

Consistent with the definition of a fisherman proposed in section 4.2.2, this includes any individual who catches fish or shellfish for commercial gain. As previously noted, the majority of these fishermen operate from ports located within the two ICES management areas VIIId and VIIle, but may include individuals operating from ports in adjacent management areas.

2) **Organisations that directly represent the interests of fishermen**

The structure and membership of these organisations may vary considerably, but a common theme is that they are formed of fishermen (both active and retired) who work voluntarily to promote their interests of their members – particularly with respect to local and regional issues. Two main types of fishermen’s organisations are common in the UK: local fishermen’s associations that are typically open to all, regardless of vessel size and types of fishing practised; and national/regional organisations formed to represent specific interests groups. Examples of the latter include the New Under Ten Fishermen’s Association (NUTFA); the South West Handline Fishermen’s Association; and the South West Inshore Fishermen’s Association (SWIFA).

3) **Organisations that promote fishing and the fishing industry**

In contrast to the fishermen’s organisations discussed above, these organisations typically employ a paid workforce of specialists to support and promote the fishing industry. The most notable example is the Seafish Industry Authority which is funded by a levy on the sale of Seafish landed in the UK. Within the Channel, Seafish have established a number of regional bodies to promote fishing and seafood; namely Seafood Cornwall, and Seafood Devon and Dorset. In some cases, these bodies co-ordinate the delivery of additional services such as industry training. Another notable organisation is the Marine Stewardship Council (MSC), which works to develop and promote sustainable fishing practices through its certification programme and ecolabelling scheme.
4) Organisations responsible for the management and regulation of the fishing industry

The management and regulation of the UK fishing industry is conducted at two levels: the Marine Management Organisation (a non-departmental public body) is responsible for managing the national fishing fleet and UK fisheries quotas; whereas Inshore Fisheries and Conservation Authorities (IFCAs) are responsible for regional/local management (see section 2.4). Significantly, while such organisations work closely with the fishing industry, their status as managers/regulators means that their perception among some fishermen is negative rather than positive. With regards to domestic scientific research, much of this work is coordinated by the Centre for Environment, Fisheries and Aquaculture Science (Cefas).

Members of these four stakeholder groups were identified using secondary data sources, with this process being conducted concurrently with the first stage of inventory data collection. With regards to stakeholder groups 2 – 4, contact was made with individuals from thirteen key organisations working within the Channel. In each case, contact was sought with the individual within each organisation who was deemed to be best placed to verify the accuracy of existing data on diversification activities, in addition to contributing new data on the subject. With respect to individual fishermen (group 1), a sample of six individuals was identified from secondary data sources and upon the recommendation of other stakeholders. These individuals included fishermen currently practising diversification and those who have contributed to the development of diversification activities.

In all cases, stakeholders were contacted initially by telephone, but in some instances it was more feasible to conduct subsequent discussions using email. While this approach generated sufficient data to meet the objectives of the inventory, the researcher also visited three stakeholders in person as this was considered to be beneficial in developing contacts for the latter stages of research.

Data was recorded using handwritten notes, which were later transcribed and used to construct an inventory database in Microsoft Excel. The bulk of data was collected over a six-month period commencing in autumn 2009, although amendments were made throughout the length of the research study as required. The decision of using stakeholders to verify secondary data sources provide to be beneficial, as a number of activities were found to have ceased upon making contact. However, for this reason, the resultant inventory should be regarded as a ‘snapshot in time’ of fisheries diversification in the English Channel.
4.3.3 Data analysis

As previously noted, the main objective of conducting a diversification inventory was to establish a baseline of existing activities in the Channel which could be used to inform the succeeding phases of research. The design of a data collection framework using Microsoft Excel allows data to be categorised on the basis of key variables such as the location, type and extent of activities. A decision was taken to use the Geographical Information System (GIS) software Mapinfo to plot diversification activities by type according to their geographical location. The advantage of using GIS is that it allows data to be organised and viewed efficiently to assist decision making (Heywood, Cornelius & Carver, 2006, p.18). However, due to the relatively small number of observations, it was not feasible to undertake more detailed statistical analysis such as correlation and regression to explore relationships between variables.

4.4 Surveying stakeholders and fishermen

4.4.1 Research design

The principal objective of introducing a survey component into this research study was to generate quantitative data relating to the awareness, opinions and attitudes of stakeholders and fishermen in the English Channel. As noted previously, this objective was determined in part by the CHARM funding body who stipulated that in addition to establishing existing fisheries diversification activities in the English Channel, this research should seek to explore the likelihood of fishermen engaging in diversification; and determine the social, economic and administrative factors that can affect the development of diversification strategies in this region.

Surveying is an approach to data collection rather than a particular technique, and although frequently linked with the use of questionnaires, may be conducted using a range of methods including those more typically associated with qualitative research (e.g. in-depth interviewing). As such, surveys may be distinguished by the form of data collected and the methods by which it is analysed (De Vaus, 2002, p.3). The aim of the survey is to collect data relating to pre-specified variables in a structured and systematic manner from a number of ‘cases’ (usually respondents). Ensuring consistency with respect to the type of data and the manner in which it is collected allows the researcher to adopt a number of analytical techniques; including collating responses to create an aggregated measurement, and comparing results between respondents based upon their attributes. As such, surveys are generally conducted as part of a non-experimental
research design where the researcher is clear on the type of information they wish to collect (Robson, 2002, p. 232).

The research design of this survey was shaped through a process of discussion with project partners in France – in order to ascertain the best approach for meeting the objectives of CHARM project. Given that the principal subjects of this research are fishermen operating within the English Channel, it was imperative that the survey was designed to elicit the views of a sample of these individuals. However, following completion of the inventory of diversification activities it was clear that the inclusion of non-fishing stakeholders would also make a valuable contribution to this research. Upon discussion with the CHARM project partners, a decision was taken to conduct two separate surveys: an initial survey of stakeholders followed by a more detailed survey of fishermen. In both cases it was agreed that surveying would be conducted using a questionnaire-based approach, as this was deemed to be the most effective method of collecting consistent structured data.

4.4.2 Questionnaire development

In light of the different roles played by stakeholders and fishermen in the English Channel fishery, it was necessary to develop separate questionnaires for these two survey populations. However, it was considered beneficial to incorporate a number of common questions into both surveys to allow the perceptions and attitudes of different respondent types to be analysed. To this end, a series of questions were drafted around the following five themes – informed by the findings of the inventory:

- Awareness of different types of diversification activities in the Channel;
- Existing opportunities for fishermen to diversify into related activities;
- Likelihood of fishermen diversifying into related activities in the future;
- Key motives for fishermen diversifying;
- Relative importance of constraints that fishermen face in developing diversification activities.

The above themes formed the core of the stakeholder’s questionnaire (Appendix B), with additional questions added to ascertain the role of stakeholders in developing diversification activities. The fishermen’s questionnaire (Appendix C) developed these themes further to include questions on the sale and marketing of products; fishing practices and diversification behaviour; and the role of family members in the fishing
business. In both cases, consideration was given to the wording and structure of questions, as this would determine not only the type and quality of data collected (and thus the ultimate validity of the questionnaire as a research tool) but also the type of analysis that can be conducted with this data. Questionnaires were drafted in line with the key attributes identified by Denscombe (2003, p.153), namely: avoiding the use of leading questions; designing questions that are short, straightforward and unambiguous; providing respondents with sufficient options to answer; and minimising the use of technical jargon. Consideration was also given to incorporating variety into the design of questions, to prevent respondents becoming bored or falling into a ‘pattern’ of answering (2003, p.155). A decision was taken to use predominantly closed questioning due to the advantages it offers regarding questionnaire length and ease of coding. The limitation of this approach is that it restricts the amount of detail that individuals are able to provide with their responses, however, given that the survey was to be followed with a qualitative research phase this was not deemed to be problematic.

For the questions relating to awareness and motives for diversification, respondents were presented with a list from which they were asked to select all options that apply. The advantage of this technique is that it serves to prompt respondents with options that they may be aware of, yet would not have recalled if asked using an open-ended design. Additionally, these questions included an ‘Other, please specify’ option to ensure that responses absent from the presented list were recorded. For the questions relating to existing opportunities and the future likelihood of diversification, a decision was taken to adopt Likert scales. The application of scaling questions with multiple indicators can be advantageous over questions with more limited (e.g. dichotomous) response options because they provide a more thorough understanding of strength of opinion. Furthermore, by applying scaling to a range of indicators it is possible to derive a more valid and reliable assessment of a concept than may be achieved using a single-item measure (De Vaus, 2002, p.181). The advantages of the Likert scale over alternative scaling techniques include its ease of development and analysis, and its appeal to respondents – an important attribute with respect to generating considered responses (Robson, 2002, p.293). For both questionnaires, verbal scales were selected in favour of numerical scales as these were deemed to be clearer to interpret. For the question on diversification opportunities, the following four-point scale was used: Many opportunities; Some opportunities; Limited opportunities; and No opportunities. For the question on future likelihood, a five-point scale was used, comprising of Very likely; Likely; Neither/nor; Unlikely; and Very unlikely.
4.4.3 Exploring constraints upon diversification

A review of supporting literature and discussion with stakeholders identified five main ‘types’ of constraint upon fishermen diversifying into related activities:

1) Economic factors: fishermen may decide not to diversify into new activities because they are not economically viable due to lack of profitability, financial risk and/or difficulty in accessing the required capital finance.

2) Social factors: fishermen may be reluctant to diversify into new activities because they detract from the tradition of fishing, or their role and identity as fishermen. Diversification activities may also require new skills that fishermen are unable to provide or unwilling to develop.

3) Lack of opportunities: there may be a lack of viable opportunities to diversify into other activities in the area in which the fisherman is located; either through lack of demand or market saturation.

4) Lack of information: fishermen require information about the viability of different types of diversification activities, what they involve, and how profitable they may be in order to decide whether to diversify.

5) Administrative constraints: fisherman may be restricted from diversifying into new activities because of national or regional regulations. Alternatively, fishermen may be deterred from diversifying because of the complexity of the administrative process required to develop new activities.

While the importance of these constraints may be determined using Likert scales, this technique does not provide a measure of the relative importance that respondents attribute to each variable. It cannot be assumed that a respondent who provides the same rating for two different variables will hold those variables in equal importance if asked to rate them in relation to each other. A measure of relative importance may be achieved via the use of a choice experiment, in which respondents are presented with a series of hypothetical scenarios from which they select preferences. However, the limitation of this approach is that the choice experiment considers a respondent’s preference in relation to groups or combinations of objectives, rather than individual objectives (Mardle, Pascoe & Herrero, 2004, p.2). An alternative strategy is to use a qualitative technique such as in-depth interviewing to explore respondents’ perceptions of different constraints verbally. While this approach enables the researcher to explore the
reasoning behind the respondent’s choices, it is inherently time consuming and creates potential difficulties for interpreting the resultant data in a quantifiable form.

In light of the above considerations, a decision was taken to use a form of multi-criteria decision analysis called the Analytic Hierarchy Process (AHP). AHP is based upon the premise that to make a decision: “…we need to know the problem, the need and purpose of the decision, the criteria of the decision, their sub-criteria, stakeholders and groups affected and the alternative actions to take” (Saaty, 2008, p.84). Criteria and sub-criteria can be numerous; comprising of both tangible and intangible factors which an individual effectively trades off during the decision making process. AHP seeks to capture this process by identifying a hierarchy of decision making in relation to a pre-specified goal. The criteria and sub-criteria that comprise this hierarchy are presented to the respondent as a series of paired objectives (‘pairwise comparisons’) at opposing ends of a numerical scale. In each case, the respondent is asked to select the position on the scale that best represents the importance/preference of one objective relative to the other. Typically a 9-point scale is used where 9 represents the extreme importance of one objective over the other, and 1 represents equal importance between the two objectives (figure 4.2). Through a process of normalisation, a score is derived which reflects the relative importance attributed to each objective. Data can then be weighted and aggregated to create combined scores for the research population, or to enable comparison between sub-groups of respondents.

**Figure 4.2: Example of 9-point pairwise comparison scale**

<table>
<thead>
<tr>
<th>Objective A</th>
<th>Objective B</th>
</tr>
</thead>
<tbody>
<tr>
<td>9</td>
<td>1</td>
</tr>
<tr>
<td>8</td>
<td>2</td>
</tr>
<tr>
<td>7</td>
<td>3</td>
</tr>
<tr>
<td>6</td>
<td>4</td>
</tr>
<tr>
<td>5</td>
<td>5</td>
</tr>
<tr>
<td>4</td>
<td>6</td>
</tr>
<tr>
<td>3</td>
<td>7</td>
</tr>
<tr>
<td>2</td>
<td>8</td>
</tr>
<tr>
<td>1</td>
<td>9</td>
</tr>
</tbody>
</table>

AHP offers a number of advantages over more traditional techniques of respondent elicitation. Given that the methodology has its roots in mathematics and psychology, it is not necessary to ensure statistical generalisation; indeed Herath (2004, p.266) argues that a sample size of one is theoretically sufficient enough to implement AHP. As such, the methodology has been used effectively in the fisheries sector with samples of less than 50 key representatives or stakeholders (Mardle et al., 2004; Whitmarsh & Palmieri, 2009).
An additional advantage lies in the use of pairwise comparisons which reduce the cognitive burden of prioritising decision-making (Himes, 2007). The numeric preference scale represents a consistent non-monetary unit of measurement, thereby allowing the comparison of quantitative and/or qualitative criteria, in addition to those with or without a market price/value. The relative simplicity of this format means that the interviewer need not be present to guide the respondent through the process – as may be the case with more complex techniques such as contingent valuation.

Application of AHP

The successful development of an AHP survey rests upon four main stages (Wattage & Mardle, 2007):

1) The development of a hierarchy of criteria;
2) A pairwise comparison survey to elicit the preferences of individuals;
3) Analysis of the individuals’ results;
4) Aggregation of data to establish the relative importance attributed to variables.

The development of the AHP hierarchy is discussed below, while an overview of the pairwise comparison survey, analysis and aggregation of results is provided in the respective sub-sections relating to the survey of stakeholders and fishermen.

Developing the AHP hierarchy

The development of the AHP hierarchy involves the researcher establishing a clear goal and then identifying the criteria and sub-criteria that may realistically influence this goal. It is therefore essential that the hierarchy is representative of the system under study, and that the criteria are clear and convey the same meaning to all respondents (Wattage & Mardle, 2007, p.365). Having established the goal as ‘constraints upon diversification’, a hierarchy was developed using multiple data sources – including previous research studies and direct contact with Channel fishers and stakeholders. The outcome of this process was a hierarchy consisting of five first-tier criteria and fourteen respective second-tier sub-criteria (table 4.3).

Table 4.3: Hierarchy of constraints upon fisheries diversification

<table>
<thead>
<tr>
<th>Economic</th>
<th>Social</th>
<th>Lack of information</th>
<th>Lack of opportunities</th>
<th>Administrative</th>
</tr>
</thead>
<tbody>
<tr>
<td>Profitability</td>
<td>Attitudes/preferences</td>
<td>Provision</td>
<td>Lack of</td>
<td>National legislation</td>
</tr>
<tr>
<td>Financial risk</td>
<td>Knowledge &amp; skills</td>
<td>Quality</td>
<td>demand</td>
<td>Regional regulation</td>
</tr>
<tr>
<td>Lack of capital</td>
<td>Formal qualifications</td>
<td>Accessibility</td>
<td>Market saturation</td>
<td>Bureaucracy</td>
</tr>
</tbody>
</table>

98
Consideration needs to be given to the number of criteria and resultant pairwise comparisons presented to respondents to avoid fatigue and inconsistency. The number of pairwise comparisons can be derived using the formula: \[ \frac{n(n-1)}{2} \], where \( n \) represents the number of individual criteria (Whitmarsh & Wattage, 2006, p.118). It is possible to reduce the number of pairwise comparisons by comparing all of the first-tier criteria, but only comparing sub-criteria within their respective criteria groups only – rather than both within and between groups (see Whitmarsh & Palmieri, 2009). The use of this technique for the hierarchy in table 4.3 resulted in ten first-tier pairwise comparisons, and a further thirteen second-tier comparisons. However, piloting the questionnaire with a sample of fishers and stakeholders revealed that twenty-three pairwise comparisons was deemed to be excessive. Upon discussion with CHARM project partners, an agreement was made to focus upon the first-tier of criteria as this would provide the most valuable insight into diversification constraints. During questionnaire design, it became clear that the opportunity existed to add further pairwise comparisons to the stakeholder questionnaire – given that respondents were only to be asked about their attitudes rather than behaviour. As a result, a decision was taken with project partners to incorporate the second-tier of economic criteria into this questionnaire.

4.4.4 Sampling and recruitment

One of the main considerations in selecting a sample for the stakeholder and fishermen’s surveys concerned the issue of statistical inference. In order to use survey results to derive valid generalisations of the wider research population it is necessary to adopt probability sampling – where each individual in the population has an equal and known chance of being selected to participate. Consideration must also be given to the influence of sample size upon the degree of accuracy (or conversely sampling error): larger samples result in lower sampling error and a greater confidence that results are reflective of the wider research population. This principle remains applicable when splitting the sample into sub-groups, for example, on the basis of specific respondent attributes. However, it is important to note that it is the absolute size of the sample which matters, rather than its size as a percentage of the total population (Hague, Hague & Morgan, 2004, p.83). For example, a sample of 100 individuals will yield a sampling error of +/- 10% (based upon a 50/50 response at the 95% confidence level), whereas the same response from a sample of 1,000 individuals yields a far lower sampling error of +/- 3%. The exception to this rule is when the sample size represents a sizeable proportion of the total population e.g. 10% (De Vaus, 2002, p.81).
Given the above considerations, to successfully administer probability sampling required not only the resources to achieve a sufficient number of interviews, but significantly a full ‘list’ of the research population (Robson, 2002, p.262). While collecting data for the inventory, the researcher sought the advice of a number of stakeholders with respect to the feasibility of meeting these two requirements. The outcome of these discussions was that surveying was best completed using face-to-face interviewing, which would ensure a much higher response rate, but at the expense of the number of interviews that could be conducted. Furthermore, contact with representatives of the regional IFCAs revealed that it was not possible to access a contact list of registered fishermen due to data protection issues. For these reasons a decision was taken to adopt a non-probability sampling strategy informed by ‘purposive sampling’, whereby participants are selected on the basis of satisfying the specific needs of the project (Robson, 2002, p.265). This approach is particularly relevant for conducting an AHP study, which despite its fixed design is essentially a qualitative rather than quantitative technique. Furthermore, it is possible to combine this approach with snowball sampling as a means of identifying additional respondents who satisfy the objectives of the research. Given that non-probability sampling was being used, the issue of bias that inevitably results from snowball sampling (David & Sutton, 2011, p.232) was not considered to be problematic. The application of this sampling strategy to the respective populations of stakeholders and fishermen is outlined below.

Stakeholder survey sampling

The diversity of the English Channel fishery as a marine resource means that the individuals and organisations which may be identified as stakeholders are potentially comprehensive. Previous stakeholder-focused research in the fishing industry and marine environment has acknowledged this diversity. For example, in her work on stakeholder objectives for managing Marine Protected Areas (MPAs), Himes (2007) defines a stakeholder as “anyone who is invested in the outcome of management actions or decisions related to an MPA” (p.601). Similarly, Hilborn (2007) notes that in addition to the ‘traditional’ stakeholder group of consumptive users (i.e. fishermen), governments, environmental non-governmental organisations (NGOs) and the general public all have a stake in fisheries management. In light of the above observations, it was necessary to sample stakeholders from a range of backgrounds, while ensuring that they were able to contribute knowledge on the subject of diversification. For this reason, a decision was taken to design the sampling strategy around the four stakeholder groups identified during data collection for the inventory (section 4.3.2). However, given that individual fishermen were to be interviewed in the second stage of surveying, it was decided to limit their
participation to those holding a position of responsibility in a representative organisation (e.g. chairmen of local fishing associations). Furthermore, upon completion of the inventory it was clear that knowledge of diversification was also held by individuals in related organisations that were not considered to be part of the fishing industry. Examples include harbour commissioners, Local Authorities and wildlife organisations. Consequently, sampling was based on the following four stakeholder groups:

- Organisations that directly represent the interests of fishermen;
- Organisations that promote fishing and the fishing industry;
- Organisations responsible for the management and regulation of the fishing industry;
- Organisations whose work is indirectly related with the fishing industry.

Sample size was determined by the need to ensure that representatives from all of the key stakeholders in the Channel fishery were given the opportunity to participate in the research; and the requirement that fieldwork be completed in line with the reporting deadlines of the CHARM project. To this end, a sample of 40 individuals was identified from the four stakeholder groups above, drawn from both the eastern and western Channel (table 4.4).

<table>
<thead>
<tr>
<th>Stakeholder type</th>
<th>Fishermen’s representatives</th>
<th>Promotional organisations</th>
<th>Fisheries management</th>
<th>Related organisations</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Eastern Channel (VIId)</td>
<td>4</td>
<td>1</td>
<td>5</td>
<td>3</td>
<td>13</td>
</tr>
<tr>
<td>Western Channel (VIIe)</td>
<td>5</td>
<td>2</td>
<td>10</td>
<td>10</td>
<td>27</td>
</tr>
<tr>
<td>Total</td>
<td>9</td>
<td>3</td>
<td>15</td>
<td>13</td>
<td>40</td>
</tr>
</tbody>
</table>

Fishermen’s survey sampling

Consistent with the stakeholder survey, a strategy of purposive sampling was adopted for the fishermen’s survey in order to identify key respondents who could contribute to meeting the objectives of the research. However, this strategy also incorporated elements of ‘dimensional sampling’, in which the dimensions identified as important to the research are incorporated into the sampling plan to ensure that at least one representative from each possible combination of these dimensions is included (Robson, 2002, p.265). In the context of this study, these dimensions included fishermen in the under 10m and over 10m sectors; and those who had chosen/not chosen to diversify into related activities. Furthermore, it was important that the sample was drawn from fishermen operating
throughout the Channel fishery to account for the influence of geographical factors upon their attitudes and opinions.

In light of the above considerations, a sampling plan was designed consisting of 24 fishers stratified by administrative port, vessel length and diversification status (table 4.5). The administrative ports of Newlyn and Plymouth in the western Channel, and Poole and Hastings in the Eastern Channel were selected because they collectively account for 59 individual homeports (including those in the Channel Islands) – from which respondents could be drawn. In the case of vessel length, the decision to adopt a stratified sampling approach was taken following initial investigation of the research population of key informants. Despite the Channel fishery being dominated by vessels in the under 10m sector, it was considered important to interview at least one fisherman from the over 10m sector for each of the categories to obtain a crude baseline. This baseline provides a context through which the similarities and differences of vessel owners in these two sectors can be explored. Finally, given the core themes of the survey, a decision was taken to only interview fishermen who own and operate their vessels, and thus assume a central role in the decision-making process of the fishing enterprise.

Table 4.5: Sampling plan for fishermen’s survey

<table>
<thead>
<tr>
<th>Administrative port</th>
<th>Vessels under 10m</th>
<th>Vessels over 10m</th>
<th>Diversifiers</th>
<th>Non-diversifiers</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Newlyn</td>
<td>5</td>
<td>1</td>
<td>3</td>
<td>3</td>
<td>6</td>
</tr>
<tr>
<td>Plymouth</td>
<td>5</td>
<td>1</td>
<td>3</td>
<td>3</td>
<td>6</td>
</tr>
<tr>
<td>Poole</td>
<td>5</td>
<td>1</td>
<td>3</td>
<td>3</td>
<td>6</td>
</tr>
<tr>
<td>Hastings</td>
<td>5</td>
<td>1</td>
<td>3</td>
<td>3</td>
<td>6</td>
</tr>
<tr>
<td>Total</td>
<td>20</td>
<td>4</td>
<td>12</td>
<td>12</td>
<td>24</td>
</tr>
</tbody>
</table>

Recruitment

For both the stakeholder survey and fishermen’s survey, a consistent recruitment process was adopted as follows:

1) The researcher contacted each respondent by telephone, introducing themselves and providing a concise overview of the research project. Following an explanation as to why they had been selected as part of the sample, the respondent was asked whether they wished to participate;

2) Upon agreeing to participate, each respondent was asked to select a convenient time and location for the interview. Respondents were sent a letter by email or post confirming this appointment, together with an information sheet (Appendix D)
providing further details about the research and their role as a respondent. Where respondents declined to have this information sent to them, a copy of the Information Sheet was provided at the interview. Respondents were asked to read this sheet prior to signing a consent form (Appendix E) before interviewing commenced.

4.4.5 Piloting

Piloting represents an essential component requisite of questionnaire development, by allowing the researcher to pre-test the content and format with members of the target audience. In addition to testing the structure and clarity of individual questions, the pilot is used to examine the flow of the questionnaire; correct routing of questions (where used); respondent interest and attention; and timing (De Vaus, 2002, p.117). Where a questionnaire contains poorly structured and/or worded questions, respondents may provide inaccurate responses because they are unclear on what is being asked of them. Similarly, if respondents are denied the opportunity to provide their desired response then they may select an alternative or refrain from answering altogether. The interest and attention of respondents will be influenced by both the structure/wording of questions and the length of the questionnaire. Importantly, an overly long questionnaire may result in respondents terminating the interview before completion, or refusing to participate in the first instance.

Following agreement among partners of a preliminary draft, the stakeholder questionnaire was piloted with four members of the research population: one drawn from each of the four stakeholder groups. The questionnaire took an average of 13 minutes to complete which was considered to fall comfortably within the acceptable length for a face-to-face survey. No major issues were identified with the structure or wording of questions, although a recommendation was made to clarify the definition of ‘marketing initiatives’ as a diversification activity by using an example. This term was subsequently amended to read ‘marketing initiatives e.g. ecolabelling’. As this amendment was considered to be minor, a decision was taken not to conduct a second phase of piloting. The fishermen’s survey was similarly piloted with 4 members of the research population, taking an average of 19 minutes to complete which was considered by respondents to be an acceptable length.

As noted in section 4.4.3, a decision was taken following piloting to reduce the number of pairwise comparisons in the AHP component. Piloting this section of the questionnaire with stakeholders revealed that both the purpose of the exercise and the wording used were clear. Conversely, a number of fishermen requested further clarification regarding
the definition of constraint types. A suggestion was made to make these definitions more explicit with regards to the main concepts to which they applied, and to minimise the use of terminology. To this end, the following revisions were applied to the fishermen’s questionnaire:

1) ‘Economic factors’ was reworded as ‘There’s no money in it’;
2) ‘Social constraints’ was reworded as ‘They’d rather stick to fishing’;
3) ‘Lack of opportunities’ was reworded as ‘There aren’t any opportunities’;
4) ‘Lack of information’ was reworded as ‘There’s no information’;
5) ‘Administrative constraints’ was reworded as ‘Too many rules and regulations’.

As the intention was to compare and contrast the AHP results of both fishermen and stakeholders, it was imperative that respondents were provided with a consistent interpretation of questionnaire terms. This was achieved by reading each participant a pre-designed script in which the purpose of the exercise and the definition of each objective (and its sub-criteria) were clearly stated (see sample questionnaires in Appendices B and C).

Given that the piloting exercise identified questions in both the stakeholder and fishermen’s questionnaires that could be improved through rewording, a decision was taken to exclude these survey results from the dataset to ensure consistency. The limitation of this approach is that the respondents interviewed during the pilot study are removed from the sample. However, the researcher sought to identify another individual within the same organisation, association or fishing region/sector to ensure their representation.

4.4.6 Data collection

Interviewing using a fixed questionnaire can be conducted by a number of methods, with a basic distinction made according to whether the participant is asked questions by the interviewer (e.g. face-to-face, telephone) or completes the questionnaire themselves (e.g. postal, internet). The former approach is clearly advantageous with respect to data quality, as the interviewer is present to respond to queries that may otherwise lead to misinterpretation of questions and/or failure to complete the questionnaire. The response rate of interviewer-delivered surveying is typically much greater than self-completion methods, with face-to-face interviewing being higher than telephone interviewing. Face-to-face interviewing provides the researcher with fewer limitations regarding the type and length of questions, and the use of visual aids; consequently it is regarded by researchers as one of the best methods of obtaining detailed data (Frey & Mertens Oishi, 1995, p.4).
Furthermore, given that respondents were unlikely to have encountered AHP before, this method enables the researcher to run through an example of the exercise with the respondent prior to its completion. To this end, a decision was taken to use face-to-face interviewing to survey both stakeholders and fishermen.

Given that a number of questions in the stakeholder survey and fishermen’s survey were identical, it was necessary to conduct face-to-face interviews in a consistent manner to minimise bias. During recruitment, participants from both the stakeholder and fishermen samples were asked to select a convenient time and location for the interview. In the majority of cases stakeholders selected their place of work, and fishermen their home; although interviews were also conducted in a range of settings including cafes and harbours.

Data collection for the stakeholder survey commenced in October 2010 and the bulk of interviews were completed over a 12 week period. Interviewing for the fishermen’s survey commenced in July 2011 and was completed over a period of 10 weeks.

4.4.7 Data analysis

Following completion of surveying, raw data was entered onto an Excel data prior to being uploaded to the statistical software package IBM SPSS (v.20). The first stage of analysis involved screening the data file in order to identify and amend any errors that may distort subsequent statistical tests. This was conducted using two different techniques, as detailed by Pallant (2007): for categorical variables the Frequencies function was used to check the number of valid and missing cases, and to examine the minimum and maximum values for each variable. Similarly, for continuous variables the Descriptives function was used to check the number of valid cases and examine the minimum, maximum and mean values for each variable. Upon completion of screening, descriptive statistics were examined for each survey question to provide a general overview of the results and potential relationships between variables. As part of this process, results were also cross-tabulated by key respondent attributes such as respondent type and location.

The succeeding stage of analysis involved applying a number of statistical techniques to the dataset in order to examine differences between respondents, and explore relationships among variables. In selecting the most appropriate techniques to apply, it is necessary to consider a number of factors – most notably whether the specific technique addresses the question that the researcher wishes to answer. The suitability of each technique is also governed by the nature of the variables being analysed (i.e. dependent or independent); the type of data they contain (i.e. continuous or categorical); and how
that data is distributed. Sheskin (2004) proposes a distinction between parametric and non-parametric techniques based upon the level of measurement represented by the data; whereby interval or ratio data are categorised as parametric, and nominal or ordinal data are non-parametric. While a case has been made in applying parametric techniques to ordinal data (e.g. Norman, 2007), many of these techniques make assumptions with respect to scores on the dependent variable being distributed ‘normally’. When examined visually, data displaying normal distribution adheres to a ‘bell-shaped’ curve – where the closer a score is to the mean the more frequently it occurs (Sheskin, 2004, p.42). However, it is not uncommon for this assumption to be violated when using ordinal data; such as that derived from Likert scales to measure attitudes and opinions (Wu, 2007). Given that both the stakeholder and fishermen’s surveys utilised Likert scales to explore opportunities and likelihood of diversification, it was important to establish the distribution of data prior to commencing statistical tests. This was conducted using the Explore function in SPSS: distribution was examined visually with histograms, and mathematically using the skewness, kurtosis and Kolmogorov-Smirnov statistic outputs. The results of this exercise revealed that the data for these key questions was not distributed normally but displayed positive or negative skewness and kurtosis values. This observation was supported by the corresponding Kolmogorov-Smirnov statistics which were all found to be significant at the 0.05 level, thereby indicating non-normal distribution.

Pallant (2007) identifies three main strategies for dealing with non-normal distribution of data. The first option is to continue using parametric techniques on the basis that their robustness will allow for minor violations of assumptions, particularly if sample sizes are relatively large. The risk of adopting this approach is that the power advantage that parametric techniques hold over their non-parametric alternatives may be negated (Sheskin, 2004, p.97). The second option is to mathematically transform the scores; however, Tabachnick and Fidell (2007, p.86) note that the use of data transformation as a remedy to non-normal distribution is not universally recommended, and in some cases can increase the difficulty of interpretation. The third option is to use non-parametric tests, which while less sensitive than their parametric alternatives remain well suited to data measured on categorical scales and smaller samples (Pallant, 2007, p.210). Given that the output of the stakeholder and fishermen’s surveys consisted largely of ordinal data collated from a relatively small sample, a decision was taken to adopt non-parametric alternatives. Where feasible, the following statistical tests were applied using SPSS:

- Chi-square test for independence (two categorical variables);
- Mann-Whitney U test (one categorical and one continuous variable);
- Spearman’s Rank Order Correlation (two continuous variables);
- Logistic regression (categorical dependent variable).

In order to achieve a more detailed interpretation of the survey findings, these tests were used to explore relationships among sub-groups – including respondent type and location. The main consideration when conducting this analysis was to ensure that the number of respondents in each sub-group was sufficient to allow robust comparison; particularly given that the combined sample of stakeholders and fishermen amounted to only 60 responses.

**Aggregation and analysis of AHP data**

The objective of the AHP technique is to obtain a series of scores which reflect the relative importance that respondents assign to each objective tested. This is achieved by calculating normalised priority weights for each individual’s responses, and aggregating these scores to determine an overall weighting. The first stage of this process involved the conversion of scores into a pairwise comparison matrix, where the vector $W$ represents the weights given to a set of criteria, and $w_i/w_j$ measures the importance of criteria $i$ relative to criteria $j$ in a pairwise comparison (Whitmarsh & Wattage, 2006, p.118). The calculation of normalised priority weights was then undertaken using both the *Eigenvalue method* and *Geometric mean* for comparative purposes. The advantage of the former is that it provides a measure of the consistency of individual responses in the form of a consistency ratio (CR) where a ratio of 0 indicates perfect consistency in the responses given by an individual (Ishizaka, Balkenbour & Kaplan, 2010, p.7). A CR value of 0.1 or less is generally acceptable, although there is a lack of clarity in many studies as to whether this threshold has been adhered to (Himes, 2007). Wattage and Mardle (2007) note that some studies have applied a 0.2 threshold to investigate the reliability of results; while Whitmarsh and Wattage (2006, p.120) argue that despite a high CR being indicative of a lack of understanding by the respondent, “to exclude the result altogether from the dataset would be to reject an expressed preference, which arguably is valid in its own terms”.

Upon aggregating normalised priority weights for the entire sample of participants, priority weights were analysed by respondent type to identify similarities/differences and the possible factors driving these results. In addition to coding and analysing participants according to their pre-defined characteristics (e.g. fishers and non-fishers), agglomerative hierarchical clustering was conducted in SPSS to group participants on the basis of their responses. This technique was applied by Himes (2007) in a study using AHP to investigate stakeholder preferences relating to the management of marine protected...
areas. Significantly, cluster analysis revealed little similarity within a priori defined stakeholder groups, but instead showed similarity among respondents with similar personal interests (2007, p.616).

In addition to conducting cluster analysis in SPSS, correlation of normalised priority weights was undertaken to explore the underlying scale of preference that respondents share for one objective vis-à-vis another (Whitmarsh & Wattage, 2006, p.114). An additional benefit of undertaking correlation of priority weights is that it enables the researcher to examine whether resultant coefficients conform to a priori expectations (Whitmarsh & Palmieri, 2009, p.456). Consistent with these previous studies, this process was conducted using non-parametric Spearman’s Rank Order Correlation to take account of the fact that priority weights are derived from ordinal data displaying non-normal distribution.

4.5 Qualitative research

4.5.1 Research design

In designing the qualitative phase, it was necessary to consider how this approach would complement the preceding stage of quantitative research. In contrast to the inventory and survey of stakeholders and fishermen, qualitative research was not conducted in order to meet the objectives of the CHARM project – but rather to explore specific themes of relevance to the thesis using a grounded theory methodology. However, the requirement to conduct quantitative research did create a number of constraints upon conducting the subsequent qualitative phase – with respect to both available time and financial resources. Fishermen work long and frequently irregular hours, which can make the coordination of fieldwork problematic – particularly when conducted in a face-to-face setting. Given that a decision had previously been made to conduct face-to-face interviewing for the fishermen’s survey, there were clear benefits to combining this survey with qualitative data collection. The decision to combine quantitative and qualitative research creates a number of implications for research design, particularly with respect to sampling and data collection techniques – which are addressed in the following sub-sections. However, it was first necessary to identify the general approach through which qualitative data would be collected.

One of the advantages of grounded theory is that it provides the researcher with the flexibility to allow the research problem to shape the data collection methods they use (Charmaz, 2006, p.15). In the absence of secondary qualitative data sources relating to
this subject area, it was necessary to collect primary data – with the two main options being observational or interview-based methods. Robson (2002, p.319) notes that one of the main advantages of observation is its directness; in that rather than asking respondents about their attitudes and behaviour the researcher observes and records what they say and do. As a result, this technique has the potential to yield rich detailed data, albeit dependent upon the skills of the researcher in recording their observations. Observational methods may also be used to overcome the discrepancies that can exist between how a respondent describes their behaviour in an interview-based setting, and how they actually behave. However, conversely the act of being observed may itself lead respondents to behave differently. In the context of this study, the benefits of using observation over interview-based methods was questionable given that the research questions focus upon eliciting fishermen’s attitudes and opinions in relation to fishing-related practices, rather than these practices per se.

Following the decision to proceed with an interview-based research design, it was necessary to explore the relative appropriateness of collecting data using focus groups or individual interviewing. One of the key strengths of focus groups is that they enable respondents to interact, thereby generating a potentially more detailed and wide-ranging discussion than one-to-one interviewing. (David & Sutton, 2001, p.133). This approach has been used with some success previously to elicit the opinions and attitudes of fishermen in England (e.g. Creative Research, 2009), and would clearly be suitable for meeting the objectives of this study. There are however a number of limitations of this approach. As noted previously, the working hours of fishermen makes it difficult from a practical perspective to bring multiple participants together in one setting. Furthermore, the difficulty of ensuring confidentiality may result in fishermen being reluctant to discuss topics which they consider to be commercially sensitive, such as fishing methods and financial success. For these reasons, a one-to-one interviewing approach was deemed to be the most suitable method of collecting qualitative data – particularly in the light of the decision to combine this phase with the fishermen’s survey.

4.5.2 Interview guide development

Patton (2002, p.342) identifies three basic methods to collecting data through qualitative interviewing: the informal conversational interview; the general interview guide approach; and the standardised open-ended interview. The informal conversational interview constitutes an ‘unstructured’ approach in which the researcher does not rely upon predetermined questions, but rather generates questions spontaneously throughout the interview process. Patton argues that the lack of structure does not mean that interviews
are unfocused; rather the inherent flexibility of this approach can generate detailed data that is sensitive to individual and situational differences (p.343). The main limitation, however, is the time required to collect and analyse sufficient systematic data to satisfy the research questions. This contrasts with the standardised open-ended interview, where the researcher uses a structured set of questions presented to each respondent in a consistent order and manner. The use of such questioning can be advantageous in certain situations; for example to guard against variation when using more than one interviewer, or where it becomes necessary to prioritise questions due to the limited time available for data collection and analysis. The obvious disadvantage of this approach is that it restricts the ability of the researcher to diverge from the question list and explore additional issues of interest that may arise.

The third option of using a general interview guide represents a middle-ground between structured and unstructured interviewing. This ‘semi-structured’ approach has been used successfully to collect data on cultural, economic and social issues relating to the fishing industry (Stead, Daw & Gray, 2006). As with structured interviewing, an interview guide is designed prior to fieldwork commencing and contains consistent questions to be asked of all respondents. However, it is distinguished by the fact that questions represent broad themes of inquiry around which the researcher can explore more specific topics of interest. Given the wide range of issues affecting the English Channel fishing industry, this approach allows the researcher to focus upon the challenges and response strategies of fishermen – while exploring the individual contexts within which they occur.

In designing the content of the interview guide, it was necessary to ensure that individual questions contributed both thematically to the research investigation, and dynamically by promoting positive interaction with the respondent (Kvale, 1996, p.129). Questions were designed in accordance with the criteria proposed by Patton (2002); namely that “…good questions should, at a minimum, be open-ended, neutral, singular, and clear” (p.353). To this end, an interview guide was drafted (Appendix F) consisting of six questions on the following themes:

1) The main challenges that the respondent faces in making a living from fishing;
2) How these challenges impact upon the financial performance of their fishing business;
3) Whether the respondent has changed their fishing behaviour as a result of these challenges;
4) Diversification and the reasons for its adoption/non-adoption;
5) Multiple-job holding and the reasons for its adoption/non-adoption;
6) Whether the respondent envisaged spending the rest of their working career within the fishing industry.

### 4.5.3 Sampling and recruitment

The decision to combine in-depth interviewing with the fishermen’s survey creates a number of issues regarding sample design. In contrast to many quantitative studies, the issue of statistical representation is afforded less prominence in qualitative research – which typically retains a degree of openness to allow the formulation of concepts rather than their testing (David & Sutton, 2011, p.111). Furthermore, given that part of this process may involve exploring the identity of individuals and populations of interest, it may not be possible to specify in advance who these subjects actually are (2011, p.112).

Given that a probability sampling approach was not adopted for the fishermen’s survey, due in part to the absence of a defined sampling frame, the possibility of utilising the survey sample for in-depth interviewing appeared to be viable. It was still necessary, however, to consider the implications of sample size upon in-depth interviewing – most notably with respect to resource requirements. As previously noted in section 4.5.2, the use of a semi-structuring approach enables the researcher to explore key topics and emerging themes in greater detail than could be achieved through structured interviewing.

The main limitation of this approach is that more time is required to undertake each interview and analyse the resultant data (Robson, 2002). As such, it was necessary for the researcher to consider the relative merits of conducting in-depth interviewing over shorter, more structured interviews with a larger sample of respondents. A decision was taken against the latter, as this approach was unlikely to generate a sufficiently detailed understanding of the individual contexts in which fishermen experience challenges and develop response strategies.

The adoption of a grounded theory approach also created a number of issues for consideration. In grounded theory, one of the key objectives of sampling is to select participants on the basis of being “representative of the experience”, rather than being representative of a wider population (Morse, 2007, p.232). As such, this objective can be seen to adhere to the principles of purposive sampling used in the fishermen’s survey – in that the goal is to select individuals with knowledge of the subject gained through experience or observation, as exemplified in the following statement:

> “Participants must therefore be experts in the experience or the phenomena under investigation; they must be willing to participate, and have the time to share the necessary information; and they must be reflective, willing and able to speak articulately about the experience” (Morse, 2007, p.231).
A distinction also exists with respect to the type of sampling strategies typically used during the grounded theory process. The first stage of data collection involves initial sampling, where the researcher establishes the sampling criteria before entering the field and uses the resultant data to establish basic categories. This is then followed with theoretical sampling – the aim of which is to collect data to explicate these categories (Charmaz, 2006, p.100). The underlying principle of theoretical sampling is that data is not collected prior to analysis, but rather the two stages are conducted concurrently. As such, the researcher collects data on concepts rather than people – shaping the sampling approach to build upon previous interviews and develop the concepts that emerge from them. This process continues until a point of saturation is reached where all the concepts are well defined and explained (Corbin & Strauss, 2008, p.145). Combining in-depth interviewing with the fishermen’s survey made it problematic to adopt this two-stage sampling approach – particularly given the timescale for data collection. However, Corbin and Strauss (2008, p.145) acknowledge that some researchers may have to work with previously collected data, or collect data during a restricted time period, particularly if they have to travel to interview participants. In such circumstances, theoretical sampling is still possible albeit more difficult to conduct. Given that theoretical sampling is concept-driven, the researcher can still use these concepts to guide them in examining the data; essentially they are sampling data that has already been collected for incidents pertaining to a concept (2008, p.150). One of the limitations of this approach is that the analytical process may create gaps in the research because it is not possible to collect additional data. Where such situations arise, the authors suggest that the researcher seeks to ‘make do’ with what they have: “It doesn’t mean that the study will lack significance or be superficial. A researcher can do a high-level analysis on whatever data he or she has” (Corbin & Strauss, 2008, p.150).

Recruitment

The recruitment of participants for qualitative interviewing was conducted concurrently with recruitment for the fishermen’s survey – as detailed in section 4.4.4. When first contacted, fishermen were informed that participation involved completing both a questionnaire and face-to-face interview.

4.5.4 Piloting

In contrast to the survey of stakeholders and fishermen, conducting a separate pilot of the interview guide with a subset of respondents was considered to be less critical. As noted by Robson (2002, p. 383) most flexible designs can incorporate piloting within the study itself, which is beneficial given the effort required in organising and conducting data
collection. Given that the guide consisted of six broad questions that had been drafted and refined internally, a decision was taken to use the initial interviews with fishermen as a means of piloting the guide. Only one amendment was made: following the first interview an additional question was added to ascertain whether respondents believed that fishermen as individuals displayed innovative behaviour.

4.5.5 Data collection

Upon reviewing the respective content of the questionnaire and interview guide, it was considered logical to undertake the in-depth interview after the participant had completed the survey questionnaire. Commencing with the questionnaire provided an opportunity to develop rapport with participants, and allowed them to become comfortable with the research content and interview environment prior to being asked more detailed open-ended questions.

In order to generate a full transcript of each interview it was necessary to utilise digital voice recording rather than taking handwritten notes, however, this was only possible upon the consent of the participant. Each participant was asked whether they were happy for the interview to be recorded, prior to signing the interview consent form – positively all of the participants agreed. Interviewing was conducted over a six-week period commencing in mid-July 2011. Interviews ranged in duration from 20 minutes to over one hour, with a mean average length of 37 minutes.

4.5.6 Data analysis

Corbin and Strauss (2008) define analysis as the process of “examining a substance and its components in order to determine their properties and functions, then using the acquired knowledge to make inferences about the whole” (p.45). The analysis of qualitative data can be conducted on a number of levels from descriptive interpretation through to theory generation, according to the underlying aims of the specific research study. However, one of the defining features that distinguishes qualitative analytical methods from those of quantitative research is that analysis is typically a process that builds over time and with the acquisition of data (Corbin & Strauss, 2008, p.57). Through this process, the researcher seeks to generate initial concepts which are developed and revised as the analysis progresses.

Analysis in grounded theory is conducted by a process of ‘coding’ which represents “the operations by which data are broken down, conceptualized, and put back together in new ways” (Strauss & Corbin, 1990, p.57). Strauss and Corbin identify three distinct types of coding that are used during the analytical process: open coding; axial coding; and
selective coding – the basic principles of which are briefly summarised below. Importantly, although these three types appear to form distinct sequential stages, it is not uncommon for researchers to move between different coding types throughout the analytical process.

1) Open coding:

Open coding represents the initial stage of analysis, in which the researcher closely examines the data in order to identify basic concepts. Through a process of asking questions and making comparisons, emerging concepts are firstly labelled and then categorised on the basis of pertaining to a similar phenomenon (Strauss & Corbin, 1990, p.61). These categories are developed further by identifying their inherent attributes or properties, and recording the dimensions within which they exist.

2) Axial coding:

Strauss and Corbin define axial coding as “a set of procedures whereby data are put back together in new ways after open coding, by making connections between categories” (1990, p.96). This process is conducted using a coding paradigm in which each category is examined with respect to its key features or ‘sub-categories’, namely: the conditions that give rise to it; the context in which it is embedded; the strategies by which it is managed and responded to; and the consequences of these strategies (p.97). The application of deductive and inductive thinking is a key component of this process: the concepts and relationships that emerge from deductive thinking are constantly verified against actual data and discarded if they do not fit.

3) Selective coding:

The final stage of selective coding represents the process by which categories, sub-categories and relationships are developed systematically into theory. Strauss and Corbin identify five steps through which this is achieved:

i) The first step requires formulating a story line which conceptualises the essence of the research findings with respect to a central phenomenon which becomes the core category. Should a situation arise where two phenomena emerge as equally important or interesting, the researcher must choose one as the core category and relate the other to this as a subsidiary category (1990, p.122).

ii) Upon formulation of the story line, the next step involves relating the other categories to the core category – thereby making them subsidiary categories. Consistent with
axial coding, this process is conducted using the coding paradigm to establish conditions, contexts, strategies and consequences.

iii) The third step involves relating categories at the dimensional level and ordering them so that they provide an analytic version of the story. According to Strauss and Corbin, if the story is told accurately and logically then the ordering of categories should be achieved without great difficulty. Where the researcher has difficulty in relating the categories it is necessary to ‘rewrite’ the story until the placement of categories makes sense (1990, p.129).

iv) Once the categories have been ordered it is possible to construct a hypothetical statement that describes the relationships that exist among categories. It is necessary though to validate these relationships by going back to the data to ensure that the statement holds for each person in the study (1990, p.130). In order to account for the patterns, connections and variations present in the data, this process applies not only at a broad conceptual level, but at the property and dimensional levels for each category.

vi) Upon construction of a theoretical framework that holds up to scrutiny, the final step involves revisiting the categories to “fill in any missing detail” (1990, p.141). Strauss and Corbin note that this process can be undertaken with any category that appears poorly developed, and may involve the researcher returning to the field to collect additional data (i.e. theoretical sampling).

A decision was taken to conduct the analysis of qualitative data using the computer software package NVivo 9. The use of computer-assisted qualitative data analysis brings a number of advantages to this study, most notably with respect to the speed at which data can be coded and categorised; and the rigour that it brings to the analytic process (Seale, 2005, p.190). A further advantage lies in the resultant ‘audit trail’ that provides the researcher with an easily accessible record of the decisions taken during analysis. The use of computer software is not without its critics; indeed the advantage that it brings in speeding up the coding process has also been cited as one of its limitations as some researchers believe that qualitative analysis should take time (David & Sutton, 2011, p.389). However, it should be stressed that the decisions taken with respect to coding and categorising still remain with the researcher – the software just assists them by placing data in the best position to aid their cognitive work (Morse, 2007, p.233).

While it is feasible with some analytical approaches to reduce qualitative data into a form that allows some degree of quantification (e.g. content analysis), the quasi-grounded
theory methodology adopted in this study requires the opposite. Each interview transcript is explored in detail, and through the coding process emerging themes are expanded in order to identify relationships and underlying concepts. David and Sutton (2011, p.586) highlight a common criticism regarding the presentation of qualitative research findings, in that the audience are presented with a series of examples without being able to determine how representative they are of the research population. In light of this observation, the reporting of qualitative findings will be undertaken in-line with Berg’s (2007) recommendation that a minimum of three examples are required for each key finding reported.

4.6 Validity and Reliability

4.6.1 Basic principles

Validity and reliability are key considerations in the design and implementation of a research study because they determine the level of trust that can be placed in the findings. Robson (2002, p.93) provides a basic distinction between validity and reliability, in that validity refers to whether the findings are “really about what they appear to be about”; whereas reliability refers to the consistency or stability of the measures from which these findings are derived. However, given that the principles of validity and reliability were initially developed with respect to quantitative methods, there is considerable debate regarding their applicability to qualitative research (Robson, 2002, p.93). For this reason, these principles are discussed below in separate sections relating to the quantitative and qualitative research phases of this study.

4.6.2 Quantitative research

Validity in quantitative research may be categorised into three main types: construct validity; internal validity; and external validity. Construct validity (also known as measurement validity) is concerned with data collection – in that it focuses upon with whether an indicator that is devised to measure a concept actually measures that concept (Bryman & Bell, 2008, p.41). In contrast, internal validity is concerned with whether the relationships that emerge from the analysis of data can be plausibly demonstrated. In quantitative research this typically applies to causal relationships between dependent and independent variables. External validity develops this principle further to examine whether the results observed in a specific study can be generalised to other settings and/or populations.
For the purposes of this study, it was necessary to consider issues of validity during both the inventory and survey phases – as they both involve quantitative methods. Given that the main objective of the inventory was to generate descriptive data, these considerations relate more to the collection of data rather than its analysis. As such, a number of steps were taken to ensure that data was collected in a valid and reliable manner. Construct validity was sought by utilising a working definition of fisheries diversification that maintains consistency with previous academic research (see section 4.2.2). Similarly, adopting a data collection framework (table 4.2) provided consistency with respect to the main attributes of each diversification activity identified. Reliance upon secondary data sources does create implications for the validity of the inventory – particularly where this data is obtained from online sources (Denscombe, 2003). For this reason, direct contact was also made with stakeholders as a means of triangulating secondary data sources. In the survey of stakeholders and fishermen it was necessary to consider issues of construct validity during questionnaire development, to ensure that questions effectively addressed the topics of study. This was achieved using a number of techniques, including peer review of draft questionnaires, and conducting piloting prior to agreeing a final draft. With respect to data analysis, internal validity was sought through the application of a range of statistical techniques to examine the strength and nature of relationships among variables. In contrast, issues of external validity were not deemed to be of central importance as the intention was not to generalise results to the wider population.

Reliability in quantitative research may also be categorised into three main types: stability; internal reliability and inter-observer consistency. Stability relates to whether a measure is consistent over time, which may be tested by re-administering a measure to the same group of respondents at a later time. However, this approach can be problematic because events that occur between these two time periods may influence the consistency of results. As a result, few research studies conduct tests of stability (Bryman & Bell, 2008, p.163). Internal reliability relates to quantitative measures with multiple indicators; for example, where rating scales are combined to create an aggregated score. For this measure to be reliable, it is imperative that the individual indicators are related to each other – which can be examined by the level of correlation between respondents’ scores for different indicators. Finally, issues of inter-observer consistency arise when more than one individual is involved in aspects of the research process which involve subjective judgement. Examples include recording observations and categorising open-ended questions (2008, p.163).

In examining the applicability of the three types of validity outlined above, it may be argued that their relevance to the inventory phase is limited. The main objective of the
inventory was to generate descriptive data drawn primarily from secondary sources, rather than primary research with respondents. Furthermore, issues of inter-observer consistency were not deemed to be problematic as the collection and analysis of data was conducted by one individual. In the case of the stakeholder and fishermen’s surveys, it was not considered feasible to test stability by re-administering questionnaires at a later time; however, correlation was used to explore internal validity for the questions relating to diversification opportunities and likelihood. As with the inventory, issues of inter-observant consistency were not considered to be problematic due to data collection and analysis being conducted by one individual.

4.6.3 Qualitative research

The general principles upon which qualitative research is based mean that many of the measures of validity and reliability discussed in the previous section are of limited relevance, and have been rejected by some qualitative researchers altogether (Robson, 2002, p.168). Nonetheless, it may be argued that the basic concepts of validity and reliability remain applicable – particularly the notion of adopting a consistent approach to generate findings that actually reflect what they appear to reflect. Consistency can be achieved through both the collection and analysis of data by developing and adhering to a set of procedures or ‘styles’; for example, the way in which participants are recruited and interviewed, or how categories are coded during analysis. However, Maxwell (2002, p.42) proposes that the concept of validity relates primarily to accounts rather than data or methods; as such there remains considerable scope for the researcher to introduce bias during the analysis of qualitative data. In light of the above observations, the collection and analysis of qualitative data has traditionally called for objectivity (Corbin and Strauss, 2008, p.32), although the authors argue that this is a myth because researchers bring particular perspectives, knowledge, training and biases to the research situation.

In grounded theory, issues of researcher objectivity can be addressed through the application of theoretical sensitivity, defined as: “...the attribute of having insight, the ability to give meaning to data, the capacity to understand, and capability to separate the pertinent from that which isn’t” (Strauss & Corbin, 1990, p.42). Theoretical sensitivity is brought to the research process via both the individual attributes of the researcher and the analytical approach that they adopt. Individual attributes are derived from familiarity with the phenomenon being studied, which may be gained from secondary sources as well personal experience. This background knowledge and experience enables the researcher to become more sensitive to concepts in the data, as well as seeing the connections between concepts (Corbin & Strauss, 2008, p.34). Theoretical sensitivity in the analytical
approach stems from the actual techniques used to analyse data, and how effectively these are applied by the researcher.

As noted in section 4.2.1, one of the benefits of using grounded theory is the existence of a systematic set of analytic techniques which arguably bring some degree of reliability to this process. Similarly, the application of computer software can also contribute to reliability by providing a structured and auditable approach to analysis. The ultimate validity of these techniques, however, will be determined by the individual researcher – particularly if they allow their preconceived ideas and assumptions to bias the analysis. To this end, the researcher aimed to “balance creativity with science”, which includes periodically stepping back to examine whether their perceptions fit the reality of the data; regarding all explanations, categories and hypotheses as provisional until supported by the data; and adhering to data collection and analytic procedures (Strauss & Corbin, 1990, p.44).

4.7 Ethical considerations

Prior to commencing data collection, it was necessary to obtain full ethical approval from the University of Portsmouth PBS Research Ethics Committee. While the general principles of conducting ethical research are widely applicable, it is necessary to consider these principles in relation to the specific research population being studied. For example, fishing in the UK is a competitive business activity in which the majority of vessels are owned by fishermen themselves. Fishermen may be reluctant to disclose information on their preferences, attitudes and behaviour if they wish this to remain confidential from other fishermen. Similarly, with respect to organisations working within the sector, a distinction exists between those that directly represent fisherman and those that manage and regulate their activities. The relationships that exist between fishermen and these different organisations could be potentially undermined by reporting research findings that are directly attributed to specific individuals.

De Vaus (2002) notes that most professional codes of ethics stipulate five ethical responsibilities towards research participants. These responsibilities are examined below in relation to this specific study:

1) Voluntary participation

The principle of voluntary participation means that individuals should be free to choose whether to participate, and not be forced or coerced into participating. One of the most
effective means of ensuring voluntary participation is to inform participants explicitly (De Vaus, 2002, p.60). Thus, prior to commencing both the survey and qualitative interviewing, each participant was provided with an Information Sheet (Appendix D) clearly stating the following: (i) that participation in the research study is voluntary; and (ii) that they have the right to withdraw at any stage without giving a reason.

2) Informed consent

The principle of informed consent is closely aligned with that of voluntary participation, in that when individuals choose whether to participate they should be fully-informed of the purpose of the survey; why they have been selected to take part; what their participation will involve; and what happens when the research study is completed. It is also necessary to clarify the practical issues of participation such as the time required to participate, the location of the research, and whether payment/expenses are provided. A balance must be found between providing participants with sufficient information to make an informed decision, without discouraging their participation or distorting their responses by providing too much information (De Vaus, 2002, p.60). As with the principle of voluntary participation, concise information on each of these issues was provided to participants via the Information Sheet, which also outlined the process through which participations could ask further questions by contacting the researcher directly.

Evidence that informed consent had been gained was established through the use of a consent form (Appendix E), in which participants were asked to confirm that they understood the purpose of the research and their role, and agreed to these conditions in participating.

3) No harm

The potential exists for research participants to experience physical and/or mental harm from taking part in research – particularly within fields such as medicine and psychology. In the context of this research project, the possibility of such outcomes are deemed to be minimal; nonetheless, there remains a possibility that individuals may experience psychological harm from participation if their anonymity/confidentiality is breached. This principle is discussed in more detail below.

4) Anonymity and Confidentiality

The provision of anonymity and/or confidentiality is a key principle of conducting ethical research, however, De Vaus (2002, p.60) notes that a failure among researchers to distinguish between these two terms can result in participants being misled as to how their
responses will be used. The author provides a simple distinction: anonymity means that the researcher will not and cannot identify the respondent; whereas confidentiality means that the researcher can match names with responses but ensures that this information cannot be accessed by others. Babbie (2007, p.64) observes that it is not possible for a typical interview survey to assure anonymity because the interviewer collects data from an identifiable respondent. This observation applies to the survey of stakeholders and fishermen, as individual respondents were identified through the sampling process and then surveyed using face-to-face interviewing. Although this outcome was essentially unavoidable, it was possible instead to offer participants the option of confidentiality when completing the consent form. Where applicable, participants were also given the option for the participation of the organisation they represent/work for to remain confidential.

In order to ensure that the confidentiality of participants was maintained, consideration had to be given to how data would be presented in order to prevent individuals from being identified. This was not considered to present a particular issue for quantitative data, as the smallest units of analysis comprised broad geographical regions; fishing sectors; and diversification behaviour. However, it was possible that individuals could be identified from verbatim quotations obtained during the qualitative data phase. For this reason, a decision was taken to attribute quotations to respondent ‘types’ only (e.g. ‘Fisherman; <10m; eastern Channel’), and to exclude any quotations that could lead to individuals being identified.

5) Privacy

Respecting the privacy of research participants is closely related with the principles of voluntary participation and confidentiality, but extends to the issue of intrusion – whereby individuals may prefer not to be contacted by a researcher unless they have given prior permission (De Vaus, 2002, p.64). In a research study of this nature, the avoidance of intrusion can be difficult to achieve. In some cases it is possible to utilise existing contacts in organisations as ‘gatekeepers’, who contact their colleagues on behalf of the researcher to establish whether they are interested in participating. This approach was successfully used to recruit a number of fishermen; however, in other cases it was necessary to contact individuals directly. In such cases, it was imperative that participants were not put under pressure to participate by the researcher.
5. Results

5.1 Introduction

This chapter details the results of two distinct stages of research: the inventory of existing diversification activities; and the face-to-face survey of stakeholders and fishermen. The main aim of the chapter is to establish a detailed understanding of fisheries diversification to inform the subsequent discussion chapters. For the surveys conducted with stakeholders and fishermen, questions that were asked of both samples were aggregated to enable results to be viewed by all respondents in the first instance. The combined dataset was then cross-tabulated by respondent type (fishers and non-fishers) and region (eastern and western Channel), and results of note have been highlighted.

The analysis of in-depth interviews with fishermen is not included within this chapter, but instead is used in the following chapter to examine how fishermen conceptualise the challenges faced in fishing; and the strategies they develop in response.

5.2 Inventory of existing fisheries diversification activities

5.2.1 Overview of diversification activities

The inventory was completed over a period of six months, commencing in autumn 2009. As previously noted in section 4.3.2, further amendments were made throughout the research study as additional activities were identified, or recorded activities were found to have ceased. Due to the difficulty in some cases of establishing how many individuals at each homeport were engaged in a specific activity, a decision was taken to define each activity by its type and location – rather than by its individual practitioners. However, where known, the number of fishermen participating in each activity was also recorded. The outcome of this exercise was the identification of 67 distinct fisheries diversification activities currently being practised by fishermen in the Channel. These constitute 14 specific activity types which fall within four main categories: market-based activities; leisure & tourism; environmental activities; and non-fishing contract work (table 5.1).
Table 5.1: Summary of diversification activities by type

<table>
<thead>
<tr>
<th>Market-based activities</th>
<th>Leisure &amp; Tourism</th>
<th>Environmental activities</th>
<th>Non-fishing contract work</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ecolabelling</td>
<td>Sightseeing trips</td>
<td>Surveying</td>
<td>Guardship duties</td>
</tr>
<tr>
<td>Rebranding</td>
<td>Recreational angling</td>
<td>Litter collection</td>
<td>Supply services</td>
</tr>
<tr>
<td>Retail</td>
<td>Maritime festivals</td>
<td></td>
<td>Fishery liaison</td>
</tr>
<tr>
<td>Processing</td>
<td>Channel swimming support</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Goods &amp; services</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

When the distribution of activities is plotted geographically using GIS software, two key observations emerge (figure 5.1). Firstly, the prevalence of activities is seen to vary notably with respect to type. Diversification in the Channel fishery is dominated by market-based activities which account for 70% of the activities identified; followed by leisure & tourism (19%); environmental activities (7%); and non-fishing contract work (4%). Secondly, diversification is observed throughout the Channel with little difference in overall distribution between the two regions: of the 67 activities identified, 30 are practised in ICES area VIId; 35 are practised in area VIIe; and 2 are practised within both areas.

Figure 5.1: Distribution of diversification activities by type
In the following two sections the results of the inventory are examined in further detail; commencing with a description of activities by type, followed by a discussion of the key characteristics of diversification. From these key characteristics a typology of fisheries diversification is developed, which while based upon findings in the English Channel fishery, has potential applicability to the wider UK catching sector.

5.2.2 Description of activities by type

*Market-based activities*

Market-based activities are defined as those where fishermen diversify within the existing market structure for seafood products – which may occur at any stage of the production process between the capture of seafood and its consumption. Market-based diversification constitutes the most prevalent type of activity within the Channel, accounting for 70% of the activities identified. The majority of these activities follow one of two general themes: horizontal diversification of the seafood product and/or fishing methods; and downstream vertical integration from fishing to retail.

In the case of diversification of the seafood product, fishermen have sought to add value to their products through the use of ecolabelling or tagging schemes that promote provenance, traceability or sustainability. The most widely known of these initiatives is the Marine Stewardship Council (MSC) ecolabel, awarded to fisheries that meet the Council's standard for sustainable fishing. At the time of writing, seven fisheries within the English Channel had received MSC certification: the Hastings fisheries for herring, mackerel and Dover sole (the latter comprising two fisheries using different methods); the Cornish sardine fishery; the south west handline mackerel fishery; and the Normandy and Jersey lobster fishery. A further two fisheries were undergoing assessment: the Channel and West Sustainable Trawling Group megrim, monkfish and sole beam trawl fishery; and the Cornish hake gill net fishery. In addition to the MSC ecolabel, tagging schemes have been introduced by a number of regional seafood bodies to promote provenance, namely: Seafood Cornwall, South East Seafood; and the Genuine Jersey Products Association.

The basic principles of each labelling scheme remain similar, in that fishermen are diversifying to meet the demands of consumers who wish to know the origins of the product and its methods of production. The actual level of diversification employed is variable – particularly with respect to fishing methods as some fishermen were practising these methods prior to the scheme's introduction. It may also be argued that activities that promote the provenance and/or traceability of products constitute differentiation rather than diversification, although the distinction between the two is not always clear in practice (George, Joll & Lynk, 1991). In this case, labelling is used to differentiate the product with
respect its non-price characteristics (e.g. provenance, environmental sustainability) but in doing so essentially creates a product that appeals to an alternative market segment. Furthermore, in addition to the product, fishermen are diversifying their own role in this process: from seafood capture into marketing. Contact with stakeholders, including fishermen participating in labelling schemes, revealed that the value added by this type of activity is variable. While some fishermen do receive a premium for their labelled products, others reported that participation had not resulted in them receiving higher prices. In some cases wholesalers and processors were not willing to pay more for the differentiated product – particularly when these costs could not be passed on to the customer. Additionally, some participants, such as those in the Hastings MSC fisheries, reported difficulties in meeting demand for their labelled products due to current quota restrictions. However, despite these issues, labelling schemes were still seen to be beneficial in raising awareness among consumers of the fishing industry and the challenges which it faces.

In addition to labelling schemes, fishermen in Cornwall have added value to their product through rebranding. In response to a declining market for salted pilchards, the remaining processor in Cornwall (in collaboration with a major food retailer) rebranded the pilchard as a Cornish sardine – a decision that received notable media coverage (Stummer, 2003; Smithers, 2009). This initiative was particularly successful in reversing the decline of the regional pilchard industry, with landings increasing from less than 7 tonnes per annum to over 2,000 tonnes (Cornish Sardine Management Association, 2010). In 2004, the Cornish Sardine Management Association was established to represent the interests of vessels and processors; in 2009 the Cornish sardine was awarded Protected Designation of Origin Status by the European Commission; and in the following year the fishery received sustainability certification from the MSC.

Fishing firms may integrate vertically in one of two directions: upstream into the provision of fishing-related goods and services; or downstream into processing, wholesale and retail. Examples of upstream vertical integration are found to be limited in the Channel fishery; and include a fisherman who builds and repairs fishing vessels, and fishermen in the Channel Islands supplying bycatch from trawling as bait for pot fishermen. Anecdotal evidence suggests, however, that the latter is practised more widely throughout the Channel on an informal basis. In contrast, examples of downstream integration are more prevalent throughout the Channel; and dominated by fishermen diversifying into direct selling of their catch through fixed and mobile retail units, and to a lesser extent at markets. Typically, this involves the selling of fresh fish, although examples were found of fishermen processing or preparing seafood prior to selling. In the majority of cases this
processing is undertaken for shellfish – notably crab and lobster. Three examples were also found of fishermen diversifying into the catering sector by opening restaurants through which they sold their catch.

**Leisure & Tourism**

The practice of fishermen diversifying into the leisure and tourism sector is well established in parts of the Channel, with the main examples being sightseeing trips and recreational angling charters. Sightseeing trips are typically 1-3 hours in duration and provide participants with the opportunity to view local landmarks and wildlife. While the majority of these trips are conducted on vessels with a commercial fishing licence, only one case was found of a fisherman offering tourists the opportunity to observe fishing practices – in this example pot fishing for crab and lobster. In the case of recreational angling, trips are generally 1-3 hours in length – targeting mackerel using rods or handlines, or longer trips of up to 8 hours targeting a range of species. In both cases, fishing tackle and tuition is usually included in the price, thereby appealing to members of the public who would not consider themselves ‘recreational anglers’.

Where fishermen have diversified into the practice of taking paying visitors aboard the fishing vessel, a number of common characteristics are observed. Firstly, such activities are undertaken predominantly during the summer months at ports which are popular with tourists. During these periods, demand for such activities is at its highest and short-term diversification is deemed to be more profitable than fishing for some fishermen. Secondly, these activities are generally undertaken by inshore fishermen with smaller vessels. One reason for this is the suitability of vessels for carrying passengers. As noted by Ulrich et al. (2002), many inshore fishermen in the Channel adopt a range of fishing gears to target different species as conditions dictate. The versatility of their vessels means that unlike larger specialised vessels, the decks can be cleared of equipment to provide sufficient space to carry passengers safely. The issue of passenger safety is a key consideration, as fishermen must obtain the appropriate coding from the Maritime and Coastguard Agency (MCA) to take passengers onboard their vessels.

While the majority of leisure and tourism activities focus upon recreational boat trips, examples were also found of fishermen participating in local maritime and fishing festivals. The type of participation in these events is variable, but includes trawler races; demonstrations of oyster shucking and net making; answering questions from the public; and in one case allowing tourists onto a moored vessel. In all of these examples, fishermen participate in these activities voluntarily to raise money for charity and to promote seafood and the fishing industry. Finally, a localised example was identified in
the eastern Channel of Dover-based fishermen operating as support vessels for cross-
Channel swimming attempts.

**Environmental activities**

A number of examples were found of fishermen diversifying into activities related to the 
marine environment – principally chartering their vessels to environmental organisations 
for research purposes. The source of much of this work is the UK Centre for 
Environment, Fisheries and Aquaculture Science (Cefas) which has employed fishermen 
throughout the Channel to assist in studies on the effects of aggregate sampling, species 
distribution, and testing of fishing equipment. Such contracts are open to tender and 
advertised in the trade press. Stakeholders reported that environmental contract work can 
be potentially lucrative for fishermen, particularly during quiet fishing periods or where 
fishing activity is constrained by lack of quota. However, this work is generally sporadic 
and can be selective with respect to the types of vessel required and the duration of 
contracts. There was widespread agreement among stakeholders that opportunities for 
environmental work were likely to increase with the proposed network of Marine 
Conservation Zones (MCZs) under the Marine and Coastal Access Act 2009, although the 
administrative process of tendering for such work was identified as a possible obstacle to 
fishermen applying.

The other main example of diversification into environmental activities is participation in 
the ‘Fishing for Litter South West’ project, which forms part of a wider international 
initiative to reduce marine litter through the involvement of the fishing industry. Fishing 
vessels are provided with large bags to collect litter, which are disposed of when they 
return to port. At the time of writing 86 vessels from 7 ports in the western Channel were 
participating in this project. Unlike other diversification activities, participation is voluntary; 
fishermen are not paid to collect litter, although the financial costs of bag provision, 
collection and disposal are covered by the project. The main benefits of fishermen 
participating are twofold: in the immediate term it raises their profile as custodians of the 
marine environment – particularly as the source of some marine litter is attributed to 
fishing vessels. Secondly, in the longer term the project aims to reduce the volume of 
litter in the sea and thus the time that fishermen have to spend removing it from their nets.

**Non-fishing contract work**

The practice of fishermen using their vessels for non-fishing contract work is not 
uncommon in parts of the UK, particularly on the east coast of Scotland where fishermen 
undertake guardship duties for the North Sea oil and gas industries. Fishermen are
desirable candidates for this work, having the vessels and skills to operate in unfavourable sea conditions, together with experience of towing equipment. In the English Channel, a number of examples were found of fishermen undertaking contract work for the utilities sector – including telecommunications, water, and renewable energy. This work typically involves fishermen using their vessels for attendant/guardship duties, or working in an advisory capacity. The latter includes liaising with other fishermen to inform them of the work being undertaken and its potential impact upon their fishing activity; and working onboard survey vessels to ensure that conflict with fishing vessels is minimised.

While stakeholders revealed that such work can be financially lucrative, the opportunity for fishermen to diversify into such activities is evidently supply-led. Contact with one stakeholder revealed that opportunities within the telecommunications industry had become less frequent in recent years following the installation of underwater fibre-optic cables for broadband internet services. In contrast, opportunities for fishermen to diversify into the renewable energy sector – including guardship and supply services have increased. A number of stakeholders anticipated that this trend would continue upon development of the two proposed wind farm zones in the Channel (see section 3.2.2). One stakeholder also commented that offshore windfarm developments could create additional tourism opportunities that fishermen may be able to exploit.

5.2.3 Key characteristics of diversification

Having established a general understanding of the different forms of fisheries diversification and their distribution throughout the Channel regions, a number of key findings are found to emerge with respect to the characteristics of diversification. Firstly, it is clear that the strategy of fishermen diversifying into activities that complement their existing fishing practices is not a new phenomenon. Anecdotal evidence collected through the inventory process confirms that the decision of Channel fishermen to develop, or engage in, complementary activities to production is historically well-established. The most notable example is the provision of boat trips in the western Channel, focused upon popular tourist destinations such as Mevagissey in Cornwall. The individuals providing these activities are continuing a tradition that dates back over a century, in which fishermen prioritised profitable tourist markets during the summer months (Reynolds, 1982). This finding is not altogether unexpected, given that inshore fishing has historically been a significant component of pluriactive household economies in the south west (Gray, 2000). However, further examination of the activities currently practised throughout the Channel reveals that the majority have not been inherited, nor practised by individuals from the start of their career; but instead developed more recently in response to changing
market conditions. The most evident example of this is provided by the relative dominance of market-based activities within both the eastern and western Channel – comprised largely of product labelling schemes and direct selling (figure 5.2). Each of the ten main labelling schemes currently adopted in the Channel were introduced within the last seven years; and may be seen to reflect a growing trend among UK consumers for greater information regarding the source of food products and the methods by which it is produced and processed. Consequently, consumer demand has increased for products with clear provenance and traceability, and those produced using sustainable methods – resulting in considerable growth in markets for organic, fair-trade, and free-range products. While much of this growth has occurred within the agricultural sector, the seafood industry has reacted to this shift in attitudes accordingly.

Figure 5.2: Geographical distribution of diversification activities by type (n=67)

In addition to promoting the provenance and sustainability of products through initiatives such as labelling and fisheries certification, fishermen have sought to promote the traceability of their products through downstream integration into retail. Twenty-five examples were identified of fishermen selling their catch direct to consumers through distinct enterprises: fifteen from fixed retail premises; seven from mobile premises; and three examples of fishermen opening restaurants. The principal aim of both diversification into marketing initiatives and downstream integration into retail remains consistent – namely to add value to the seafood product; however the financial rewards and associated risks are markedly different. Comments provided by stakeholders indicate that the financial benefits of participation in labelling schemes are highly variable and fluctuate according to the individual fishery. However, each of the ten schemes within the Channel have been developed and/or supported by collective bodies – thereby reducing the
administrative burden and financial risk faced by individual fishermen. This contrasts with downstream integration into retail, where the potential to increase profitability through elimination of the ‘middleman’ is clear but inevitably requires greater financial outlay. Furthermore, fishermen must be both able and willing to commit the knowledge, skills, and time required to successfully diversify; in addition to meeting the legislative requirements for the processing and selling of seafood. With regards to the more traditional practice of selling fish direct from the vessel, the introduction of the Registered Buyers and Sellers (RBS) Scheme in 2005 was cited by a number of stakeholders as a major constraint upon the development of this activity. The RBS legislation requires all buyers of fish direct from a vessel or agent to be registered and responsible for maintaining and submitting purchase information to their local fisheries office. Registration is not required if purchases from a vessel are less than 25kg per day and for private consumption only (Marine Management Organisation, 2010b), however, the ability of fishermen to sell direct from their vessel is further constrained by the fact that public access may be restricted due to health and safety requirements – particularly in the Channel’s larger ports. As such, these characteristics may explain why the practice of diversification into marketing initiatives is notably more prevalent than direct selling among individual fishermen.

The observation that many fishermen have diversified more recently in response to changing market demand is particularly evident among activities associated with the marine environment and non-fishing contract work. Opportunities for environmental work may be seen to reflect an increased focus upon the management and conservation of marine resources – reflected at a policy level by the introduction of the Marine and Coastal Access Act 2009. Similarly, opportunities for fishermen to diversify into non-fishing contract work are largely reflective of technological developments – particularly within the telecommunication and energy sectors. Both of these activity types share a number of common characteristics: they can represent a lucrative source of income with a relatively low level of associated risk; but may also be both limited in duration and sporadic in occurrence. As such, fishermen are less likely to rely upon such activities for the longer-term survival of their fishing businesses. The notable exception to this is the ‘Fishing for Litter’ project in the western Channel in which fishermen participate voluntarily, but stand to derive non-pecuniary benefits with respect to reducing the volume of marine litter and promoting their public perception. As with marketing initiatives, it is anticipated that fishermen are encouraged to participate in this project by the fact that administrative and financial costs are borne largely by a third-party organisation.

Consistent with the finding that the majority of diversification activities have developed in response to market demand, is the observation that activity type is heavily influenced by
geographical location. While viewing the distribution of activities by type reveals similar levels of prevalence within the eastern and western Channel (figure 5.2), further examination identifies a number of notable differences. The finding that market-based activities are present throughout the Channel is reflective of the opportunities that exist to develop these types of activity. While labelling schemes are defined by their geographical focus, the opportunity exists for any distinct fishery throughout the Channel to develop their own product label. However, given that these schemes are co-ordinated by collective organisations, their resultant distribution reflects the presence of these collectives. For example, at the time of writing the prevalence of labelling schemes is greater in the western Channel than the eastern Channel; but similarly the number of collectives is found to be greater in this region. This in itself may reflect the greater number of fishermen operating within this region: of the 1,660 vessels registered at Channel homeports, 65% of these are registered at homeports in the western Channel (Marine Management Organisation, 2012b).

Compared with market-based activities, the distribution of leisure and tourism activities is less prevalent and more concentrated within specific areas of the Channel. Diversification into these activities is only feasible where sufficient demand exists and where the presence of other providers is of a magnitude that allows fishermen to compete. In many parts of the Channel demand for sightseeing and angling trips is already being met – either by fishermen who have already diversified, or more commonly by specialised providers with purpose-built vessels. Consequently, examples of fishermen diversifying into sightseeing trips and recreational angling charters are limited or absent in larger tourist centres as they are unable to compete with these specialised providers. Instead, this practice is generally found to operate from smaller tourist destinations where fishermen have developed established enterprises, such as Mevagissey in Cornwall and Beer in Devon. The prevalence of non-contract work and environmental activities is similarly concentrated within specific Channel locations, and its limited prevalence may be seen to reflect the current market for these services. Given that fishermen are employed by third-party organisations, the location of activities is governed by the objectives of the recruiter and includes research study zones (environmental sampling), and sites of construction (telecommunications and energy). In the case of the voluntary ‘Fishing for Litter South West’ initiative, opportunities to participate are determined by the regional boundaries of the project.

In addition to the type of diversification being influenced by market demand and geographical location, another key finding from the inventory concerns the type of fishermen that are currently engaged in diversification activities. The majority of these
participants were inshore fishermen with vessels under 10m in length, which may be explained by a number of reasons. Firstly, as noted in section 5.2.2 inshore vessels may be better suited to alternative activities such as boat trips and recreational angling – having less fixed machinery than specialised vessels (e.g. trawlers) and thus more open deck space. Secondly, inshore fishermen themselves may be more inclined to consider diversification as they frequently diversify their fishing methods throughout the year. Given that the majority of inshore vessels in the Channel are owner-operated with many operating as day boats, fishermen have greater flexibility to combine fishing with alternative activities, particularly when they operate as the sole crew member. In the example of direct selling, operating as a day-boat is also beneficial with respect to providing consumers with fresh products. However, the characteristics of many inshore vessels means that the ability to fish is heavily dependent upon weather conditions – which may be exacerbated in some parts of the Channel by quota restrictions. In such cases where fishermen are prevented from physically fishing, some may choose to invest their available time into alternative activities that contribute to the sustainability of their fishing business and/or the wider industry. This may include establishing individual enterprises such as processing and retail facilities, or participating in the development of collective activities such as labelling schemes.

5.2.4 Towards a typology of diversification

From the above discussion it is clear that the opportunities for Channel fishermen to diversify into complementary activities are largely determined by both geographical location and vessel type. However, by analysing the attributes of individual activities it is possible to propose a typology of diversification strategies based upon the involvement of fishermen and the nature of their actions. The involvement of fishermen in diversification takes one of two forms; according to whether they participate on an individual basis or as part of a collective action involving other fishermen. Similarly, the nature of their involvement can take one of two forms with respect to whether they assume an active or passive role in the development of the diversified activity. Using the 14 distinct activity types identified in the inventory, it is possible to create a matrix to demonstrate this typology where each strategy has distinguishing characteristics (table 5.2).
Table 5.2: Typology of diversification activities

<table>
<thead>
<tr>
<th></th>
<th>Active</th>
<th>Passive</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Individual</strong></td>
<td>Retail</td>
<td>Guardship duties</td>
</tr>
<tr>
<td></td>
<td>Processing</td>
<td>Supply services</td>
</tr>
<tr>
<td></td>
<td>Goods &amp; services</td>
<td>Fisheries liaison</td>
</tr>
<tr>
<td></td>
<td>Sightseeing trips</td>
<td>Surveying</td>
</tr>
<tr>
<td></td>
<td>Recreational angling</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Channel swimming</td>
<td></td>
</tr>
<tr>
<td><strong>Collective</strong></td>
<td>Labelling schemes</td>
<td>Maritime festivals</td>
</tr>
<tr>
<td></td>
<td>Rebranding</td>
<td>Litter collection</td>
</tr>
</tbody>
</table>

The ‘individual active’ strategy of diversification encompasses fishermen who develop distinct business activities upon their own initiative. While these activities maintain a link with commercial fishing, they are often operated separately as standalone enterprises with their own company name, branding and marketing. In some cases, fishermen operate these activities themselves (e.g. sightseeing and angling trips); whereas others such as processing and retail may involve the employment of additional staff. Anecdotal evidence collated during the inventory suggests that these staff may include the fisherman’s partner and/or other family members. The risk of investing in these activities may be substantial given that the set-up and operating costs are typically borne in full by the fisherman/fishing family. However, if successful, these activities can make a substantial contribution to the income of the fishing business. As such, examples are found of fishermen demonstrating innovative and entrepreneurial behaviour in order to establish successful business activities. This contrasts with the ‘individual passive’ strategy where diversification activities are not developed by fishermen themselves, but instead by a third-party organisation. In the Channel fishery these include both public sector (e.g. Cefas) and private sector (e.g. offshore energy) organisations, who effectively offer fishermen an opportunity to diversify with reduced risk. When coupled with lucrative earnings, these activities offer an attractive prospect – particularly to individuals who are more risk-adverse and disinclined to adopt an active diversification strategy. However, as this work is invariably short-term, localised, and specific with regards to experience and/or vessel
Collective diversification strategies, as their name suggests, develop from the work of groups or organisations rather than individual fishermen; although as with individualist strategies fishermen may take an active or passive role in their development. In the case of collective active diversification, the involvement of fishermen occurs in the form of local or regional interest groups – most notably fishermen’s associations. In the Channel fishery, these groups of fishermen work in conjunction with additional third-party organisations to develop and administer activities. Examples include the South West Handline Fishermen’s Association working with Seafood Cornwall to introduce a tagging scheme for regional line-caught fish; and the collaboration of the Hastings Fishermen’s Protection Society and Hastings Borough Council in applying for MSC certification. Such partnership arrangements are advantageous because third-party organisations invariably invest financial capital, time and skills that fishermen may be unable or unwilling to commit. For example, in the case of the rebranding of the pilchard as a Cornish sardine, one of the principal partners was a major food retailer who provided a market for the new product. However, the benefits that fishermen gain from participating in collective initiatives may be offset by the very fact that other fishermen are involved. As such, fishermen are faced with a trade-off between the potential returns of diversification and the level of risk that they are prepared to accept.

Finally, the strategy of collective passive diversification is arguably unique because the participation of fishermen is not driven by business-oriented motives. Instead, fishermen adopt this strategy for philanthropic reasons; by raising money through their involvement in maritime festivals, or contributing to conservation by collecting litter at sea. While it is entirely feasible that fishermen in other areas may receive financial remuneration for this type of work (in addition to non-pecuniary benefits), this finding demonstrates that diversification may be adopted for reasons other than a response to economic challenges in the industry.

5.3 Survey of stakeholders and fishermen

5.3.1 Profile of respondents

A total of sixty respondents were interviewed during the sequential phases of the stakeholder survey and fishermen’s survey, representing a shortfall of four respondents (two from each sample) from the target figure. This shortfall is attributed to difficulties
co-ordinating interviews within the allotted fieldwork period rather than a refusal to participate. A respondent profile for the stakeholders sample is provided in table 5.3, and reveals that the structure of interviewing adheres closely to the proposed sampling plan detailed in section 4.4.4. The greater number of respondents interviewed in the western Channel is reflective of their distribution; as such this profile represents a comprehensive sample of key fishery stakeholders.

Table 5.3: Respondent profile for stakeholder survey

<table>
<thead>
<tr>
<th>Stakeholder type</th>
<th>Fishermen’s representatives</th>
<th>Promotional organisations</th>
<th>Fisheries management</th>
<th>Related organisations</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Eastern Channel (VIIId)</td>
<td>3</td>
<td>1</td>
<td>5</td>
<td>3</td>
<td>12</td>
</tr>
<tr>
<td>Western Channel (VIId)</td>
<td>5</td>
<td>2</td>
<td>9</td>
<td>10</td>
<td>26</td>
</tr>
<tr>
<td>Total</td>
<td>8</td>
<td>3</td>
<td>14</td>
<td>13</td>
<td>38</td>
</tr>
</tbody>
</table>

Similarly, the fishermen’s survey adhered closely to the proposed sampling plan of stratifying respondents by administrative port, vessel size and diversification behaviour (table 5.4).

Table 5.4: Respondent profile for fishermen’s survey

<table>
<thead>
<tr>
<th>Administrative port</th>
<th>Vessels under 10m</th>
<th>Vessels over 10m</th>
<th>Diversifiers</th>
<th>Non-diversifiers</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Newlyn</td>
<td>4</td>
<td>1</td>
<td>3</td>
<td>2</td>
<td>5</td>
</tr>
<tr>
<td>Plymouth</td>
<td>5</td>
<td>1</td>
<td>4</td>
<td>2</td>
<td>6</td>
</tr>
<tr>
<td>Poole</td>
<td>5</td>
<td>1</td>
<td>3</td>
<td>3</td>
<td>6</td>
</tr>
<tr>
<td>Hastings</td>
<td>4</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>5</td>
</tr>
<tr>
<td>Total</td>
<td>18</td>
<td>4</td>
<td>12</td>
<td>10</td>
<td>22</td>
</tr>
</tbody>
</table>

In addition to questions on diversification and multiple-job holding, fishermen were asked a series of socioeconomic questions to generate a more detailed respondent profile. All of the fishermen interviewed were male and fell within older age-groups: none of the respondents were under 35 years and two-fifths (40%) of the sample was aged 55 or older (figure 5.3). While the sample cannot be deemed to be representative of Channel fishermen, this observation does support previous findings that the UK catching sector comprises an ageing workforce facing a decline in new entrants (Creative Research,
2009; Symes & Phillipson, 2009). As may be expected, the number of years that respondents have spent fishing reflects this older age profile, with over half of the sample (55%) having fished for thirty years or longer. The finding that only a minority of respondents (9%) had fished for less than twenty years indicates that most fishermen have spent the majority of their working lives within this profession. However, over one-third of fishermen (36%) reported that they had undertaken a secondary job in addition to fishing during this time.

Figure 5.3: Age-profile of fishermen interviewed (n=22)

Of the twenty-two fishermen interviewed, twenty-one lived with their partner and eleven shared their household with children under the age of 18: ten respondents had two children and one respondent had one child. The education profile of respondents is provided below in figure 5.4. The finding that nearly two-thirds (64%) of respondents held a professional qualification appears to conflict with other studies that suggest many fishermen do not hold academic qualifications (e.g. Creative Research, 2009). However, this may be explained by the fact that the majority of these respondents identified their professional qualifications as statutory fishing certificates.
Analyzing results by respondent type

As detailed in section 4.4.2, the content of questionnaires used in the stakeholder and fishermen’s questionnaires were tailored to their respective audiences but did contain a number of consistent questions; specifically with respect to opportunities, likelihood and constraints upon diversification. Given that 12 of the respondents interviewed in the stakeholder survey were fishermen (i.e. representatives of fishing organisations), a decision was taken to aggregate results with respect to ‘fishers’ and ‘non-fishers’. This process was undertaken because contact with fishers and non-fishers during the inventory indicated that attitudes and opinions of diversification varied between these two groups. Removing fishermen from the stakeholder dataset would therefore allow these potential differences to be explored. The resultant reclassification of these respondents resulted in 36 fishers and 24 non-fishers.

5.3.2 Current opportunities for diversification

Upon completion of the inventory it was clear that the nature and extent of diversification activities in the Channel displayed notable geographical variation. The inclusion of a question to establish perceptions of current diversification opportunities was intended to build upon this understanding, and identify potential areas for future development. When viewed as a combined sample (figure 5.5), respondents identified the greatest opportunities for fishermen to diversify into marketing initiatives (63.3%) and direct selling (60%). This finding reflects the dominance of market-based activities identified in the inventory – notably the development of labelling schemes and the growth of fishermen adopting direct selling as a means of adding value to their products. Similarly, the growth
of maritime and fishing festivals (45%) in recent years provides fishermen with opportunities to promote their products to consumers.

In addition to market-based activities, respondents also identified opportunities for fishermen to diversify by taking scientists onboard their vessels (46.7%). While the inventory revealed that this activity is currently practised to a limited extent by Channel fishermen, a number of respondents stated that they expected opportunities to increase following the proposed introduction of Marine Conservation Zones (MCZs) in 2012.

Figure 5.5: Perceived diversification opportunities: all respondents (n=60)

When perceived opportunities for diversification are viewed by Channel region (figure 5.6), a number of differences emerge. In the eastern Channel, respondents identified the greatest opportunities for fishermen to diversify into direct selling (61.9%) and taking scientists onboard their vessels (52.4%). Notably, only one-third (33%) of respondents identified some/many opportunities for fishermen to diversify into marketing initiatives. It is possible that this finding reflects the current status of these activities in the eastern Channel – particularly given that labelling schemes are more prevalent in the west. Similarly, the finding that 90.5% of respondents believed that there were limited or no opportunities for fishermen to diversify into telecommunications may reflect the historical lack of this work in the region. In contrast, the finding that 42.9% of respondents identified opportunities for fishermen to take tourists onboard their vessels represents a potential growth area given the relatively limited extent of this activity currently in the eastern Channel (see figure 5.1).
In the western Channel, respondents identified the greatest opportunities for fishermen to diversify into marketing initiatives (79.5%), direct selling (58.9%) and maritime/fishing festivals (51.3%) (figure 5.7). In contrast to the eastern Channel, only one-third (33.3%) of respondents identified some/many opportunities for fishermen to diversify by taking tourists onboard their vessels. This finding suggests that demand for these activities is currently being met by existing providers – a proposition that was supported by ad-hoc comments made by a number of respondents.

Having provided a descriptive account of the differences between respondents in the eastern and western Channel, a Chi-square test for independence was conducted to
examine whether observed differences between these two groups were statistically significant. Upon conducting this analysis using the five original response categories (many opportunities; some opportunities; limited opportunities; no opportunities; don’t know), it was found that the assumption that each cell should have an expected count of five or more was violated for each of the twelve variables being tested. The first step in addressing this violation was to remove ‘Don’t know’ responses from the dataset; however, this did not reduce the level of violation due to the low frequency of these responses. Similarly, an attempt to further reduce the number of categories by combining ‘some opportunities’ and ‘many opportunities’ only reduced the number of violations from twelve to ten. In light of this finding, a decision was taken to adopt a less stringent approach to violation by accepting tests where 80% of cells have an expected count of five or more (Pallant, 2007, p.214) – resulting in a reduction of the number of violations to four. On this basis, only two significant differences were found between respondents in the eastern and western Channel, with respect to opportunities in contract work for energy companies (Asymp. Sig. = 0.003); and participating in maritime/fishing festivals (Asymp. Sig. = 0.035).

5.3.3 Perceived likelihood of diversification

In addition to exploring existing opportunities for fishermen to diversify, the survey sought to elicit the opinions of respondents with respect to the future likelihood of diversifying into different activities. By comparing perceived opportunities for diversification with the actual likelihood of diversification, it is possible to identify specific activities that fishermen may be deterred from diversifying into due to constraints. When viewed as a combined sample (figure 5.8), the activities that fishermen are most likely to diversify into are generally reflective of perceived opportunities. Thus, fishermen were considered to be most likely to diversify into marketing initiatives (61.7%); taking scientists onboard vessels (53.3%); direct selling (48.3%); and contract work for environmental organisations (46.6%). The finding that only one-third (31.6%) of respondents believed that fishermen were likely/very likely to diversify into maritime festivals is supported by the observation that many of these events tend to focus upon retail and catering, rather than the catching sector.
Consistent with the findings for diversification opportunities, analysing results by Channel region reveals a number of notable differences. In the eastern Channel, respondents identified the likelihood of diversification to be greatest for marketing initiatives (57.1%); direct selling (57.1%); and contract work for energy companies (57.2%) (figure 5.9). The discrepancy between opportunities and likelihood of fishermen diversifying into contract work for the energy sector may be explained by the proposal to construct two offshore wind farm zones in this region (see section 3.2.2).

Figure 5.9: Perceived likelihood of diversification: eastern Channel (n=21)
In the western Channel, the perception that fishermen were more likely to diversify into marketing initiatives (64.1%) and direct selling (43.6%) remains consistent with the eastern Channel results (figure 5.10). However, the likelihood of fishermen diversifying into the energy sector (30.8%) is comparatively lower due to the lack of proposed development sites in this region. Instead, respondents believed that fishermen were more likely to diversify into taking scientists onboard their vessels (59%) and contract work for environmental organisations (43.6%) – in line with the proposed network of MCZs.

Figure 5.10: Perceived likelihood of diversification: western Channel (n=39)

As with the question on perceived opportunities, a Chi-square test for independence was conducted to examine whether observed differences in perceived likelihood between eastern and western Channel respondents were statistically significant. Conducting this analysis using the six original response categories (very likely; likely; neither/nor; not very likely; not at all likely; don’t know) resulted in a violation of the assumption that each cell should have an expected count of five – for each of the twelve variables being tested. Removing ‘Don’t know’ responses did not reduce this level of violation so the number of categories was further reduced to three: likely; neither/nor; and unlikely – resulting in a reduction in violations from twelve to eight. Adopting a more lenient strategy of including tests where 80% of cells have an expected count of five or more further reduced the number of violations to four. On this basis only one significant difference was found between respondents in the eastern and western Channel; with respect to the likelihood of fishermen diversifying into collecting litter/waste at sea (Asymp. Sig. = 0.012).
5.3.4 Perceived motives for diversification

Stakeholders and fishermen were asked to identify the principal motives for diversification in the English Channel from a pre-specified list containing economic, social and environmental factors. An ‘other’ option was also included, with these responses being recorded as verbatim comments. Given that opinions were expected to vary according to the role of respondents within the Channel fishery, results are presented for fishers and non-fishers in the first instance (figure 5.11). Business survival was identified by the greatest proportion of both fishers (86.1%) and non-fishers (83.3%) as a principal motive for fishermen diversifying into other activities. Similarly, the economic objective of increasing profit was also identified as a key objective although a notable difference is observed between fishers (58.3%) and non-fishers (33.3%). This finding was supported by the fact that a number of fishers stated that diversification was typically a strategy of business survival rather than growth. Consequently, these individuals stressed that the main economic motive was one of maintaining rather than increasing profit.

Figure 5.11: Perceived motives for diversification: all respondents (n=60)

The finding that 33.3% of fishers and 41.7% of non-fishers identified ‘maintaining the traditions of fishing’ as a principal motive supports the notion that fishermen hold a strong affiliation to their profession. A number of the fishermen interviewed stressed the link between economic and social motives, in that the financial benefits of diversification could allow them to continue fishing during unprofitable periods. Only a minority of fishers identified maintaining fishing communities (16.7%); improving working conditions (5.6%); or reducing pressure on the marine environment (8.3%) as principal motives. This finding adds further support to the dominant influence of financial incentives upon the decision of
fishermen to diversify. Seven respondents cited motives that were not pre-defined on the questionnaire and have been recorded as ‘other’ in figure 5.11. These motives include opportunism; promoting sustainability; increasing independence; developing an interest in other activities; and being forced to diversify by regulation, quota limitations or personal health.

In contrast to questions on perceived opportunities and the likelihood of diversification, a Chi-square test for independence did not reveal any cases where the assumptions of the test were violated – which may be explained by the fact that this question includes only two response categories. However, when examined for statistical significance (using the Continuity Correction for a 2x2 table) no significant differences were found between fishers and non-fishers. Similarly, analysing results by Channel region did not reveal any statistically significant differences – with responses remaining broadly similar between the two groups.

5.4 Constraints upon diversification

Incorporating the AHP component into questionnaires for both the stakeholder and fishermen’s surveys resulted in a total of sixty respondents being asked to complete this exercise. The majority of respondents were able to complete the AHP process without difficulty, although two individuals refused to complete this section of the questionnaire. One respondent stated that they did not understand the task sufficiently to be able to provide accurate responses – despite a worked example being provided by the researcher. The other respondent refused to complete the AHP section because they felt uncomfortable in providing responses within the context of fishermen in the Channel. This decision may be partly explained by the fact that this individual was a non-fishing stakeholder.

5.4.1 AHP results by all respondents

The analysis of AHP results involves a process of aggregation and normalisation, from which each criterion within the hierarchy is attributed a weight that reflects its relative importance (commonly expressed as a percentage). As discussed in section 4.4.7, the calculation of normalised priority weights can be conducted using two methods: the geometric mean method using Microsoft Excel, or the eigenvalue method using Expert Choice software. The results of using both methods are detailed in table 5.5 to allow comparison; as can be seen these two methods yielded almost identical results. For the
purposes of consistency, results derived from the eigenvalue method will be used for the following discussion.

When viewed as a combined sample, the results reveal that respondents attributed a similar level of importance to four of the five main constraint types: administrative constraints were deemed to be most important (25.2%), closely followed by lack of opportunities (24%), social constraints (20.4%) and economic factors (19.6%). In contrast, lack of information (10.7%) was attributed notably less importance as a constraint upon fisheries diversification.

Table 5.5: Comparison of normalised priority weights derived from geometric mean and eigenvalue method

<table>
<thead>
<tr>
<th>Objective</th>
<th>Geometric mean</th>
<th>Eigenvalue method</th>
</tr>
</thead>
<tbody>
<tr>
<td>Economic</td>
<td>0.196</td>
<td>0.196</td>
</tr>
<tr>
<td>Social</td>
<td>0.204</td>
<td>0.204</td>
</tr>
<tr>
<td>Lack of information</td>
<td>0.108</td>
<td>0.107</td>
</tr>
<tr>
<td>Lack of opportunities</td>
<td>0.240</td>
<td>0.240</td>
</tr>
<tr>
<td>Administrative</td>
<td>0.252</td>
<td>0.252</td>
</tr>
<tr>
<td><strong>Base</strong></td>
<td><strong>58</strong></td>
<td><strong>58</strong></td>
</tr>
</tbody>
</table>

Examining the consistency of individual responses revealed that around one-quarter (24.1%) of respondents had a consistency ratio of less than 0.1; compared with over two-thirds (69%) who had a consistency ratio of less than 0.2. It was found that over two-thirds (68.2%) of respondents with a consistency ratio of 0.1 or greater were fishers; and a Mann-Whitney U Test confirmed that ratio scores were significantly higher among fishers ($Md = 0.161$) than non-fishers ($Md = 0.129$) at the 0.05 level ($p = 0.031$). A number of possible explanations for this inconsistency may be proposed, including lack of understanding of the process; difficulty among respondents in determining the relative importance of individual criteria; and respondents simply displaying indifference. It is difficult, however, to establish the relevance of these different explanations in accounting for the observed inconsistencies. Efforts were made to ensure that each respondent clearly understood the AHP process; by providing them with a thorough explanation (including a worked example) and asking them to confirm that they understood the task prior to commencing. Despite these measures it cannot be assumed that each respondent had a complete understanding of what they were required to do. Similarly, it is possible that some respondents may have been indifferent to the relative importance of criteria although there is little evidence in the ad-hoc comments provided by respondents to support this. A more feasible explanation may be that respondents found it difficult to
‘trade off’ the importance of different constraints, thus resulting in inconsistent responses. This explanation is supported by the finding that four of the five constraints were regarded collectively as having a similar level of importance.

The presence of inconsistent responses is not altogether uncommon when using the AHP methodology; for example, Ishizaka, Balkenbourg and Kaplan (2011, p.1807) observed that less than one-third of their sample returned an inconsistency ratio of 0.1 or less – which they attributed to respondents being indifferent to the alternatives. It is necessary though to establish how inconsistent responses will be used during the analysis of data. In section 4.4.7 three main strategies were discussed, namely: only including responses with a consistency ratio of less than 0.1; including responses with a consistency ratio of less than 0.2; or including all responses regardless of their consistency. For the purposes of comparison, normalised priority weights were calculated for each of these three scenarios (table 5.6).

Table 5.6: Comparison of normalised priority weights by consistency ratio

<table>
<thead>
<tr>
<th>Objective</th>
<th>All responses</th>
<th>Consistency &lt;0.2</th>
<th>Consistency &lt;0.1</th>
</tr>
</thead>
<tbody>
<tr>
<td>Economic</td>
<td>0.196</td>
<td>0.194</td>
<td>0.212</td>
</tr>
<tr>
<td>Social</td>
<td>0.204</td>
<td>0.193</td>
<td>0.188</td>
</tr>
<tr>
<td>Lack of information</td>
<td>0.108</td>
<td>0.114</td>
<td>0.139</td>
</tr>
<tr>
<td>Lack of opportunities</td>
<td>0.240</td>
<td>0.252</td>
<td>0.230</td>
</tr>
<tr>
<td>Administrative</td>
<td>0.252</td>
<td>0.247</td>
<td>0.231</td>
</tr>
<tr>
<td><strong>Base</strong></td>
<td><strong>58</strong></td>
<td><strong>40</strong></td>
<td><strong>14</strong></td>
</tr>
</tbody>
</table>

When responses with a consistency ratio of less than 0.1 are included in the analysis, the results show a similar pattern to that of the total sample of 58 respondents – in that administrative constraints (23.1%) and lack of opportunities (23.0%) are attributed greatest importance, and lack of information (13.9%) notably less importance. However, in contrast to the total sample, economic constraints (21.2%) are ranked slightly higher than social constraints (18.8%). Inclusion of responses with a consistency ratio of less than 0.2 also reveals a similar outcome, albeit with slightly altered rankings. In this scenario, respondents attributed greatest importance to lack of opportunities (25.2%) followed by administrative constraints (24.7%), with lack of information (11.4%) retaining the lowest ranking. In light of these observations a decision was taken to include all respondents in the analysis of the AHP component for two reasons. Firstly, as noted by Whitmarsh and Wattage (2006), each response represents the stated preference of an individual which arguably has a right to be included even if inconsistent. There is no clear pattern between inconsistency and respondent type, nor any reason to suspect that
certain respondents may have intentionally provided inconsistent responses. Secondly, the results detailed in table 5.6 show that the aggregated responses of the total sample are broadly similar to those of the samples with a consistency ratio of less than 0.2 and less than 0.1 respectively. Although the individual rankings show some variation, the pattern remains consistent: administrative constraints and lack of opportunities are attributed the greatest importance, followed closely by social and economic constraints. In each scenario, lack of information is attributed notably less importance by respondents. For these reasons, there is no obvious benefit to be gained from removing responses which fall outside of a pre-defined consistency threshold.

5.4.2 AHP results by respondent sub-groups

Having established the relative importance that the total sample of respondents attributed to different constraints upon diversification, results were analysed by respondent type to explore any notable differences (table 5.7). A comparison of fishers and non-fishers revealed that administrative constraints were attributed the greatest importance (26.4% and 22.9% respectively), and lack of information attributed the lowest importance (9.1% and 13.3%) – thus retaining consistency with the total sample. A key difference emerges however with respect to the importance of social constraints upon diversification. Fishers attributed social constraints with the second highest importance weighting (24.8%), with many commenting that they believed fishermen would prefer to concentrate on fishing rather than diversify. This finding contrasts with the opinions of non-fishers who attributed notably less importance to social constraints (14.8%). A number of these respondents stated their belief that fishermen were innovative individuals, and thus would not be averse to considering fisheries diversification as a business strategy.

Table 5.7: Comparison of normalised priority weights by respondent type

<table>
<thead>
<tr>
<th>Objective</th>
<th>Fishers</th>
<th>Non-fishers</th>
<th>Eastern (all)</th>
<th>Western (all)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Economic</td>
<td>0.188</td>
<td>0.203</td>
<td>0.163</td>
<td>0.213</td>
</tr>
<tr>
<td>Social</td>
<td>0.248</td>
<td>0.148</td>
<td>0.279</td>
<td>0.167</td>
</tr>
<tr>
<td>Lack of information</td>
<td>0.091</td>
<td>0.133</td>
<td>0.128</td>
<td>0.095</td>
</tr>
<tr>
<td>Lack of opportunities</td>
<td>0.210</td>
<td>0.288</td>
<td>0.173</td>
<td>0.282</td>
</tr>
<tr>
<td>Administrative</td>
<td>0.264</td>
<td>0.229</td>
<td>0.257</td>
<td>0.243</td>
</tr>
<tr>
<td>Base</td>
<td>35</td>
<td>23</td>
<td>21</td>
<td>37</td>
</tr>
</tbody>
</table>

Analysing results by the region in which respondents work also reveals a number of notable findings. In contrast to the total sample, respondents in the eastern Channel attributed greatest importance to social constraints (29.7%) rather than administrative
constraints (25.7%). A number of these respondents who were not fishermen supported the notion that many fishermen would prefer to fish rather than diversify. This finding was not consistent in the western Channel though, where respondents attributed notably less importance to social constraints (16.7%). Furthermore, western Channel respondents attributed the greatest importance to lack of opportunities (28.2%) as a constraint upon diversification, rather than administrative constraints (24.3%). In summary, these observations demonstrate that while some of the key themes remain consistent among different respondents (e.g. the relative importance of administrative constraints compared with lack of information), a number of notable differences emerge between regions and respondents’ role in the industry.

5.4.3 AHP results for economic sub-criteria

As with the first-tier of criteria, the second-tier of economic sub-criteria included in the stakeholder survey was analysed using Expert Choice software. In contrast to the first-tier criteria, the proportion of respondents providing inconsistent answers was found to be greater; with 50% of the sample having a consistency ratio of less than 0.2. One explanation for this outcome is the observation that a number of respondents commented on the interrelationship between the three economic sub-criteria. This was most notable with respect to capital finance – in that respondents believed that access to finance was directly influenced by the profitability and risk associated with the proposed investment. When results are analysed by the total sample of 36 respondents, lack of capital finance was attributed the greatest importance as an economic constraint (40.4%), followed by financial risk (31.0%) and lack of profitability (28.7%) (table 5.8).

<table>
<thead>
<tr>
<th>Objective</th>
<th>All responses</th>
<th>Consistency &lt;0.2</th>
<th>Consistency &lt;0.1</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lack of profitability</td>
<td>0.287</td>
<td>0.288</td>
<td>0.297</td>
</tr>
<tr>
<td>Financial risk</td>
<td>0.310</td>
<td>0.290</td>
<td>0.298</td>
</tr>
<tr>
<td>Lack of capital finance</td>
<td>0.404</td>
<td>0.422</td>
<td>0.405</td>
</tr>
<tr>
<td><strong>Base</strong></td>
<td><strong>36</strong></td>
<td><strong>18</strong></td>
<td><strong>15</strong></td>
</tr>
</tbody>
</table>

When responses with a consistency ratio of less than 0.1 are analysed, lack of capital finance is also attributed the highest importance (40.5%), although financial risk (29.8%) and lack of profitability (29.7%) are attributed similar importance. A similar outcome is also observed for responses with a consistency ratio of less than 0.2. Despite these differences, a decision was taken to include all responses in the subsequent analysis of data. As with the first-tier of criteria, the pattern of responses remains broadly similar.
between different respondent groups, and all responses are considered to represent a valid stated preference.

Consistent with the first-tier of criteria, data was analysed by respondent sub-groups to explore notable differences (table 5.9). Comparison of fishers and non-fishers reveals that both groups attributed the greatest important to lack of capital finance as a constraint upon diversification (42.7% and 39.0% respectively). However, a difference emerges in the ranking of the remaining criteria; fishers identified lack of profitability (29.7%) as the second most important constraint, followed by financial risk (27.6%) – which contrasts with that of non-fishers who identified financial risk (33.0%) as the second most important constraint. A possible explanation for this finding is provided by the way in which fishers and non-fishers conceptualise financial risk in the decision making process. More specifically, a number of fishermen commented that they did not believe that risk was a significant barrier to diversification because they accepted risk (both financially and to personal safety) as an inherent aspect of their occupation. Consequently, these individuals are prepared to accept the risk associated with developing a new activity provided it is financially viable and sufficiently profitable.

**Table 5.9: Comparison of economic normalised priority weights by respondent type**

<table>
<thead>
<tr>
<th>Objective</th>
<th>Fishers</th>
<th>Non-fishers</th>
<th>Eastern (all)</th>
<th>Western (all)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lack of profitability</td>
<td>0.297</td>
<td>0.281</td>
<td>0.322</td>
<td>0.269</td>
</tr>
<tr>
<td>Financial risk</td>
<td>0.276</td>
<td>0.330</td>
<td>0.339</td>
<td>0.294</td>
</tr>
<tr>
<td>Lack of capital finance</td>
<td>0.427</td>
<td>0.390</td>
<td>0.338</td>
<td>0.438</td>
</tr>
<tr>
<td><strong>Base</strong></td>
<td><strong>13</strong></td>
<td><strong>23</strong></td>
<td><strong>12</strong></td>
<td><strong>24</strong></td>
</tr>
</tbody>
</table>

When analysing the results by region, a notable difference emerges in that respondents in the eastern Channel attribute a similar level of importance between the three economic sub-criteria. In contrast, results from the western Channel follow a similar trend to that of the combined sample by attributing greatest importance to lack of capital finance (43.8%), followed by financial risk (29.4%) and lack of profitability (26.9%). This similarity between the western Channel and the full sample may be the result of the comparatively greater proportion of respondents from this region (i.e. two-thirds of the respondents who completed this component). In summary, these results show that respondents considered each of the three economic constraints to be influential upon the decision to diversify – although the relative importance is variable (most notably by region).
5.4.4 Correlation

The purpose of undertaking correlation of normalised priority weights is to explore whether relationships exist with respect to the importance that respondents attribute to different constraints upon diversification. Spearman’s Rank Order Correlation was conducted in SPSS to determine the strength, direction and statistical significance of the first-tier constraints with respect to each other – the output of which is presented in table 5.10.

Table 5.10: Correlation matrix of normalised priority weights: all respondents

<table>
<thead>
<tr>
<th></th>
<th>Economic</th>
<th>Social</th>
<th>Lack of information</th>
<th>Lack of opportunities</th>
<th>Administrative</th>
</tr>
</thead>
<tbody>
<tr>
<td>Economic</td>
<td>1.00</td>
<td>-0.172</td>
<td>-0.115</td>
<td>0.039</td>
<td>-0.227</td>
</tr>
<tr>
<td>Social</td>
<td>-0.172</td>
<td>1.00</td>
<td>-0.026</td>
<td>-0.361**</td>
<td>-0.356**</td>
</tr>
<tr>
<td>Lack of information</td>
<td>-0.115</td>
<td>-0.026</td>
<td>1.00</td>
<td>-0.067</td>
<td>-0.346**</td>
</tr>
<tr>
<td>Lack of opportunities</td>
<td>-0.039</td>
<td>-0.361**</td>
<td>-0.067</td>
<td>1.00</td>
<td>-0.397**</td>
</tr>
<tr>
<td>Administrative</td>
<td>-0.142</td>
<td>-0.356**</td>
<td>-0.346**</td>
<td>-0.397**</td>
<td>1.00</td>
</tr>
</tbody>
</table>

** Correlation significant at 0.01 level  
* Correlation significant at 0.05 level

Base = 58

Examination of these results reveals the existence of four statistically significant correlations at the 0.05 level. Administrative constraints were found to be negatively correlated with social constraints (-0.356), lack of information (-0.346), and lack of opportunities (-0.397). Social constraints were also found to be negatively correlated with lack of opportunities (-0.361). Based on their coefficient values, each of these significant correlations represents a medium strength relationship by falling within the range 0.30 – 0.49 (Cohen, 1997, p.80). The prominence of negative correlation scores is to some extent reflective of the AHP methodology (Whitmarsh & Wattage, 2006) – as each respondent essentially trades off the importance of one constraint against another. Nonetheless, it is useful to examine this data to see whether it adheres to a priori expectations – particularly those derived from comments given by stakeholders and fishermen during the data collection process. It should be noted that while correlation testing indicates the strength, direction and significance of a relationship between two variables it does not reveal the causality; consequently results may be subject to multiple interpretations.
The observation that administrative constraints are negatively correlated with social constraints, lack of information and lack of opportunities may be seen to reinforce the importance that respondents attribute to this constraint. This finding suggests a possible distinction between respondents being prevented from diversifying by factors over which they have limited/no control, and choosing not to diversify for personal reasons. Thus, a hypothetical scenario may be envisaged where an individual seeking to diversify identifies a viable opportunity and accesses the information required to inform their decision, but is deterred from diversifying due to administrative constraints. An alternative approach to analysing the results of this correlation is to focus upon the significant negative relationship of lack of opportunities with social constraints (-0.361) and administrative constraints (-0.397). The interpretation of this relationship gives rise to two hypothetical scenarios – both of which are supported by ad-hoc comments provided by respondents completing the AHP exercise. In the first scenario, opportunities exist for diversification but fishermen are deterred from diversifying due to the administrative constraints faced and the fact that they would prefer to concentrate upon fishing. Alternatively, a scenario may emerge where fishermen are neither deterred by social nor administrative constraints, but are prevented from diversifying due to a lack of viable opportunities. In reality, it is likely that both of these scenarios are present within the Channel fishery and determined largely by geographical location.

Conducting Spearman’s Rank Order Correlation by respondent sub-groups of fishers and non-fishers revealed the presence of similar themes (table 5.11); for example, the finding that administrative constraints are negatively correlated with social constraints (-0.427) and lack of information (-0.416) among fishers. Notably, no statistically significant relationships were identified among non-fishers. While not statistically significant, the positive relationship among fishers between lack of opportunities and economic constraints (0.270) is noteworthy because it further supports ad-hoc comments made by a number of respondents. These individuals identified a relationship between the two criteria – in that lack of opportunities referred to existing options for diversification being economically unviable, rather than a lack of options per se.
Table 5.11: Correlation matrix of normalised priority weights by respondent type
(f = fisher; nf = non-fisher)

<table>
<thead>
<tr>
<th></th>
<th>Economic</th>
<th>Social</th>
<th>Lack of information</th>
<th>Lack of opportunities</th>
<th>Administrative</th>
</tr>
</thead>
<tbody>
<tr>
<td>Economic</td>
<td>1.00</td>
<td>-0.291 (f)</td>
<td>0.244 (f)</td>
<td>0.270 (f)</td>
<td>-0.176 (f)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>0.065 (nf)</td>
<td>0.020 (nf)</td>
<td>-0.235 (nf)</td>
<td>-0.297 (nf)</td>
</tr>
<tr>
<td>Social</td>
<td>-0.291 (f)</td>
<td>1.00</td>
<td>-0.132 (f)</td>
<td>0.377* (f)</td>
<td>-0.427* (f)</td>
</tr>
<tr>
<td></td>
<td>0.065 (nf)</td>
<td></td>
<td>-0.052 (nf)</td>
<td>-0.314 (nf)</td>
<td>-0.379 (nf)</td>
</tr>
<tr>
<td>Lack of information</td>
<td>-0.244 (f)</td>
<td>0.132 (f)</td>
<td>1.00</td>
<td>-0.081 (f)</td>
<td>-0.416* (f)</td>
</tr>
<tr>
<td></td>
<td>0.020 (nf)</td>
<td></td>
<td>-0.052 (nf)</td>
<td>-0.371 (nf)</td>
<td>0.073 (nf)</td>
</tr>
<tr>
<td>Lack of opportunities</td>
<td>0.270 (f)</td>
<td>-0.377* (f)</td>
<td>-0.081 (f)</td>
<td>1.00</td>
<td>-0.316 (f)</td>
</tr>
<tr>
<td></td>
<td>-0.235 (nf)</td>
<td></td>
<td>-0.314 (nf)</td>
<td>-0.371 (nf)</td>
<td>-0.303 (nf)</td>
</tr>
<tr>
<td>Administrative</td>
<td>-0.176 (f)</td>
<td>-0.427* (f)</td>
<td>-0.416* (f)</td>
<td>-0.316 (f)</td>
<td>1.00</td>
</tr>
<tr>
<td></td>
<td>-0.297 (nf)</td>
<td></td>
<td>-0.379 (nf)</td>
<td>0.073 (nf)</td>
<td></td>
</tr>
</tbody>
</table>

** Correlation significant at 0.01 level
Base = fishers 35; non-fishers 23

Examining correlation results by Channel region also reveals a number of similarities with the combined dataset – particularly with respect to the negative relationship between administrative constraints and other criteria (table 5.12). The finding in the western Channel that lack of opportunities is significantly correlated with social (-0.408) and administrative constraints (-0.491) is noteworthy, given that the inventory revealed a greater prevalence of activities in this region. In light of the inventory findings, this correlation may infer that fishermen are deterred from diversifying into existing opportunities due to personal preference and the presence of administrative constraints. However, it also feasible that some fishermen in the western Channel are willing to diversify and not deterred by administrative constraints, yet find the market for diversification activities is saturated by existing providers.

The finding in the eastern Channel that social constraints and administrative constraints display a significant negative correlation is particularly notable due to the strength of this relationship (-0.719). As previously noted, this relationship may be interpreted in one of two ways with respect to causality. However, in contrast to the western Channel, respondents attributed a greater level of importance to social constraints (27.9%) than administrative constraints (25.7%) in the AHP component (table 5.7). It is therefore feasible that these respondents believe that fishermen are not deterred from diversifying by administrative obstacles, but rather due to personal preference.
Table 5.12: Correlation matrix of normalised priority weights by region
(e = eastern; w = western)

<table>
<thead>
<tr>
<th></th>
<th>Economic</th>
<th>Social</th>
<th>Lack of information</th>
<th>Lack of opportunities</th>
<th>Administrative</th>
</tr>
</thead>
<tbody>
<tr>
<td>Economic</td>
<td>1.00</td>
<td></td>
<td>-0.154 (e)</td>
<td>-0.058 (e)</td>
<td>-0.043 (e)</td>
</tr>
<tr>
<td>Social</td>
<td>-0.154 (e)</td>
<td>1.00</td>
<td>-0.007 (e)</td>
<td>-0.103 (e)</td>
<td>-0.719** (e)</td>
</tr>
<tr>
<td>Lack of</td>
<td>-0.465* (e)</td>
<td>-0.007 (e)</td>
<td>1.00</td>
<td>-0.134 (e)</td>
<td>-0.180 (e)</td>
</tr>
<tr>
<td>information</td>
<td>0.134 (w)</td>
<td>-0.152 (w)</td>
<td></td>
<td>-0.010 (w)</td>
<td>-0.435** (w)</td>
</tr>
<tr>
<td>Lack of</td>
<td>-0.058 (e)</td>
<td>-0.103 (e)</td>
<td>-0.134 (e)</td>
<td>1.00</td>
<td>-0.223 (e)</td>
</tr>
<tr>
<td>opportunities</td>
<td>-0.082 (w)</td>
<td>-0.408* (w)</td>
<td>-0.010 (w)</td>
<td></td>
<td>-0.491** (w)</td>
</tr>
<tr>
<td>Administrative</td>
<td>-0.043 (e)</td>
<td>-0.719** (e)</td>
<td>-0.180 (e)</td>
<td>-0.223 (e)</td>
<td>1.00</td>
</tr>
<tr>
<td></td>
<td>-0.290 (w)</td>
<td>-0.147 (w)</td>
<td>-0.435** (w)</td>
<td>-0.491** (w)</td>
<td></td>
</tr>
</tbody>
</table>

** Correlation significant at 0.01 level
* Correlation significant at 0.05 level
Base = eastern 21; western 37

5.4.5 Cluster analysis

The analysis of AHP results provided in the previous sections of this chapter has sought to explore variations in opinion between different respondent groups – with individuals being assigned to these groups according to pre-defined characteristics i.e. whether or not they are fishermen, and the Channel region in which they are located. It is logical to assume that the opinions and attitudes of respondents may be shaped to a varying extent by their role and location – an assumption that was supported by a number of statistically significant findings. However, it is also possible that respondents may be more effectively categorised by alternative homogeneous characteristics, rather than their membership of a priori defined groups (Himes, 2007). To explore this possibility, hierarchical cluster analysis was applied in SPSS to categorise each respondent on the basis of the priority weights they attributed to the five first-tier AHP criteria – the output of which is displayed in figure 5.12. Each case is identified by respondent ID number, but for the purposes of interpretation has also been labelled by respondent type and Channel region (e = eastern; w = western). Initial investigation revealed that clusters do not correspond with the pre-defined groups to which respondents belong; instead the variables of respondent type and
Channel region are evident throughout different clusters. Upon further examination, six distinct clusters were identified which are labelled A-F respectively in figure 5.12. A summary of these clusters with respect to their characteristics and membership is provided below:

Cluster A consists of fourteen respondents who attribute a relatively high level of importance to administrative constraints upon diversification: accounting for between 42.2% and 66.1%. Of these fourteen individuals, nine are fishers; two work within fisheries management; two work for related organisations; and one works for an organisation that represents the fishing industry.

Cluster B consists of six respondents who attribute importance across economic constraints, social constraints, lack of information and administrative constraints – but attribute relatively little importance to lack of opportunities (between 2.8% and 12.2%). Notably, all of these respondents are fishers; four from the eastern Channel and two from the western Channel.

Cluster C consists of eight respondents who attribute varying levels of importance across the five main criteria, but place greatest emphasis on the importance of economic constraints (between 22.3% and 40.5%). This cluster consists of four fishers and four employees of related organisations; seven of these eight individuals are located within the western channel.

Cluster D consists of only two respondents, both from the western Channel; a fisherman and an employee of a related organisation. This cluster is distinguished by the fact that these individuals attribute relatively high levels of importance to two criteria: lack of opportunities and lack of information. In both cases, the combined importance of these two constraints accounts for over 60% of priority weights, but the importance attributed to the remaining three criteria is found to vary.

Cluster E consists of seventeen respondents and is the largest of the six clusters by membership. The distinguishing feature of this cluster is that respondents attribute a relatively high level of importance to lack of information as a constraint upon diversification (between 31.31% and 65.1%); a finding that contrasts notably with the other clusters. Of these seventeen respondents, seven are fishers; five work within management; four work for related organisations; and one works for an organisation that represents the industry. Thirteen of these individuals are based within the western Channel and four within the eastern Channel.
Cluster F consists of eleven respondents who are distinguished by the relatively high level of importance that they attribute to social constraints: between 47.4% and 61.9%. Of these eleven respondents, eight are fishermen; two work for related organisations; and one works for an organisation that represents the industry. Seven of these individuals are located within the eastern Channel and the remaining four within the western Channel.
Figure 5.12: Dendrogram of hierarchical cluster analysis
5.5 Preferred response strategies of fishermen

Although diversification has the potential to provide fishermen with a valuable source of complementary income, the importance that respondents attributed to social constraints upon diversification (table 5.7) suggests that many fishermen would prefer to concentrate on fishing. To explore this issue further, fishermen were asked how they would respond if their current fishing activities became unprofitable (figure 5.13).

Of the twenty-two fishermen that were asked this question, fifteen (68%) reported that they would continue fishing but attempt to find a more profitable species or fishing method. This finding is not unsurprising given the inherent adaptability of the Channel fleet, particularly within the inshore sector. Around one in five respondents (22%) reported that they would continue fishing but seek to supplement their income with other fishing-related employment (i.e. fisheries diversification); and only a minority (5%) reported that they would adopt a strategy of multiple-job holding. The finding that only 5% of respondents would consider leaving the industry adds support to the presence of limited opportunities and non-pecuniary benefits discussed in section 3.6.

Figure 5.13: Preferred response strategies of fishermen (n=22)

A Chi-square test for independence was used to examine the relationship between fishermen’s preferred response strategies and the following characteristics:

- Region;
- Age-group;
- Years spent fishing;
- Percentage of household income from fishing;
- Experience of holding a secondary job;
- Presence of children in household.

Conducting this analysis using the original response categories resulted in a violation of the assumption that each cell should have an expected count of five or more – for each of the six tests. Reducing the number of response strategies and accepting tests where 80% of cells have an expected count of five or more resulted in the same outcome, which may be explained by the small sample size for this question. An alternative approach was to conduct the Chi-square test for those respondents who reported that they would ‘continue fishing, but find a more profitable species or method’. Despite the assumption remaining violated for each of these tests, the results did not reveal any statistically significant differences with respect to respondent characteristics.

Following Chi-square testing, Binary Logistic Regression was used to model the influence of the above characteristics upon the decision of fishermen to continue fishing. The ‘age-group’ variable was removed from the model to avoid multicollinearity with the ‘Years spent fishing’ variable. The full model containing five independent variables was not statistically significant (\( \text{Sig.} = 0.127 \)); however, the significance of the model was improved by removing the ‘Region’ and ‘Percentage of household income from fishing’ variables (\( \text{Sig.} = 0.019 \)). The model as a whole explained between 36.2% (Cox & Snell R square) and 50.7% (Nagelkerke R square) of variance in propensity to continue fishing, and correctly classified 68.2% of cases. As can be seen in table 5.13, only one of the three independent variables has a unique statistically significant influence upon the model: experience of holding a secondary job in addition to fishing (\( \text{Sig.} = 0.028 \)).

**Table 5.13: Logistic Regression predicting likelihood of continuing fishing**

<table>
<thead>
<tr>
<th>Variable</th>
<th>B</th>
<th>S.E</th>
<th>Wald</th>
<th>df</th>
<th>Sig.</th>
<th>Odds Ratio</th>
<th>95% C.I for Odds Ratio</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Lower</td>
</tr>
<tr>
<td>Secondary job</td>
<td>-3.837</td>
<td>1.747</td>
<td>4.825</td>
<td>1</td>
<td>.028</td>
<td>.022</td>
<td>.001</td>
</tr>
<tr>
<td>Years spent fishing</td>
<td>.107</td>
<td>.077</td>
<td>1.946</td>
<td>1</td>
<td>.163</td>
<td>1.113</td>
<td>.957</td>
</tr>
<tr>
<td>Number of children</td>
<td>-.407</td>
<td>.702</td>
<td>.337</td>
<td>1</td>
<td>.562</td>
<td>.665</td>
<td>.168</td>
</tr>
<tr>
<td>Constant</td>
<td>-.245</td>
<td>2.258</td>
<td>.012</td>
<td>1</td>
<td>.914</td>
<td>.783</td>
<td></td>
</tr>
</tbody>
</table>

Examining the \( B \) values to determine the direction of the relationship between variables indicates that fishermen are more likely to continue fishing (and thus disregard alternative strategies) if they have spent longer in the fishing industry, but less likely if they have held a secondary job or have children. This observation adheres to the findings of previous
work on both fisheries diversification (e.g. Alban & Boncoeur, 2004) and multiple-job holding (e.g. Wu et al., 2009).

5.6 Summary

As noted in the introduction, the aim of this chapter is to establish a detailed understanding of the nature and extent of current diversification practices in the Channel; and to provide some insight into potential opportunities and the future likelihood of fishermen diversifying. Given the amount of data derived from the inventory and subsequent surveys of stakeholders and fishermen, it is useful to provide a summary of these research findings prior to the succeeding chapter. This is provided below in five key summary points:

1) Diversification into activities that complement the product, profession or business of fishing is historically well-established, and has increased notably over the last ten years. Despite this growth, diversification remains a strategy practised by a minority of fishermen in the Channel – most of which operate inshore vessels of under 10m in length.

2) Examples of fisheries diversification are present throughout the English Channel, although the type of activity practised is determined geographically by available opportunities. Consequently, some activities are found to be highly localised (e.g. contract work); while others are geographically widespread (e.g. direct selling). The presence of agencies that support the development of diversification is also influential upon the distribution of some activity types – most notably with respect to labelling initiatives designed to market the provenance and/or sustainability of products.

3) Consistent with the finding that opportunities for diversification are spatially diverse, the perceived likelihood of fishermen diversifying into different activity types is also found to vary by region – although some similarities are evident. Respondents in the eastern Channel believed that fishermen were most likely to diversify into marketing initiatives; direct selling; and contract work for the energy sector. In the western Channel, the perceived likelihood of diversification was greatest for marketing initiatives; taking scientists onboard vessels; and direct selling. Irrespective of region or role, respondents identified the key motive of diversification as survival of the fishing business rather than business growth.
4) The practice of Channel fishermen diversifying into related activities is subject to multiple constraints, of which administrative obstacles (26%); social factors (25%) and lack of opportunities (21%) were attributed greatest importance. In contrast, lack of information was attributed relatively little importance by fishermen upon the decision to diversify. The finding that non-fishing stakeholders attributed lower importance to social factors (15%) suggests that the influence of personal attitudes and beliefs upon decision making is underestimated.

5) From the findings of the inventory and surveying, a typology of fisheries diversification in the Channel is developed; based upon the involvement of fishermen (active or passive) and the nature of the activities practised (individual or collective). Fishermen adopting an active individualist strategy can be viewed as diversification 'entrepreneurs'; who may face significant financial risks in developing new enterprises but conversely may receive substantial rewards. In contrast, the risks associated with engaging in a collective diversification strategy are much lower for individual fishermen, but the financial benefits may be similarly dissipated.
6. Examining the challenges and response strategies of Channel fishermen

6.1 Introduction

In Chapter 3 a range of challenges that influence the financial performance and ultimate viability of fishing businesses were identified. For the purposes of discussion, these challenges were categorised into three main themes: administrative; environmental; and socioeconomic. Due to the lack of literature on this subject, much of this discussion was based upon the challenges facing the fishing industry from a national rather than regional perspective. While many of these challenges remain applicable to Channel fishermen, it is important to acknowledge that the impact of such challenges upon financial performance will be subject to regional, local and individual contexts. Similarly, while evidence suggests that fishermen in the Channel may adopt a range of strategies in response to these challenges, little is known of fishermen’s attitudes towards these strategies, their practices, or the constraints they face in developing them.

In light of the above considerations, the aim of this chapter is to establish a descriptive understanding of the challenges and response strategies of Channel fishermen which is grounded in the experiences and opinions of respondents. The chapter consists of three sections: the objective of the first section is to establish a typology of the challenges faced by fishermen and the contexts within which they occur. This typology is significant because the way in which fishermen identify and perceive challenges is anticipated to influence the type of strategy they adopt in response. The second section builds upon this typology by exploring the impact of these challenges upon the profitability of fishing, including shifts in profitability over time; and the relationship between different challenges and profitability. In the third section of the chapter, the response strategies of Channel fishermen are examined with respect to intra-sectoral strategies, fisheries diversification and multiple-job holding.

The results presented within this chapter derive primarily from in-depth interviewing with fishermen, although quotations provided by stakeholders during the survey phase are included where relevant. Due to the volume of data that emerged from this process, the following discussion is based upon the key findings that emerged during data analysis. Verbatim quotations are included where appropriate to highlight notable observations.
6.2 Establishing a typology of challenges

In the first part of the interview, fishermen were asked to identify and discuss the main problems that they faced in making a living from fishing – but were not initially prompted with challenges identified from existing literature. This approach was adopted to enable respondents to define the nature and magnitude of challenges on the basis of their own priorities, rather than being guided by the researcher. However, following this discussion, respondents were prompted with challenges that were not mentioned to ensure that their opinions were elicited. The decision to commence in-depth interviewing by focusing upon the negative aspects of fishing was dictated by the key research questions which this work seeks to address. An alternative strategy would have been to commence with a more neutral approach to explore both the positive and negative aspects of the fishing industry. However, given that this research is situated within a wider context of challenges facing the fishing industry (as discussed in section 3.2), a negative-focused introduction was considered to be appropriate. Furthermore, the use of semi-structured interviewing provided the opportunity for positive aspects of the fishing industry to be explored where they emerged through general discussion.

During analysis, challenges were coded according to type and subsequently categorised into broad themes. Four themes emerged from this process, which are discussed separately below: administrative challenges; economic challenges; biological challenges; and environmental challenges.

6.2.1 Administrative challenges

In Chapter 3, a review of the main challenges faced by fishermen in the UK revealed that administrative factors may act as constraints upon both the inputs and outputs of fishing activity, thus determining the ability of individuals to operate a commercial vessel; the areas in which they fish; the species targeted; and the methods/gear used. Therefore, it was not unexpected to find that administrative challenges factors were frequently the first to be mentioned by respondents. Eight distinct types of administrative challenge were identified, although analysis revealed that many of these challenges are interrelated (figure 6.1).
With the exception of illegal and part-time fishing, the administrative challenges faced by fishermen derive largely from legislation and management practices imposed upon them at two tiers: internationally through the EC Common Fisheries Policy (CFP); and domestically by the UK Department for Environment, Food and Rural Affairs (Defra). Of these, issues related to the availability and allocation of species quota were dominant within the majority of interviews conducted. Quota was invariably the first challenge to be identified by respondents, including non-fishing stakeholders and fishermen who targeted non-quota species. This observation may be seen to reflect the impact of quota upon the fishing industry – borne through the awareness and strength of opinion that individuals hold towards this issue.

The extent to which quota represents a challenge for fishermen is dependent upon a range of factors, including the type of species targeted (itself dictated by region); the fishing methods used; and vessel size. The latter characteristic is particularly influential because of the differences in quota management that exist between the under 10m and over 10m sectors (see section 2.5). Given that the research sample was dominated by inshore fishermen, issues related to quota for the under 10m sector were prominent during interviewing. Consistent with the findings of Creative Research (2009), inshore fishermen expressed dissatisfaction with the amount of quota which their sector is allocated:

We've obviously got the problem with the Government in the sense of how the quotas are handled, and I think anyone serious in fishing is aware it has to be quota-ed, or it has to be
managed in a certain way. You know, no one wants it just to be a free for all because that's not very good. But with the under 10 metre boats, they're quite limited, what you can do with an under 10 metre boat, and it's just the way the quotas have been put on us the last few years, and the share of the quota out of the pot is very, very small.

(Fisherman; <10m; eastern Channel; F16)

Furthermore, an opinion was expressed that the relative allocation of quota did not accurately reflect the number of vessels in the inshore sector – which constitutes the majority of vessels registered at Channel ports (and within the UK):

...we are 85 per cent of the fleet with 4 per cent of the quota, so you think of those figures. That's, you know that just says it all really.

(Fisherman; <10m; western Channel; F23)

Due to the relatively high average age of the fishermen interviewed, many had witnessed the introduction of quota for the inshore sector within their working careers. Opinions regarding this introduction were mixed: while some fishermen accepted that it was necessary to regulate the volume of species landed by inshore vessels, others believed that the quota system was inappropriate for this sector. This belief stems from an argument that many inshore vessels are already restricted by their size; which limits the amount of fish they can physically land, their geographical range, and the weather conditions in which they can operate. Consequently, the imposition of quota means that it can be difficult for smaller vessels in some areas of the Channel to target alternative stocks once their monthly catch limits have been reached. In light of these observations, a suggestion was made that removing smaller inshore vessels from the quota management system could make a notable contribution to the sustainability of these businesses:

But, I think if the under-10s, or say the under-eights, let's not say the under-10s, under-eights were taken out of the quota system, it would make a lot of smaller fishermen's lives a hell of a lot easier and their incomes a lot more profitable.

(Fisherman; <10m; eastern Channel; F15)

In addition to the widely-held opinion among inshore fishermen that quota is unequally distributed between the two sectors, the amount of quota that is allocated in the form of monthly catch limits was also identified as problematic. For some species, monthly catch limits were deemed to be out-of-sync with actual stock sizes – leading some respondents to question the process by which quota is allocated:

The quotas are part of the, well, one of the biggest parts of the problem of the management. Because they're ineffective and there's no structure to the way quotas are handed out. If I can give you an example: currently, we have a quota for three tons of monkfish a month. Now, you'd be very lucky to see six on my boat for a whole year. And
yet skate, I have a quota of 100 kilos a month of whole fish, which amounts to 47.9 kilos of
wings, which is you know, how you cut them. [Sighs] And I can catch that in 20 minutes.

(Fisherman; >10m; eastern Channel; F05)

In such situations fishermen will invariably continue fishing but attempt to target alternative
species. However, where similar methods are used it is not uncommon to catch the
original target species which must then be discarded at sea – a practice which is
exacerbated in some areas of the Channel due to the perceived abundance of certain
quota species:

…over the last few days I've thrown back about five hundred quid's worth of skate because
there's just not enough quota. The sea's alive with skate I can't get away from them, yet
that quota's pathetic. And you know a little boat like that, that's half your week's work there
you've just thrown back over the side.

(Fisherman; <10m; eastern Channel; F14)

When considering the above findings, it is important to note that the impact of quota
management is highly variable between fishermen and depends upon their location; the
species they target; and the methods/gear used. As such, a number of fishermen
reported that they were not directly affected by this management system because they
targeted non-quota species. However, these individuals did express concern that quota
restrictions may be introduced by Defra in the future – particularly with respect to shellfish.

Concerns about the impact of management measures upon fishing activity are not limited
to the quota system, but encompass a range of restrictions on effort and output. A
number of fishermen identified licensing as a potential challenge upon their activities, and
expressed concerns that Defra will introduce restrictive licensing to remove latent capacity
among the English fishing fleet. Consequently, some of these respondents believed that
they were likely to lose their entitlement to fish for shellfish because of the low volumes
that they landed currently:

…the worrying concern for me is we're under a management regime at the moment that's
saying you use it or lose it. So by that, what I'm saying is that if over a period of time, I've
got a shellfish entitlement, and as I haven't used that, only in terms of landing a by-catch of
lobsters and crabs from trawling, as I haven't been a full-time crab fisherman or lobster
fisherman, I will then have my entitlement taken away, probably next year.

(Fisherman; >10m; eastern Channel; F05)

In contrast to quota and licensing issues, only one respondent identified ‘days-at-sea’
restrictions (see section 3.2.1) as a potential challenge – although they stressed that it did
not have a significant impact upon their own fishing activity. This may be explained by the
fact that this restriction only applies to eligible vessels operating within the Cod Recovery
Zone in the eastern Channel and the Sole Recovery Zone in the western Channel.
Similarly, management-imposed restrictions on the type/quantity of fishing gear used were not widely identified as a challenge facing Channel fishermen. However, inshore fishermen in the western Channel did cite legislative changes to red mullet net mesh sizes as an example of gear restrictions. Upon further discussion, it was found that this issue was attributed to a change in the type of gauge used to measure mesh size rather than the mesh size per se. A legal requirement to use the recently introduced ‘Omega Gauge’ means that nets that were previously legal now fall within the banned range of 70-90mm:

We don’t want to catch small fish, so we work the biggest mesh possible and the nets on the market have been made at a millimetre under the legal limit, the required limit. Everything has been fine for years and years and then they bring this new tool out and it stretches it over the 70, so suddenly everyone’s nets are illegal and there is nothing you can do about it.

(Fisherman; <10m; western Channel; F10)

As noted in the above quotation, respondents considered this management measure to be unnecessary and questioned the reasons for its introduction. Criticisms were also raised with respect to the time period within which this measure had been introduced, as it did not allow fishermen to phase out the use of their existing nets. Instead, these nets had to be replaced outright at significant financial cost. This finding is reflective of a wider theme that emerges from the data; namely, that many of the fishermen interviewed are dissatisfied with the management of the domestic fishing industry. Given the strong opinions that fishermen hold with respect to the quota system, it was not unexpected to find that some respondents attributed this dissatisfaction to the UK’s membership of the Common Fisheries Policy (CFP):

…what’s left of it, it’s been devastated by the Common Fishery. That’s all it amounts to you know, ah there is plenty of fish in the sea but we’re not allowed to catch it. If you were just allowed to carry on as you’d like to carry on then we’d be booming. The industry is now, the fish are just dying out there now because nobody is catching it.

(Fisherman; >10m; eastern Channel; F13)

However, despite this viewpoint being well established and receiving considerable media coverage in recent years, the majority of negative opinions expressed by respondents did not focus upon the CFP – but rather the domestic management practices of Defra and the Marine Management Organisation (MMO). At a wider political level, fishermen believed that the British Government did not assign the fishing industry the status that it deserved, and subsequently did not always act in the best interests of fishermen:

I don’t think fishing in this country’s highly regarded by the Government, as some others, you know, like the financial sector.

(Fisherman; <10m; Eastern Channel; F16)
This belief manifests itself in a perception that management organisations have an incomplete understanding of the challenges and priorities of fishermen, due to a lack of effective engagement. A number of examples were cited to support this observation, including the introduction of unnecessary bureaucracy; and the speed at which management rules and regulations are amended or implemented (e.g. the Omega Gauge). Significantly, respondents reported that management practices created uncertainty which made planning for the future difficult:

> We've been asking for years, whatever rules they want to come up with, just set it for a long period, you know...What we've got at the moment is we sit down on January the first, and we say, 'Right, as of today we've been given this set of rules, so we'll make this plan.' But then, as the year goes on, rules alter and morph into other types, and on January the first in the following year, it all changes again. So it's an impossibility to actually make informed, logical business decisions in the fishing industry.

(Stakeholder; fishermen's representative; eastern Channel; S39)

The final type of administrative challenge identified by respondents is distinguished by the fact that it relates directly to the actions of other fishermen, in the form of illegal and part-time fishing. Although the threat posed by illegal fishing was not widely identified as a challenge facing fishermen in the Channel, two respondents cited examples of this practice: unlicensed shellfish fishing; and vessels illegally targeting mackerel in the western Channel. Respondents did not associate part-time fishing with illegal practices, but instead were critical of the fact that part-time fishermen received a quota allocation. An opinion was expressed that these individuals were essentially inhibiting the ability of full-time fishermen to access quota and make a living from fishing:

> Now morally is it right that they can own a licence, come into a professional industry and dabble at it when they want to? For what it's worth, my opinion is no, it shouldn't be, because what you're actually doing is taking away quota from the sector that want to be fishermen for the whole 52 weeks. And I don't think that's right because that guy could be a plasterer, or a taxi driver, or a window cleaner for 52 weeks of the year, couldn't he, and still earn his living.

(Stakeholder; fishermen's representative; eastern Channel; S39)

### 6.2.2 Economic challenges

After administrative challenges, challenges relating to economic aspects of the industry were cited most frequently by respondents. The coding process resulted in sixteen distinct types of economic challenge which fall into two broad groups: those influencing the inputs required to operate as a fisherman; and those influencing the outputs (i.e. products) of fishing. For the purposes of discussion, these two groups are addressed separately below.
Analysis of economic inputs reveals eight types of challenge that Channel fishermen face in making a living from their occupation (figure 6.2).

**Figure 6.2: Economic challenges upon fishing inputs**

Of these eight types, operating costs were identified as one of the key economic challenges facing fishermen. More specifically, fishermen attributed the rate at which fuel prices had increased in recent years as having a significant effect upon their operating costs:

…I’m not going back many years when we was actually getting it for 20 pence a litre, and now we’re getting it for 70 pence. So for us, in the last eight years it’s gone up over 300 per cent, which is probably more than it has in the pumps, because a lot of the pump price is tax isn’t it?

(Fisherman; <10m; eastern Channel; F16)

While fuel costs have affected each of the fishermen interviewed, the magnitude of this impact varies according to the type of vessel and fishing methods used. For example, some inshore fishermen commented that fuel prices affected them less because they travelled relatively small distances to fish. In contrast, fishermen operating larger vessels with active fishing gear (e.g. trawling) reported that fuel had a significant impact upon their operating costs. Respondents also suggested that the impact of fuel costs was exacerbated by the age of many vessels in the Channel fleet and their relative inefficiency compared with modern vessels. Despite this perception of inefficiency, a number of fishermen identified overcapacity in the Channel fleet as a challenge upon profitability. Interestingly, the issue of overcapacity was not attributed to the number of vessels in the
fishery; but rather the process of ‘technological creep’ where fishermen offset the operational inefficiencies of their vessels by improving the efficiency by which they locate and catch their target species:

In addition to fuel prices, fishermen noted that the cost of fishing gear had also increased considerably in recent years. This was attributed to rising prices for raw materials – particularly oil, as much of the gear (e.g. ropes, netting, lobster/crab pots) is plastic-based:

Our gear costs have almost doubled in, I can relate to 14 years, so I would say... in fact they have doubled, in 14 years they have definitely doubled...

(Fisherman; <10m; western Channel; F19)

Crab and lobster fisherman also reported that the cost of bait used in their pots had increased significantly in recent years. This was deemed to be particularly problematic because bait costs were increasing at a faster rate than the prices that fishermen received for their products:

Bait costs have gone up for the lobsters. The price of horse mackerel is now £16 a box. Last year it was 14. A couple of years ago it was 12 and so on. I think, and I'd have to look it up to see...but it's gone much faster than the price that we get for the fish.

(Fisherman; <10m; Eastern Channel; F17)

Additional operating costs identified by fishermen included insurance, maintenance costs and harbour dues. While these costs had increased over time, their escalation had generally been slower than that of fuel and gear which made them more manageable. Consequently, few fishermen regarded these input costs as a significant challenge upon the profitability of their businesses. Similarly, only one fisherman identified their method of fishing as a challenge upon profitability – due to the fact that they only practised line fishing rather than using a range of methods throughout the year.

The above findings demonstrate that the majority of challenges related to economic inputs derive from the physical inputs required to catch fish. However, an exception to this observation is found with respect to the human inputs of fishing – particularly the ability to recruit crew members, and the working conditions that these individuals face. The extent to which crew was cited as a challenge facing Channel fishermen is found to be highly variable; which may be explained by the fact many of the inshore fishermen interviewed operate their vessels single-handed. As such, difficulties of recruitment centre upon larger inshore vessels and those in the over 10m sector. The difficulty of finding suitable crew was linked to wider concerns regarding the lack of new entrants to the fishing industry. This concern was expressed by a range of the fishermen interviewed – including those who did not employ crew. Pursuing a career in fishing was deemed to have become less
appealing, partly due to the potential of new entrants to receive low earnings in relation to
the hours and conditions of work:

It’s hard work. You can’t dress it up any nicer than the fact that it’s hard bloody work. Now
you get an 18 year old kid to get out of bed at half past three in the morning. To then come
back in at say seven o’clock at night, without a guarantee of a wage…although to be fair it
does even out. But the amount of hours they have to put in, it’s well below the minimum
wage.

(Fisherman; <10m; western Channel; F24)

Economic outputs

Through the coding of interview data, seven types of challenge associated with economic
outputs were identified. Each of these challenges is related either directly to the prices
that fishermen receive for their products, or to underlying variables that influence these
prices (figure 6.3).

Figure 6.3: Economic challenges upon fishing outputs

The impact of pricing is determined largely by the type of species that are caught and the
methods through which they are sold. As a result, it is difficult to draw generalisations on
the extent to which price constitutes a challenge to Channel fishermen, although a number
of notable observations do emerge from the analysis of interview data. The first of these
concerns a discrepancy in pricing between fish and shellfish prices. Where fish prices
were generally considered to have increased with rising operating costs, an exception was
noted with respect to shellfish – particularly crab:
Pricing is always an issue. Having said that, I mean, on the whole I would say fish prices are holding up quite well there. You know, if anything they've probably gone up a little bit in the last year or so. But shellfish prices haven't.

(Fisherman; <10m; eastern Channel; F15)

Well, they have gone up, but no they haven't gone up in line with costs, no, by any means at all. Which could be surprising in a way, because I don't think they've even kept price with general, you know, price indexes as well. I haven't sat down to work it out, but certainly I suppose the price for crabs at the moment is probably about a pound a kilo in our wholesale market, and if you look at the price back in '93, '95, it might've been 80 pence or something, so it's not keeping up..

(Fisherman; <10m; eastern Channel; F17)

Significantly, a number of shellfishermen reported that the prices they received for crab had remained at a similar level for many years, and in some cases had actually decreased over time. The main reason given for low prices was an oversupply of crab to the market due in part to an increase in vessel capacity – an issue that is exacerbated at certain times of the year when stocks are more abundant.

Exploring the selling process in greater detail reveals that Channel fishermen utilise a range of different methods to sell their catch. Respondents highlighted the impact that these methods have upon their profitability, including selling through an auction; selling to wholesalers; and selling through fishermen's co-operatives. While selling at auction is a well established practice in the UK fishing industry, there are only three auctions located on the English Channel coast: at Newlyn; Brixham and Plymouth. Given that each of these locations is in south west, the practice of selling at auction is largely confined to fishermen in the western Channel. Significantly, a number of these fishermen reported dissatisfaction with selling through auctions due to the prices they received for their catch. One respondent from the inshore sector cited this as an influential factor in moving away from this method and into direct selling:

…if you're an auctioneer on the market and you've got 50 boats worth of fish to sell that morning, and you're on a commission and you want to get the overall best sale value of the whole market's fish. So you know, all the buyers, and they're all lined up, they've all got their shopping lists, they've got their orders from the night before and they've got people ringing them up and so they start with the biggest lot of poorest quality fish first and end up with the smallest lot of high quality day boat fish. So because most of the buyers' shopping lists they've got what they want by the time you get to the end, then the prices equate, so that's obviously not good for us.

(Fisherman; <10m; western Channel; F10)

In the absence of auctions, fishermen in the eastern Channel and Channel Islands rely more upon selling to wholesale fish merchants (i.e. 'wholesalers' or 'merchants') or to processors. This practice is also evident in the western Channel; particularly among
shellfishermen, and fishermen landing smaller quantities which makes selling at auction financially unviable. The majority of fishermen using these selling methods did not identify them as a particular challenge upon profitability, although an opinion was expressed that higher prices could be achieved through alternative methods such as direct selling:

Lobsters this week, as much as I can get for them being in the July month still, as much as I can get is six-fifty a pound. But all my other mates who’ve got bigger boats, they’re fishing to wholesalers and bigger outfits and they’re struggling with four pound a pound, and twenty-five years ago they were the same price.

(Fisherman; <10m; western Channel; F11)

However, respondents also reported that the lower prices received from wholesalers were offset by not having to pay auction fees; and the benefit of securing a market for less-valuable species.

Given that the majority of Channel fishermen sell their catch through the auction or wholesale route, issues associated with selling through a co-operative were not widely identified during interviewing. Discussion was limited to Guernsey in the Channel Islands where the demise of the co-operative was attributed to fishermen receiving higher prices by selling individually:

Now we all used to land through there but the problem there is, and it's a problem with every co-operative I think, is the fish was mixed together, so the lowest denominator was the seller. So if any, you know, if someone tried unloading a fish that hadn't been on ice and was in poor condition, everybody sold at that quality because it's mixed together, where it should never have happened. It should have been sold individually.

(Fisherman; <10m; western Channel; F22)

Finally, a number of respondents identified the ability to ensure continuity of supply as a potential challenge facing fishermen in the Channel – including those selling through auction or wholesale routes. A concern was expressed that buyers in some parts of the Channel may seek alternative markets if fishermen are unable to meet their demands.

6.2.3 Biological challenges

Biological challenges relate to the stocks of commercially valuable fish and shellfish in the Channel fishery; principally with respect to the geographical presence of these stocks and their population size. Significantly, these types of challenge were not frequently identified by fishermen as a challenge they faced in making a living from fishing. Instead, respondents stressed that many of the stocks they targeted were healthy, but the ability to profit from their exploitation was constrained by alternative factors. For species that are subject to a TAC, the availability and allocation of quota was inevitably identified as a key
constraint. Consequently, fishermen attributed this combination of healthy stocks and quota restrictions with an increase in the practice of discarding (as noted in section 6.2.1):

The stocks are exceptionally good off here, that is proven by the amount of discards that they unfortunately produce.

(Fisherman; <10m; eastern Channel; F12)

Well, the stock level is massive because we’re throwing thousands of pounds worth of perfect fish away.

(Fisherman; <10m; western Channel; F10)

Restrictions on the ability to profit from healthy stocks were not limited to the effects of quota allocation, but also included market forces. A notable example was cited where an abundance of shellfish had resulted in low prices and a consequent reduction of fishing effort:

…but in some of the larger over 10 crabbing boats, even in the last couple of seasons, they’ve had to tie up for periods of time when the market just can’t accept any more volume. So the price is so bad, or they actually can’t process that volume that boats have tied up because of that. Which would be a sort of market induced tie up, rather than availability of resources.

(Stakeholder; management; western Channel; S38)

Despite the widely-held belief that biological factors do not represent a key constraint upon profitability, one exception was identified with respect to the overfishing of mackerel in the western Channel:

You know the winter mackerel stocks now and I think that’s just probably been hit hard, stocks been hit before it gets here without which, and that was a big, big earning thing for the harbour, you know for a lot of boats. But as a fishery that’s sort of been taken away from us if you know what I mean.

(Fisherman, >10m; western Channel; F08)

Consequently, this respondent reported that he had been forced to target alternative species during the winter months in order to remain profitable.

6.2.4 Environmental challenges

In contrast to the finding that biological factors are not widely perceived as a challenge to Channel fishermen, respondents identified a number of challenges relating to the marine environment as potentially problematic (figure 6.4). Upon closer examination, these challenges fall within two main types: natural challenges upon which fishermen have limited control; and human-imposed challenges.
Of the natural challenges facing fishermen, weather has a significant influence upon fishing activity as it dictates both the distribution of species and the ability of fishermen to catch them. However, given that this relationship is an inherent aspect of fishing it was not widely identified by respondents as a challenge upon profitability. Examples were limited to a small number of inshore fishermen who reported that the size of their vessels makes it infeasible to operate throughout the year. Furthermore, the impact of weather upon these individuals is exacerbated in some areas by environmental factors such as tides and weed:

…once you leave port you're in the English Channel. There is no shelter you know, your next bit of headland is France. So if you're in a relatively small boat you're lucky if you get, we used to reckon on 200 days a year at sea; now I would say it's more like 150, maybe 170, weather permitting, days at sea. And then if you factor those in with the spring tides, which aren't very good for fishing, the seasons when we've got the weed on the south coast, because we suffer from a hell of a lot with weed along here, your fishing activity days are probably under 100 days.

(Fisherman; <10m; eastern Channel; F15)

In addition to weather, access to ports was identified by fishermen as a challenge upon the operation of their vessels – although this was limited to two localised examples. In both cases, these fishermen operate from river-mouth ports which are not accessible at all stages of the tide.

While fishermen accepted natural environmental variables as an inherent aspect of their occupation, human-imposed challenges relating to the marine environment were identified as being increasingly problematic. Of these, the issue of conservation generated
considerable discussion among respondents. Fishermen were not opposed to the general principles of conserving the marine environment; a number of respondents cited the importance of conservation to the sustainability of the industry, and acknowledged that more could be done to improve conservation in some areas:

…we should be ensuring that there’s sufficient sustainability in the sea and everything else to ensure that if we are there’s something there to be had! There’s a lot of fishermen that might not think like that, because they’re only thinking ‘we’ll catch it today because tomorrow might not come’.

(Fisherman; <10m; western Channel; F02)

However, some respondents were critical of the way in which some conservation organisations ‘blamed’ the fishing industry for the destruction of the marine environment. More specifically, these individuals questioned the legitimacy of claims made by conservation organisations about the negative environmental impact of fishing:

I think of the lads, one of their main worries, apart from the fact nobody’s coming in to the industry, it’s all this conservation. We’ve got to close this area, we’ve got to close that area, which we’ve proved is a load of tommyrot. I’ll tell you what, the trawlers have been working out here for the last 40 years and there’s less trawlers now, and there’s still fish around, and there’s good fish around. You know, they can’t be doing that much damage otherwise they would have killed it in the first two or three years.

(Fisherman; <10m; western Channel; F23)

The strength of opinion expressed by fishermen towards conservation may be explained in part by the topical nature of this subject matter. The fieldwork for this research coincided with a two-year consultation period to propose a network of Marine Conservation Zones (MCZs) for the UK. As such, concerns were raised over the potential loss of fishing ground that could result from the introduction of this network:

…the setting up of marine protected areas including marine conservation zones, that is going to put further pressure on the fishing industry. There will be displacement, which may cause all sorts of problems. In some areas it will cause major problems, and it’s not just where people are displaced to, it’s what happens to the areas they displace from.

(Stakeholder; related organisation; eastern Channel; S18)

Although the proposed introduction of MCZs was identified as a potentially significant challenge for future fishing activity, the threat posed by loss of ground was not limited to conservation initiatives. One fisherman expressed concern over the proposed development of an offshore wind farm zones in the eastern Channel; while another cited the loss of ground resulting from competing fishing activity as a localised challenge. As an inshore fishermen using static fishing gear, this individual identified trawling as
particularly problematic – especially when these vessels fished illegally within the 6-mile limit:

Area restrictions are problematic for us because of the trawlers and we're static here, so we are very limited where we can go. And a lot of the static gear boats are all on top of each other because there's so little room, we're hemmed in. We have French trawlers six miles to the limit, one fisherman last tide had half a string of pots towed away by a French trawler five and a half miles off the shore.

(Fisherman; <10m; western Channel; F10)

6.3 The impact of challenges upon financial performance

Following discussion of the challenges faced by Channel fishermen, respondents were asked to discuss the impact of these challenges upon financial performance – with respect to profitability. Due to the sensitive nature of this subject, fishermen were not requested to provide specific financial data relating to their business activities. Instead, the use of semi-structured interviewing provided respondents with the opportunity to define their own experiences and observations. Two main themes emerged from the analysis of interview data: the first relates to respondents' experiences of how profitability has changed over time; whereas the second relates to the way in which different challenges impact upon profitability. These two themes are discussed respectively below.

6.3.1 Experiences of profitability

Given the relatively high average age of the fishermen interviewed, respondents were able to draw upon considerable experience when discussing the subject of profitability. This provided valuable insight into how the profitability of fishing had changed during their time in the industry – particularly in relation to the different challenges that fishermen encounter. Analysis of this data revealed that opinions regarding changes to profitability over time were mixed. This finding is not unexpected given the diversity of challenges faced by fishermen; the impact of which is highly influenced by location, vessel type and fishing method. As a result of this diversity it is difficult to make generalisations about the profitability of the Channel fleet, as stressed by the following respondent:

…you don't have to be Einstein to look at what makes a fishing vessel profitable. It's how much it catches, what that catch makes when it's sold and what the expenses are to catch that fish. So, it's a very basic equation to see where the profitability falls out. Now, again, it's too simplistic just to say, 'The fleet does this', because the fleet is then broken down into subdivisions. You've got mobile gear, you've got static gear, potting static gear, netting, shellfish mobile. You've got all of these different subdivisions and all of them will have different expenses, different make up of expenses, different levels of percentage that
it costs them to go and produce what they're producing, so you would have to break that down again.

(Stakeholder; fishermen’s representative; eastern Channel; S39)

Despite this observation, when asked whether they believed that the profitability of fishing had changed during their time in the industry, the majority of fishermen provided a definitive response based upon their own experiences. From this data, a general trend emerged that fishing had become less profitable over time:

It's definitely less profitable. I should think every fisherman, without doubt, bottom line, has decreased over the last 10 years.

(Fisherman; <10m; eastern Channel; F15)

Interestingly, a number of fishermen believed that the fishing they had experienced through their career was less profitable than that of the generation that preceded them; who benefitted from a combination of less stringent regulations, more abundant stocks, and relatively lower operating costs:

Yeah I mean I haven’t seen the best bit, the generation before had the best bit without a doubt. No quotas, cheap fuel, plenty of fish, reasonable prices. I mean a mate of mine found a load of old fish tickets a little while ago, nineteen seventy-one, nineteen seventy-two. With a boat similar to what I’ve got there, he was regularly grossing a thousand pounds a week in seventy-one seventy-two you know. That was big money.

(Fisherman; <10m; eastern Channel; F14)

Significantly, the perception that profitability has declined in the Channel fishery was not shared by all respondents. Consistent with the diversity present within the industry, a view was expressed that fishing had become more lucrative due to the exploitation of new markets – such as the export trade for whelks and cuttlefish. While perceptions of profitability are therefore highly variable, a notable finding does emerge with respect to the way in which fishermen perceive the relative profitability of their occupation. When viewed in relation to alternative employment sectors, respondents frequently reported that returns from fishing were comparatively poor – as highlighted in the following quotation:

…if you do get the money, and you look at the return you're going to get, you know, I mean, I think the average guy around here sort of earns something like 20 grand a year, which for the hours they put into it and the capital they've got is bugger all, really, isn't it? You can go and work in an office and play on the computer for probably a similar amount.

(Fisherman; <10m; eastern Channel; F15)

6.3.2 Understanding how challenges impact upon profitability

Analysis of interview data reveals two principal routes through which the challenges faced by fishermen impact upon profitability. The first route relates to factors which restrict the
ability of fishermen to physically catch or land profitable species; principally through controls on fishing effort or output, but also including biological and environmental conditions. In contrast, the second route relates to the ability of fishermen to derive a profit from the catches they do land, and thus is influenced by financial costs and revenue. The nature and impact of these two different routes is discussed separately below.

Restrictions on the ability to catch profitable species

Although fishermen identified a number of different challenges that restrict their catching ability, discussions of the impact of these challenges upon profitability were dominated by quota management. While other forms of administrative, biological and environmental challenges can restrict the ability of some fishermen to catch and land their target species, these individuals could historically respond by increasing/relocating their effort or targeting different species. However, these options have become increasingly limited by the implementation of the quota system. Consistent with the discussion of challenges facing the fishing industry, a distinction emerges with respect to the impact of quota upon the profitability of the under 10m and over 10m sectors. This distinction was frequently highlighted by inshore fishermen, as typified in the following quotation:

There are other people that are making far more money than me, but there's an awful lot of people that work like I work, you know. You take what you need to survive, but you need more than they'll let you have. You know, you cannot survive on the pittance that you are being allowed. I mean it's been years since I had a good year.

(Fisherman; <10m; western Channel; F23)

As previously noted, the majority of respondents from the inshore sector had witnessed the introduction of quotas during their careers in the fishing industry. Consequently, these individuals have been required to accept the quota system as an ever-present constraint affecting the profitability of their fishing enterprises. It should be stressed, however, that respondents did not identify quota as preventing them from making a profit per se, but rather as a constraint upon the magnitude of this profit. A notable outcome of this observation is that fishermen – particularly those in the inshore sector – may struggle to set aside profit for reinvestment in their businesses:

Unless you're in a situation where you are going to have those big hits, and you're a very good money manager, and you can put that money aside and let it build up, so when you get a month in the winter where you don't get to sea you've got the money you put aside, but if you haven't, catching the big hits of fish, because of the quotas, you're knackered. You know, you're not going to, you're living from hand to mouth. And once that starts, you've got no money to reinvest in the boat, you've got no money to reinvest in your gear, and it's the start of the slippery slope, I feel.

(Fisherman; <10m; eastern Channel; F15)
This notion of inshore fishermen living a ‘hand to mouth’ existence was identified by a number of respondents when discussing the issue of profitability. In contrast, respondents in the over 10m sector acknowledged the impact of quota restrictions upon profitability but did not perceive them as a threat to the survival of their fishing businesses. One explanation for this is the ability of these fishermen to acquire additional quota – a response that is discussed in more detail in the following chapter. Alternatively, one respondent commented that restrictions on the availability of quota could create an inverse effect where profitability was increased among quota-holders:

Quotas are a direct effect on your time spent on the sea now, because with an MSY situation they're holding the quota back...so profitability each day is higher which is good...but obviously we would like to be spending the same sort of time at sea and have obviously greater profitability which is where we want to get to.

(Fisherman; >10m; western Channel; F06)

Despite the finding that some fishermen are able to operate profitability within the quota system, the uncertainty that surrounds this management approach was identified as problematic. More specifically, respondents highlighted the difficulty of planning and investing in the future of their fishing businesses within this context of uncertainty – a finding consistent with the criticism of management organisations discussed in section 6.2.1.

Restrictions on the ability to profit from catch

The profit an individual receives from fishing is determined by the prices received for their products and the costs incurred in catching them – both of which may be highly variable. When analysing the impact of costs upon profitability, two notable observations emerge from the interview data. Firstly, the majority of fishermen discussed the profitability of their businesses with respect to the short-term context i.e. on a trip-by-trip basis rather than annually. One explanation for this is that it reflects the inherent variability in costs and earnings that these individuals experience as their fishing activity varies throughout the year. Secondly, fishermen tended to focus upon the impact of variable costs such as fuel, crew and bait; rather than fixed costs such as insurance and harbour dues. This may be explained by the fact that fishermen have experienced a considerable rise in the former compared with the latter in recent years. Of these variable costs, the impact of rising fuel prices upon profitability has been significant for some Channel fishermen – most notably those using active fishing methods such as trawling. For example, one of the fishermen from the over 10m sector reported that it had taken a number of years to regain the level of profitability they had experienced prior to these increases:
You know, when you get a 50 per cent increase in fuel, we’re only now this year getting back to the sort of profit, net profit levels that we were prior to 2008. So it’s took you three years to catch up you know.

(Fisherman; >10m; western Channel; F06)

The notion of fishermen living a ‘hand to mouth’ existence, previously observed with respect to quota allocation, was also cited in relation to the costs of operating and maintaining a fishing vessel. This observation is exemplified in the following quotation, where an inshore fisherman in the western Channel suggests that many fishermen currently operate at the margins of financial viability:

...if a lot of fishermen actually sat down and worked out what they’re making, they’d probably pack up. It’s only the fact that we, you know most fisherman enjoy fishing, that’s why we’re doing it otherwise we wouldn’t be doing it, they don’t sit down to work it out. It’s just work as hard as you can hope that you catch enough, it’s not until you hit, when the shit hits the fan, when something goes wrong, like your engine blows up or some major refit or your bloody wife divorces you or something, you realise [chuckles] you haven’t been working for that much.

(Fisherman; <10m; western Channel; F21)

In section 6.2.2 it was noted that the impact of pricing upon fishermen is subject to individual circumstances, including the type of species caught and the methods through which they are sold. Despite the difficulty of drawing generalisations, a key finding emerged with respect to pricing in that shellfish prices (especially for crab) had not risen in line with operating costs. The potential implications of this for profitability are demonstrated in the following quotation, where an inshore shellfisherman explains that their established fishing approach is no longer profitable on a trip-by-trip basis:

We know, if we go to sea and want to haul 200 lobster pots, and assume we’ve got a full-time crew or a crew who goes every day, say 350 lobster pots: we’re looking at 20 gallons of diesel, which this year, it’s 100 litres: that’s £68, for diesel. We’ll be looking at about three boxes of bait. That’s just gone up by 30 per cent: that’s another £60, £20 a box. So that’s £128. That’s diesel and bait. Your crewman has got to really have, realistically, £70 a day. So what’s that? That’s the best part of 200 quid, isn’t it? It’s £198. So it’s £198 fixed costs for say a 30-foot, a 10-metre potter, to go to sea to haul 350 pots. Now, this time of the year, if he averages one lobster in 10 pots, so he gets 35 lobsters, that’s, say, 18 kilos; they’re getting £10 a kilo: that’s 180 quid. So just on the lobster, he hasn’t covered his costs.

(Fisherman; <10m; eastern Channel; F15)

While this experience was not shared by all respondents, an observation emerged among shellfishermen that the discrepancy between operating costs and prices represents an increasing constraint upon profitability. However, while fishermen frequently identified the impact of operating costs, only one respondent attributed issues with the supply chain to poor profitability in the shellfish industry. This individual suggested that fishermen have a
lack of control over pricing, which is compounded by the number of intermediaries in the supply chain:

...there’s too many people in between the plate and the fishing boat, and they just seem to keep squeezing in and making a little cut for themselves, but because we don’t control the price which maybe we should start, you know, this is the price. But it's never been, it's never worked like that...fishermen have been fishermen, they go out fishing, that's what they know how to do.

(Fisherman; <10m; western Channel; F21)

The above quotation is notable because it alludes to the perceived role that fishermen occupy in the production process. This suggests that some fishermen may be reluctant to diversify into downstream stages of the production process because it involves knowledge and skills that they may not possess. Such perceptions are discussed in greater detail in the following section, where the responses of fishermen to challenges upon financial performance are examined.

6.4 Responses to challenges upon financial performance

While the existing literature reviewed in Chapter 3 provides an indication of the response strategies that could be adopted in principle by Channel fishermen, the lack of research at a regional/local level has resulted in a knowledge gap regarding the reality of their implementation. To this end, the aim of this section is to explore the strategies that Channel fishermen can adopt in response to challenges upon financial performance; commencing with an investigation of intra-sectoral response strategies, followed by multiple-job holding and fisheries diversification. Given the influence that sociocultural attributes are anticipated to have upon decision making, this subject area is addressed separately.

Significantly, none of the fishermen interviewed admitted that they had seriously considered leaving the industry in favour of alternative employment. The reasons for this are discussed later in this chapter, but include the non-pecuniary benefits that fishermen gain from their occupation; and the relatively high average age of respondents (figure 5.3). As such, the underlying focus of the following chapter is upon strategies that enable fishermen to remain within the fishing industry, rather than those that require them to leave it altogether.
6.4.1 Intra-sectoral response strategies

Existing literature indicates that responding to challenges upon financial performance by adapting fishing practices is a well-established strategy among fishermen in the UK – particularly in seasonal mixed-fisheries such as the English Channel. As noted in Chapter 3, such adaptations include relocating and/or increasing fishing effort; increasing efficiency; and seeking to reduce costs by reducing effort or fishing activity. With the exception of retrenchment, Channel fishermen cited a range of intra-sectoral response strategies that they had adopted in response to financial challenges. These findings are summarised below, under respective sub-headings for the main strategies adopted.

Effort-based responses

The strategy of increasing fishing effort is a logical response to falling profitability because it represents a continuation of the status quo. Given that fishermen’s earnings are determined in direct relation to their catches, establishing a level of effort that maximises utility is an inherent aspect of fishing. Analysis of interview data revealed that a number of Channel fishermen had responded to falling profitability by increasing their fishing effort, although this took a range of forms. While some fishermen have responded by working longer days than previously, others reported that they had also increased the average number of days spent at sea:

Where 30, 40 years ago, you know, you could fish two or three days a week, and make a bloody good living out of it. Now, you’re fishing five or six days a week to make ends meet.

(Fisherman; <10m; western Channel; F22)

The high level of diversity present within Channel fleet means that fishermen are inclined to develop an effort-based response that is most effective to their individual circumstances. For example, one respondent reported that he offset an increase in the number of hours worked by trying to reduce the days spent at sea. Thus, the level of effort was maintained but operating costs were reduced:

Yeah, definitely doing longer hours, but we are trying to do less days. Less days but bigger days. Because it costs you know, it costs a lot of money to leave the harbour in the morning. There’s a fixed cost of a day’s fishing that you have to exceed before you start going into profit.

(Fisherman; <10m; western Channel; F19)

An important distinction also emerges with respect to the type of fishing practised and the viability of increasing effort in response to falling profitability – most notably among fishermen targeting crab and lobster with pots. While some of these fishermen reported that they had increased the number of pots they used, this response was limited by the
number of pots that could be effectively worked. In circumstances where an increase in fishing effort is infeasible, an alternative response is to relocate effort to alternative fishing grounds. Consistent with the previous observation of individuals tailoring their responses to find the most economically effective solution, examples were found of fishermen travelling further to fish, and those who have relocated their effort closer to port:

I’ve had to catch more, I’ve had to move to a more productive ground. We haven’t increased the number of pots that we’ve used, we’ve just taken them to more productive ground, which is always further away. And obviously that increases your running costs by it being further away, but the gamble normally pays off because, well the catch rate is, it far outweighs the extra running costs.

(Fisherman; <10m; western Channel; F19)

Now what we’re tending to do is fish closer, doing more tows but obviously whether it works out, whether we’re saving or not...once it drops below a certain level, the grounds are a long way off, it’s not worth it.

(Fisherman; <10m; western Channel; F20)

For fishermen targeting quota species, an increase in fishing effort may result from the decision to lease or buy additional allocation from other quota holders. A number of respondents from both the under 10m and over 10m sectors reported that they had adopted this strategy because it enabled them to increase their returns from fishing. Through further analysis, a number of key observations emerge from this practice: respondents reported that the cost of leasing quota had risen sharply in response to increasing demand:

...when we started leasing skate five years ago you could lease it for twenty quid a tonne, this year’s it’s five hundred pounds a tonne and it’s only going to carry on going up.

(Fisherman; <10m; eastern Channel; F14)

Consequently, some respondents have taken the decision to purchase quota outright rather than lease it. Although this option is limited to fishermen who are able to commit the required level of investment, those respondents who had purchased additional quota reported that it enabled them to increase profitability. The strategy of increasing effort by leasing or purchasing quota generated some consternation among respondents – particularly inshore fishermen who were critical of the quota allocated to their sector. An opinion was also expressed by inshore fishermen that the financial risk of acquiring additional quota was too great due to the variability of fish prices – as demonstrated in the following quotation:

I wasn’t prepared to start leasing because at the moment to lease a tonne of soles just so you can go and catch the bloody things is two thousand quid, two pound a kilo you know. Prices are pretty stable at the moment but if you get a price crash and you’re looking at
maybe only getting six-fifty, seven pounds a kilo, two pound a kilo is going in leasing costs. Say a day with the boat I had, a poor day would have been a hundred kilos. So that’s two hundred quid for your leasing, a hundred and sixty quid for your fuel, that’s three hundred and sixty quid to be able to land what five hundred quid’s worth of fish, six hundred quid’s worth of fish? The figures just don’t add up, you’re working your nuts off for nothing.

(Fisherman; <10m; eastern Channel; F14)

**Diversifying species and methods**

The strategy of diversifying fishing activity with respect to species (and respective methods) was found to be well established among respondents, and reflective of the diverse and seasonal distribution of commercially valuable species in the Channel (Boncoeur et al., 2000; Pascoe, 2000). Indeed, a number of fishermen identified the opportunity to diversify their target species as a positive characteristic of the Channel fishery – principally because it reduced their reliance upon a small number of key species:

Yeah we’re blessed in a way, we’re not reliant on one species…I spent a lot of time up in the north-east, in dry docks and the boys fishing out of say, North Shields. They were reliant on the herring which then got closed, the cod, again, and the haddock. At least down here we’ve got all your soles, your lemons, your dovers and monkfish, all your white fish, your white and your haddock, your pollock and your cod. So we are quite blessed on having the diversity of species to go for.

(Fisherman; <10m; western Channel; F24)

Significantly, respondents commented that diversification into alternative species would be the first-choice strategy for many fishermen faced with falling profitability. However, the ability to adopt this approach was perceived to be increasingly constrained by management restrictions upon fishing activity – including licence capping and quota allocation. This finding supports the observations made over 20 years ago by Cunningham et al. (1985); that increased regulation was making it more difficult for fishermen to adopt this type of supply-oriented response:

Can he diversify into other modes of fishing? That’s the first thing that a fisherman will think about, I can guarantee you that. When you say to a fisherman, ‘diversification’, he thinks straightaway, ‘At the moment I’m a whitefish fisherman, can I diversify into catching prawns? Can I catch whelks? Can I do this, that and the other?’ The answer to that in an awful lot and an increasing manner is no, because the Government have set to, over the last four to five years, of constraining fishermen into the sectors that they’re in now.

(Stakeholder; fishermen’s representative; eastern Channel; S39)

**Adding value**

In section 6.2.2, the discrepancy between the prices fishermen receive for their products and the costs incurred in catching them was identified as a key constraint upon profitability. Some fishermen have responded to this challenge by altering the channels
through which they sell their product, for example by shifting from auction-selling to wholesale merchants. However, this option is not viable for all fishermen due to a combination of their geographical location and the type of species they catch. An alternative strategy for increasing revenue is to add value by improving the quality of the caught product – most notably by using ice to maximise freshness.

The practice of taking ice to sea in order to improve the quality of their catch was identified as increasingly common among Channel fishermen – irrespective of their location and selling methods. In order to maintain product quality, fishermen require a regular supply of ice which they obtain using a variety of different approaches. While larger ports have on-site ice facilities, other fishermen are supplied with ice by the wholesalers they land their catch to – thus creating a mutually-beneficial relationship. In situations where it is not possible to access a regular ice supply through these means, there is an increasing trend among fishermen to purchase their own ice machines. This finding is significant because it highlights the importance that fishermen now attribute to the quality of their catch:

…we've also over the last couple of years, started to use ice a lot more. We don't have commercially available ice here. So with our bass, for instance, we've got insulated boxes now. A 70-litre insulated box is a convenient size: we take our fish to the wholesaler, load the boxes with ice if they're not short, and then that will carry us through. But obviously if they miss a day's fishing or two then there's no ice left. So I've actually bought a little ice machine.

(Fisherman; <10m; eastern Channel; F17)

In addition to using ice, two examples were found of fishermen further improving product quality by reducing the time between catching fish and supplying it to the market/customer. One of these respondents reported that he attempts to land his fish within two to three days in order to secure higher prices at auction, while the other seeks to maximise product quality by reducing the amount of time that nets are left in the water:

…one of the biggest differences is that we don't leave our nets in the water very long anymore. Most of our nets that we use are not in the water overnight, they're on the boat.

(Fisherman; <10m; western Channel; F10)

Reducing costs

An alternative approach to increasing profitability is to reduce the costs associated with fishing activity. Respondents reported using a range of cost-reduction approaches, with the most prevalent being the reduction of fishing effort. Given that fuel costs were identified as a key economic constraint upon profitability, some fishermen have responded
by reducing the distances they travel when fishing – as demonstrated in the following quotation:

You know a few years ago I wouldn’t think twice about going from here up off Fowey pollocking for a couple of days to see if there’s anything up there on the rocks but you know, the big boats have got overheads haven’t they when they start a trip. You never think you would go only on a small boat and think hang on if I go up there and back you know that’s a can of diesel twenty quid. Five gallons of diesel’s twenty quid you know, and you think you could burn a can that’s twenty quid so I’ve got to catch something before I go.

(Fisherman; <10m; western Channel; F07)

A small proportion of fishermen also reported that they had reduced the number of days that they typically spent at sea. One respondent explained that he had adopted this approach because quota restrictions prevented him landing the quantity of fish required to cover operating costs:

Well, we fish less really….and if we can't catch, or aren't allowed to catch, or can't catch what we need to make a day's money and pay the crew and all the rest of it, then you know, there's no point going is there really, at the end of the day?

(Fisherman; <10m; eastern Channel; F15)

In addition to reducing operating costs by decreasing the time spent at sea, fishermen may generate cost savings by improving the economic efficiency of fishing activity. Cunningham et al. (1985) identified two main ways in which a fishing firm can improve its overall efficiency: by withdrawing less efficient vessels from service; and by introducing technological innovations. Interestingly, few respondents cited the introduction of technological improvements as a response to falling profitability – despite the fact that many of these individuals have introduced technological devices such as fishfinders and Global Positioning Systems (GPS) onboard their vessels. Instead, the introduction (and updating) of such improvements was attributed to maintaining the ability to compete with others. This observation supports the principle of ‘technological creep’: while fishing practices have become more efficient, the widespread use of this technology – coupled with the need to reinvest – dissipates the increased revenues that fishermen seek to achieve. In contrast to technological improvements, only a minority of cases were found where fishermen had replaced their vessels with more efficient alternatives – as in the following example:
The quotas were so small that the fella I have crew with me, he couldn't afford to carry on. So I was left with no crew and, well I say a big boat, it was still an under ten but it was a big under ten. So I sold that and just got this little boat to work single-handed basically. So I mean in the last ten years I've gone from a fifty foot boat with three of us on it to that little thing working on my own, that's the way it's gone.

(Fisherman; <10m; eastern Channel; F14)

The above statement is noteworthy because it demonstrates another strategy which respondents believed was increasing in the Channel fishery (and wider UK catching sector) – that of fishermen operating with reduced crews or single-handed in order to reduce costs. While respondents expressed concerns over the safety of this practice, it should be noted that the inshore fishing sector is characterised by a high degree of lone-working among owner-operators. As such, the safety implications of working alone at sea are accepted by these fishermen as an inherent aspect of their job. Nonetheless, a number of respondents cited incidents where colleagues had been injured or killed while lone-working; including the recent fatality of a Looe-based inshore fishermen in March 2011. An investigation by the Marine Accident Investigation Branch (MAIB) acknowledged that this fisherman had been operating his vessel single-handed since 2003, but found that the equipment and processes used had compromised safety for a single-handed fisherman (MAIB, 2011).

6.4.2 Fisheries diversification

Having discussed the intra-sector responses adopted by fishermen in the Channel, respondents were asked a series of questions related to fisheries diversification – using the definition proposed by Merrien et al. (2008). Given that the sample contained diversifiers and non-diversifiers these questions were designed to explore both prior experiences and attitudes towards developing diversification activities in the future. To maintain consistency with the inventory of diversification presented in Chapter 5, the subsequent discussion is structured around the following activity categories: market-based activities; leisure & tourism; non-fishing contract work; and environmental activities.

Market-based activities

Market-based diversification among Channel fishermen takes one of two principal forms: horizontal diversification of the product and/or method of production; and vertical integration into downstream sectors of the production process. The inventory revealed that examples of horizontal diversification in the Channel were dominated by labelling schemes that enable fishermen to promote aspects of their products; including provenance, traceability and sustainability. Of the sample of 22 fishermen, 7 were participating in a labelling scheme at the time of being interviewed. In developing the
typology of diversification proposed in section 5.2.4, it was suggested that labelling schemes appeal to fishermen because they enable them to promote and add value to their products, while requiring relatively less time commitment and financial risk compared with other market-based activities. However, when questioned on their personal experiences of product labelling, fishermen’s opinions of the relative costs and benefits of participation were mixed. Although many respondents agreed that the growth of labelling schemes reflects a positive shift in consumer attitudes towards seafood production, the financial benefits of participation appear to be variable. Participants reported that while labelling could generate a higher price for their product, this was not always realised due to the influence of other market forces. Consequently, the overall impact of labelling upon prices is difficult to ascertain due to conflicting experiences:

Sometimes it does, sometimes it doesn’t. If there’s a lot of fish there, yours will sell maybe for a couple of pence more, but each tag costs about thirteen pence.

(Fisherman; <10m; western Channel; F01)

You can’t measure, that’s one of the most difficult things, you can’t measure this impact in prices yeah, because there’s so many other factors that have happened in that period of time that it could have had a bigger impact on the prices.

(Fisherman; >10m; western Channel; F06)

Nonetheless, fishermen recognised that the incentives of belonging to a labelling scheme are not limited to higher prices, but include the marketing benefits of promoting traceability and sustainability of products. Despite the growth of labelling schemes in recent years and the perceived likelihood of fishermen diversifying into marketing initiatives in the future (figure 5.8), respondents identified a number of limitations relating to current schemes. These limitations focus upon issues arising in downstream stages of the supply chain, most notably with respect to pricing and product quality. It should be stressed, however, that opinions are subject to both particular schemes and specific circumstances – especially given that each scheme has distinct objectives and methods of operation. On the subject of pricing, there was some consternation among respondents (including those who belonged to a labelling scheme) that wholesalers and retailers were receiving a premium for labelled products, which was not consistently passed on to fishermen – as demonstrated in the following quotation:

…there was this press release the other day saying that MSC fish was fetching 14 per cent more in the supermarkets and I wouldn’t describe that. I see that as not fetching 14 per cent, it’s costing 12 or 14 per cent more to the members of the public you know. Because we don’t see that much more for being able to say it’s MSC you know.

(Fisherman; <10m; western Channel; F07)
A number of respondents were also critical of the Marine Stewardship Council's ecolabelling scheme, due to the costs of acquiring and maintaining certification. Unlike other schemes in the Channel, the MSC operate a rigorous certification program to ensure that fisheries satisfy their standards for sustainable fishing and seafood traceability. Certification is conducted by third-party organisations to ensure impartiality, however, the applicant is required to meet the costs associated with pre-assessment, full-assessment and annual auditing (Marine Stewardship Council, 2012). While many fisheries received support in meeting these costs, some respondents questioned the financial viability of joining the scheme. Significantly, participants from two MSC fisheries (Thames Blackwater herring drift-net and South West handline mackerel) reported that they had collectively decided not to renew their certification because they believed that the costs of remaining within the scheme outweighed the benefits. An opinion was also expressed that third-party organisations responsible for certification were viewed by some fishermen as exploiting the industry through the fees that they charged:

There's a lot of people involved who are making money out of the industry...so they're doing a lot of assessment work, and of course it's a big earner for them. So the more they assess and the more they're involved, the more money they make. So, that money does not come back into the industry, so some members of the industry see them as parasites, and they see the certification schemes are more driven by big business and consultants than they are for any real thought of sustainability.

(Stakeholder; related organisation; eastern Channel; S18)

With regards to the issue of product quality, respondents cited examples where wholesalers had taken poor care of labelled products. While this practice appears to be limited to a small number of cases, it can create negative public perceptions of both labelling schemes and the individual fishermen belonging to them:

...that brings me to the other issue with the tagging, is that we did find that with one wholesaler, we were sending in pristine, the finest condition, sushi-grade bass you can buy anywhere, and after he finished with it, they were nearly garbage. But it had my name on it, so there is a downside.

(Fisherman; >10m; eastern Channel; F05)

The outcome of these observations is that labelling schemes appear to offer the greatest benefits where fishermen are able to maintain some control over the downstream stages of the production process – as highlighted by the following stakeholder:

I think it's fair to say it's mixed, I think the people who are not happy with are perhaps the people who haven't grasped where the market is for this. So if you've got a hand line caught fish which has got a premium, if sold into the main market that tag is lost somewhere along the way. So where you need to perhaps focus that marketing is towards say an individual restaurant or a small restaurant group, so that the tag stays with the fish
all the way through and you’re fairly confident it will stay with the fish, and that’s where the value comes.

(Stakeholder; promotional organisation; western Channel; S13)

While labelling schemes are used to differentiate existing products by promoting one or more specific characteristics, an alternative diversification strategy is to introduce new products to the seafood market. As discussed in section 5.2.2, the rebranding of the pilchard as a Cornish sardine represents a successful example of rejuvenating demand for a Channel species that had become unfashionable among domestic consumers. Although respondents did not provide any further examples of this type of market-based activity, there was a belief that consumer demand for different species was increasing. However, respondents also noted that the scope to develop markets for new products was limited by the conservative attitudes of consumers:

I don't think there will be much change…people in Britain generally we only eat, you know, five main species of fish because people are stuck in their habits and they do not like handling fish. They don't like getting their hands dirty. They don't even like cooking fish because of the smell.

(Stakeholder; related organisation; eastern Channel; S18)

In contrast with horizontal diversification, the practice of vertical integration was found to be more common among respondents. Of the 22 fishermen interviewed, 15 reported that they had adopted this strategy; with each of these practising downstream integration into succeeding stages of production – namely direct selling (14 respondents) and processing (3 respondents). Of the fourteen respondents engaged in direct selling, six of these sell through a retail unit. Two of these respondents sell from a fixed retail unit; two sell from a mobile retail unit; one operates a restaurant; and one operates a mobile catering unit. The remaining eight respondents sell directly to catering establishments, or to members of the public on an informal basis.

Respondents revealed that their decision to integrate into downstream activities was driven primarily by the opportunity to add value to their products and reduce the price volatility associated with selling through auctions or wholesalers:

…there is opportunity to catch, earn a bit more money for your catch, and maybe put a bit less effort at sea, and market your fish a bit better.

(Fisherman; <10m; eastern Channel; F16)

…well you certainly get a better price…big lobsters are £8.50 so primes for about 10 quid I think. Well I am getting £14 you know, so yeah.

(Fisherman; <10m; western Channel; F07)
Direct selling also allows fishermen to add value to products which have limited value when sold through an auction or wholesale merchant – as demonstrated in the following quotation:

…to start off with it was so I could sell the crap fish, flounders, dabs, you don’t get a lot of money for abroad. And it sort of took off from there, and now what I sell on a Saturday counts for probably thirty, thirty-five percent of my week’s grossings.

(Fisherman; <10m; eastern Channel; F14)

Consistent with the findings of the inventory, the practice of fishermen processing their catch prior to selling was largely limited to those respondents who targeted shellfish. In this context, processing involves preparation of the product for use by the end consumer – including cooking and picking crabmeat, and shucking scallops. Respondents cited increasing demand from both the general public and the catering sector as a key incentive for moving into these activities. Consistent with this finding, two respondents reported that they had developed their direct selling activities by diversifying into the catering sector. One of these respondents operates a mobile catering unit for public and private events, while the other has opened a fish restaurant. As with other forms of direct selling, this strategy allows fishermen to add value to their caught product – including those products with limited auction/wholesale value. Furthermore, the magnitude of this added value is increased because fishermen benefit from the additional mark-up between supplier and retailer:

…it is beneficial for the restaurant because I catch and sell direct you know, instead of getting six pounds for a lobster like I caught this morning I can punt that out for twenty-five, twenty-eight quid.

(Fisherman; <10m; eastern Channel; F04)

Despite the finding that downstream integration into processing and retail is practised throughout the Channel, respondents (including both diversifiers and non-diversifiers) identified a range of constraints upon developing this activity. Interestingly, some confusion is evident among fishermen with respect to the legality of selling direct to the public. A number of respondents stated that fishermen are restricted from selling direct by the Registered Buyers and Sellers (RBS) scheme introduced in 2005:

You're not allowed to anyway because the general public need a buyers licence to buy off fishermen.

(Stakeholder; related organisation; western Channel; S20)

However, examination of RBS legislation reveals the above statement to be incorrect: fishermen are entitled to sell directly to the public without either party requiring registration, on the condition that purchases from a fishing vessel are less than 25kg per
day and for private consumption only (Marine Management Organisation, 2010b). While this misunderstanding may constitute a significant obstacle to potential diversifiers, the main constraints identified by respondents focus instead upon the commitment required to successfully implement downstream activities – as typified by the following quotation:

Selling directly to the public: it's too challenging. Because if you're out 16 or 18 hours a day, the public have gone to bed generally by the time you get home. And if you're out at four o'clock in the morning, it lacks the opportunity [laughing] to get to the public to sell to them.

(Fisherman; >10m; eastern Channel; F09)

Furthermore, where fishermen have diversified into selling their products directly to restaurants, the need to ensure both continuity of supply and product quality was identified as creating additional demands upon established fishing practices:

You've got to work spring tides whereas traditionally all net boats just work neaps and then the spring tide is off. Restaurants don't like it. It's not going to work if you just send to restaurants one week and then nothing the next week.

(Fisherman; <10m; western Channel; F10)

The issue of time commitment places fishermen in a paradoxical situation where diversification into processing and/or direct reduces the time available to catch the seafood upon which these downstream activities rely. Fishermen respond to this problem in one of two ways: by maintaining processing/selling at a scale small enough to allow them sufficient time to fish; or by employing staff to assist with downstream activities. While the latter has enabled fishermen to expand their activities into standalone enterprises, the financial costs of employing staff were identified as a notable risk. One method of reducing this risk is to utilise the support of family members. This practice was evident among the diversifiers interviewed: of the 15 fishermen who have integrated downstream, 6 of these reported that a family member supported them in this activity. Of these 6 family members, 5 were fishermen’s partners and 1 was another family member. Significantly, a number of these respondents reported that the involvement of these family members was essential to the success of their enterprise.

In addition to the financial risk of employing staff, diversifiers made reference to the precarious nature of downstream integration with respect to receiving payment for their goods:
So, at the end of the day, he's gone all round god knows how many restaurants, he's already been at sea for a day, yeah? So, by now it's what, six o'clock at night, he's fucked, isn't he? Yeah? And he hasn't actually earned a whelk because they haven't paid him. So how is that better?

(Stakeholder; fishermen's representative; eastern Channel; S39)

Despite fishermen attributing the greatest importance to regulatory constraints when completing the AHP survey (section 5.4.2), this was not identified as a notable constraint among those that had developed processing and/or direct selling activities. Respondents discussed the importance of satisfying legislative requirements for processing and handling food, but did not consider these to be overly restrictive. Similarly, the finding in the AHP survey that lack of opportunities represents a key constraint upon diversification was not perceived to apply to downstream integration. However, while there was a commonly-held belief that more fishermen would adopt this strategy, one stakeholder involved in the wholesale trade expressed concerns regarding the implications of downstream integration for fisheries infrastructure:

...it’s too simplistic to say, pat a little fisherman on the head and say: ‘Go and catch less and go and serve it straight to a restaurant’, because part of it will work, most of it won’t...If everybody goes off and does their own little thing, infrastructure will just fall over, then they won’t be able to do their own little thing. Or, if infrastructure falls over, it'll take a long time to cycle back round again.

(Stakeholder; fishermen's representative; eastern Channel; S39)

Leisure & Tourism

The practice of fishermen supplementing their income with earnings from the leisure and tourism sector is evidently one of the most established forms of fisheries diversification in the Channel, and typically takes one of two forms: tourist boat trips and recreational angling. The basic principle of diversifying into these two activity types remains similar, in that fishermen benefit from economies of scope by utilising their fishing vessels (although one example was found of a respondent operating a second specialised angling boat). A distinction may be made, however, with respect to target markets. Boat trips are heavily reliant upon summer tourists, who typically demonstrate opportunistic behaviour in their participation. While many recreational angling charters also rely upon this market (particularly in the case of mackerel fishing trips), their customer-base includes devoted anglers who book their trips in advance and fish throughout the year.

Four of the fishermen interviewed had diversified into taking visitors onboard their vessels; of which three operated recreational angling charters and one operated tourist boat trips. Irrespective of the specific activity practised, respondents acknowledged the financial contribution that diversification into this sector made to their fishing business:
Well it’s just good easy money really. I sit in a boat and talk about fishing and rocks and caves and lifeboats, they hand me fifty quid at the end of the hour and it’s just easy work really. A couple of hours in the afternoon it puts the sort of icing on the cake for the fishing.

(Fisherman; <10m; western Channel; F11)

…the charter fishing side of the business was initially just an addition to income throughout the holiday, you know, like the summer, which isn’t great round here, the fishing in the summer. So we got the boats licensed for charter fishing.

(Fisherman; <10m; eastern Channel; F15)

A further financial benefit of operating recreational angling charters is that it allows fishermen to earn additional income from selling any leftover fish that their customers don’t want:

So you know, whatever I land I can bring in, whatever the anglers don’t want. They invariably take what they want and whatever’s left then because I’ve still got my commercial licence I can put it on the market.

(Fisherman; >10m; western Channel; F08)

Significantly, the notion that fishermen have diversified into leisure and tourism activities in response to constraints upon fishing activity was cited by a number of respondents. These constraints include both the distribution of target species, and restrictions imposed by quota availability:

…when we had the commercial mackerel in the winter, the mackerel was the mainstay of your income and the tripping was a top-up for the summer months. Now the tripping is the main stay that mackerel has gone.

(Fisherman; >10m; western Channel; F08)

It was because we didn’t have the ability to catch the Dover soles…we could catch tourists easy, but we couldn’t catch Dover soles. We could catch cod easy, but, of course, the cod came when the tourists left, so there was a natural progression from one to the other.

(Fisherman; <10m; eastern Channel; F12)

In order to take passengers onboard their vessels, fishermen need to satisfy a number of regulatory requirements including appropriate coding from the Maritime and Coastguard Agency (MCA) and insurance. While interview respondents acknowledged the constraint that this creates upon diversifying into these activities, this was not deemed to be an excessive obstacle. Instead, respondents noted that opportunities to diversify into the tourism and leisure sector were highly localised, and in many ports were close to (or had attained) saturation – as demonstrated in the following quotation:
I think it is fairly saturated. I mean it'd be hard to, I think most of the ports have got vessels going out so it would be hard to see that many more opportunities arriving unless, you know, it's just to replace somebody who's retiring.

(Stakeholder; related organisation; western Channel; S22)

In addition to the issue of finite demand, rising operating costs were also identified as a constraint upon fishermen diversifying into this sector. This observation is significant because it demonstrates that certain diversification activities may constitute an ineffective response to the challenges facing the fishing industry. For example, the effect of fuel costs was identified as a notable constraint upon developing activities aimed at visiting tourists:

…the dedicated angler, he knows that […] has got problems, they know that because when they book they normally say, 'the bloody fuel's gone up boys, I'm going to have to put another fiver on', and they'll go, 'yeah, I understand that', because he's gone up the garage. But Joe Public walking down the quay and seeing a board, four hours mackerel fishing, twenty quid, 'jeez I ain' paying that, I've got the kids as well'.

(Stakeholder; related organisation; western Channel; S20)

The other main example of fishermen diversifying into the leisure and tourism sector is through participation in the fishing/maritime festivals held throughout the Channel during the summer months. The involvement of fishermen was found to be variable but typically involved activities such as net-making demonstrations, and in some ports, trawler races. In addition to promoting local products, the purpose of many festivals is to raise money for charitable purposes – including the Fishermen’s Mission. Thus, unlike other forms of leisure and tourism diversification, fishermen do not receive financial remuneration for participating in these events, although they may benefit in other ways:

There is a fish festival, and I suppose it does increase consumption and awareness. So its overall effect is probably difficult to measure but perhaps it's an opportunity to market things that you wouldn't often see.

(Stakeholder; management; western Channel; S38)

Conversely, with the exception of charitable fundraising, some respondents suggested that fishermen may be averse to committing their time to festivals because the financial benefits were invariably received by other businesses:

When it comes to festivals, to get a fish festival you need funding to set that up, so it's good for the local economy, but it benefits street sellers and people selling jewellery far more than it probably does the industry.

(Fisherman; >10m; western Channel; F06)
The festival, the fish festival is only August bank holiday. This is the biggest one in the west, we get between 16 and 18,000 visitors in a day. It’s just jam packed it is…it’s not an additional income for the fishermen really, some of them think it’s a nuisance.

(Fisherman; <10m; western Channel; F09)

Non-fishing contract work

For the purposes of the inventory, a distinction was made between ‘non-fishing contract work’ and ‘environmental activities’ according to the nature of the work undertaken. While the latter may involve fishermen conducting work on a paid-contract basis, this work is distinguished by its focus upon the conservation of the marine environment rather than private-sector interests. For the purposes of clarification, this distinction is maintained throughout the following discussion.

While the potential exists for fishermen to apply their knowledge and skills to shore-based contract work, respondents reported that this was seldom practised due to a lack of opportunity. One area in which new opportunities may arise is through the provision of training – given that new entrants must attend a number of mandatory safety courses as stipulated by the MCA. While there was general agreement among respondents that fishermen could be well suited to this role, the fact that training is currently provided by external organisations was identified as a key constraint. Instead, the principal opportunities for contract working were identified in sea-based activities; especially those involving the use of fishing vessels for alternative purposes. Due to its sporadic nature, none of the fishermen interviewed were engaged in contract work at the time of interviewing. However, a number of respondents had previous experience of this activity and highlighted the earnings that could be gained:

…a few years ago one of the boats here was standing by at the end of a cable that was coming in at Pentewan there, guarding a cable for about three months at about a £1,000 a day or something, something ridiculous.

(Fisherman; <10m; western Channel; F07)

I mean a friend of mine did the contract for taking all the cables up to the 12 mile limit, they did that a few years ago for Cable & Wireless…they paid them 60 grand a year for three years.

(Fisherman; <10m; western Channel; F09)

Consequently, there was widespread agreement among respondents that many fishermen would consider undertaking contract work if it was financially beneficial. These benefits may be greater in the inshore sector, where contract work is relatively lucrative and fishermen have the flexibility to organise these activities around their fishing. In contrast,
a respondent from the over 10m sector explained that he seldom undertook contract work because it was comparatively less profitable:

I mean there was a big race for telecommunications in the late 90s, early 2000. The last time they was on about £1,000 a day. Yeah, it was nowhere near enough for us, we got to be on £3,000 to £4,000 a day make our boat pay. It was good for the type of vessels which were a little bit smaller.

(Fisherman; >10m; western Channel; F06)

In addition to the relative financial benefits of contract working, the viability of engaging in this activity is subject to a number of other factors. Although respondents reported that they had previously undertaken work for aggregate extraction, telecommunications, and offshore energy companies; the frequency of such opportunities was deemed to be highly variable. For example, while opportunities in the telecommunications sector have become less frequent following the installation of fibre-optic technology, opportunities in the offshore energy sector have increased in recent years. The viability of exploiting new opportunities was also linked to the ability of fishermen to switch from fishing to alternative activities:

…there's certain periods where the fishermen are extremely busy fishing, and then there's periods where they would be very glad to work at a very competitive rate and each area would be different…it would take you a whole week to set your boat up to go fishing and then a whole week to take all the equipment off to set it up to do a different type of job.

(Fisherman; >10m; western Channel; F06)

The difficulty of adapting vessels for contract work was identified as a particular issue for inshore fisherman, and resulted in an opinion being expressed that fishermen in this sector may be more likely to leave the industry altogether, rather than combining these activities with fishing:

…so listening to their stories, coming back and they love it because they’re earning top money, and they’ll do three months on and two months off, yeah, so the top guys are leaving because they get steadier money working for offshore oil rig work or research work.

(Fisherman; <10m; western Channel; F09)

Environmental activities

With the exception of the ‘Fishing for Litter’ project in which participation is voluntary, diversification into environmental activities does provide additional income for some Channel fishermen. However, as with contract working, the nature of this work and resultant financial benefits are variable. Given that the majority of opportunities are provided by non-commercial bodies such as environmental organisations and academic institutions, this work was generally considered to be less lucrative than contract work in
the private-sector. Nonetheless, a number of respondents reported that they had previously undertaken environmental work— including surveying for the Centre for Environment, Fisheries and Aquaculture Science (Cefas). Furthermore, these respondents stressed the benefits of this work in terms of improving scientific understanding and management of the Channel fishery, rather than financial gain:

Yeah, in actual fact we don't really gain a lot out of it. You know, we don't ever ask for no more than we would normally earn in a day. And generally, most of the schemes are set up that you get your daily rate guaranteed but whatever fish you catch is taken off that.

(Fisherman; >10m; western Channel; F06)

Consistent with the survey findings, an opinion was expressed that future opportunities for Channel fishermen to diversify into environmental work would increase as a result of the Marine and Coastal Access Act (2009). However, as with contract work, such opportunities are subject to both geographical location and the type of vessels operated by fishermen. Consequently, some fishermen reported that their ability to diversify into environmental work was constrained by the size/suitability of their vessels:

I've seen advertised opportunities for scientists to go on, I mean, mostly round here you're got small boat operators, and it's probably not the type of operations that they want to have a look at. They want to go to sea on a big trawler, or just a bigger boat generally.

(Fisherman; >10m; eastern Channel; F05)

Furthermore, one respondent suggested that while the increasing political profile of marine conservation is likely to generate further opportunities, the ability of fishermen to diversify will be constrained by competition from research institutions with specialised vessels:

My hunch is that most of the survey work will go to universities because when you look at them now, Plymouth, Southampton and the Welsh, they've got their own boats.

(Siteholder; related organisation; western Channel; S14)

6.4.3 Multiple-job holding and alternative employment

Following discussion of fisheries diversification, fishermen were asked a series of questions relating to multiple-job holding with the aim of establishing their experiences and attitudes towards working in an alternative occupation. In addition to the actual practice of multiple-job holding, fishermen were asked to discuss the employment they had undertaken prior to entering the fishing industry, and whether they envisaged remaining within the industry for the rest of their working career. The resultant findings are outlined in the following three sub-sections, commencing with current practices and experiences of multiple-job holding. Respondents’ wider observations of multiple-job
holding within the fishing industry are then examined, prior to exploring their attitudes towards this response strategy.

Practices and experiences of multiple-job holding

Of the fishermen interviewed, only one reported that they currently practised multiple-job holding: by complementing their fishing activity with income from employment as a self-employed painter and decorator. Further analysis of interview data reveals a number of notable observations. Firstly, this inshore fisherman may be regarded as an ‘established diversifier’ – having used his fishing vessel for recreational angling charters for over 12 years. As such, it is possible that he is more predisposed to developing income sources which fall outside the traditional practice of commercial fishing. Secondly, this individual only works as a painter and decorator during the winter months, having started this job four years ago. When asked about the motives for moving into this non-fishing occupation, the main reason given was in response to falling profitability from fishing activity in the winter and spring months – due in part to insufficient quota allocation:

Yeah we used to go down sole netting in the spring and it gives you only like 25 kilos of sole which is one blue boxful, it’s just not viable. I’ve got sole nets up the store, well I think I’ve sold some off to some different people. I’ve got rid of bits and pieces but I am just scaling all the commercial gear right back…I just think the leisure side of things now has taken off enough for us to say right I’ll do me summer. My end game plan is to do my summer here and go off for the winter.

(Fisherman; >10m; western Channel; F08)

This case is noteworthy because it challenges the preconception that fisheries diversification and multiple-job holding are practised as complementary activities to fishing. Instead, this individual has developed a pluriactive working strategy in which income from recreational angling and painting and decorating are complemented with earnings from commercial fishing. Importantly, each of these three roles is conducted on a self-employed basis – thereby allowing sufficient flexibility to adapt to local economic conditions.

Despite the finding that the majority of fishermen do not practice multiple-job holding, a number of those interviewed did admit to previously working in non-fishing occupations during their careers – as recorded in the survey. Consistent with the previous example, the majority of these individuals did not combine their fishing activity with non-fishing employment simultaneously, but alternated between these two job types. Some of these respondents had been forced to adopt this approach because they were unable to fish during the winter due to the small size of their vessels:
...when I first went to sea, when I was sort of 20 years old, my dad was in the fruit and veg business, and I used to go and work for him in the winter because we couldn't get out, we only had a 20-foot boat. So when I first started, I used to have an additional income, working ashore in the wintertime.

(Fisherman; <10m; eastern Channel; F15)

Alternatively, a number of respondents reported that they had tried other roles earlier in their working career but returned to fishing because of its appeal – as typified in the following quotation:

...the only time I've had another job was when I first left school, because I'd done a bit of fishing when I was still at school, and I worked for a builder for six months. I remember quite clearly, I had wage packets stacked up in my room, unopened, because I didn't know what to do with the money because it came in every week, something I wasn't used to, even then. You know? And I missed fishing so much, I could only take it for six months. And that's the only other job I've had.

(Fisherman; >10m; eastern Channel; F05)

Only three of the fishermen interviewed reported that they had previously engaged in multiple-job holding. Significantly, each of these respondents had combined fishing with an onshore job that was related to the fishing industry. Two of these individuals had worked in roles relating to boat building and maintenance, while the third respondent had left the fishing industry to undertake fishing-related consultancy work, but decided to return to fishing with the intention of combining these two roles. However, this respondent reported that it had become increasingly difficult to manage the demands of both jobs simultaneously:

I came back, bought a boat again, and then I was going onshore to do consultancy. So I thought it would work quite well, but it didn't because consultancies tended to come up right with the peaks of the fishing, so it left me really with an untidy kind of a living. And then as my kids got at critical stages of school and everything, I didn't want to be away for long periods, so I kind of stopped doing it, gradually.

(Fisherman; <10m; eastern Channel; F17)

Observations of multiple-job holding

Despite the finding that the majority of fishermen had not participated in multiple-job holding during their working careers, respondents freely discussed their observations of this practice among their colleagues. Multiple-job holding was commonly identified as a strategy adopted by inshore fishermen who are restricted from fishing in the winter months due to poor weather conditions. Furthermore, the impact of weather upon the ability to operate safely is exacerbated by an absence of sheltered harbours and the difficulty of launching vessels from the beach. In addition to geographical constraints, respondents
also linked multiple-job holding with the seasonal distribution of commercially valuable species. However, while examples were cited of fishermen seeking alternative employment in response to the lack of target species, this was generally considered to be a minority practice. Instead, respondents suggested that fishermen were more likely to adopt multiple-job holding due to poor quota allocation:

…because quota availability dictates how long they can be at sea and what they can catch, so if you can only go for 10 days out of a month, you've got to do something else for the rest, haven't you? So, you will end up a plasterer or a bricklayer, or something else, for the rest of the month until you get some more quota again.

(Stakeholder; fishermen's representative; eastern Channel; S39)

So you quite often find owner-operators having other income, and if they're self-employed, they're able to target stocks when they become more easily available and in commercial quantities. Rather than having to see yourself through the lean times, taking on the costs, you can tie your boat up, work ashore and make your money fishing when the opportunities arise.

(Stakeholder; management; western Channel; S38)

In summary, the emerging theme of these interviews is that fishermen have been ‘pushed’ into multiple-job holding out of necessity, due to an inability to make a sufficient living from fishing alone. This observation is notable because it suggests that many fishermen are resistant to the principle of multiple-job holding, rather than embracing it as a potential means of increasing income and reducing risk.

Attitudes towards alternative employment opportunities

In addition to discussing their experiences and observations of multiple-job holding, respondents were asked whether they would consider complementing their fishing activity with alternative employment in the future. In light of the challenges currently facing Channel fishermen and the widely-held perception that the relative profitability of fishing has declined, this area of exploration is particularly timely.

Significantly, only two fishermen admitted that they had considered seeking alternative employment. One respondent explained that he had thought about leaving the industry altogether because of the challenges faced in making a living from fishing, particularly with respect to quota. However, this individual went on to admit that he was unlikely to leave fishing altogether because of the job satisfaction he gained:
There's been times when I thought I've had enough of fishing. Yeah, there is times when I've thought, you know, I've had enough of fishing, to get out of fishing. There's been plenty of them times. But then you feel like, you often think like that when a letter comes through the post, you open it, and you've been stopped on another species, or something...It just gets you down, but then you go fishing and you love it so much.

(Fisherman; <10m; eastern Channel; F16)

In contrast, the other respondent stated that he would be interested in seeking complementary employment if it maintained a link with fishing; for example, by working in a consultancy/advisory capacity to the fishing industry:

I mean, on a consultancy basis, if they wanted to use my knowledge, of which, you know, all fishermen have got a lot of knowledge. They probably don't realise how much until they talk to someone who doesn't know anything about fishing. On that basis, it would be a runner, every time. I would seriously look at that, because I think that there's a lack of that sort of communication, of hands-on information that we've learnt, you know, by day after day after day going out and experiencing what the sea has to offer.

(Fisherman; >10m; eastern Channel; F05)

With the exception of the two fishermen discussed above, respondents were generally resistant to the idea of seeking additional employment and expressed strong opinions on this subject. A range of explanations were given as to why these individuals had not considered multiple-job holding. Consistent with previous findings relating to fisheries diversification, these explanations represent a series of constraints that reflect key themes, including lack of opportunity; economic viability; and individual attitudes and beliefs.

While the majority of fishermen admitted that they envisaged spending the remainder of their working career within the industry, they were willing to discuss the hypothetical possibility of holding a second job. There was widespread agreement among both fishermen and non-fishing stakeholders that the ability to combine fishing with secondary employment was limited in many parts of the Channel due to a lack of suitable opportunities. Respondents attributed this lack of opportunity to two main factors. Firstly, in some areas of the Channel there is a shortage of suitable employment due to local or regional economic conditions. This perception was particularly notable among respondents in the county of Cornwall, who attributed lack of opportunity to the decline of traditional/established industries and the seasonal nature of the tourist trade. Conversely, where alternative employment opportunities were believed to exist, an opinion was expressed that many fishermen would have difficulty exploiting these opportunities due to a lack of educational qualifications. Furthermore, while respondents acknowledged that fishermen demonstrate a range of skills in their day-to-day work, opinions regarding the transferability of these skills were mixed. While some respondents believed that
fishermen could utilise skills such as engineering and welding in onshore occupations, the general consensus was that such opportunities were limited. This was attributed to both a shortage of employment opportunities, and the fact that fishermen’s skills are not supported by formal qualifications:

I think it’s very difficult for anyone who’s been involved in fishing to get out into another industry, because most fishermen haven’t got any academic qualifications. They’re very good at sorting out problems and getting things running, but they’re not sort of engineers as such. So you’ll find a fisherman can normally get something running, but it won’t be to a level where he could pass those skills on and charge someone for doing it, like engineering or repairs, that type of thing.

(Fisherman; <10m; eastern Channel; F15)

What do you transfer them into? They’ve got all sorts of sea-gained skills but what do they do? Some fishermen, they’re very good welders, they can do all sorts of things but, you know, where’s the requirement for those? The opportunities aren’t there, those jobs are already taken and that is the biggest problem, what else do they do?

(Stakeholder; related organisation; eastern Channel; S18)

Irrespective of the opportunities that exist for multiple-job holding, a number of fishermen reported that the economic costs of combining fishing with alternative employment were unviable. Given that the majority of respondents were inshore fishermen working as owner-operators, the fixed costs of fishing were identified as a major constraint upon adopting a second job. As such, fishermen reported that they had to maximise the use of their vessels in order to maintain an acceptable level of profitability. Furthermore, increasing the amount of time spent at sea creates a knock-on effect whereby fishermen have to increase the time spent onshore maintaining their vessels and gear:

Because there isn’t enough time. There just isn’t, there isn’t enough time... even when, like the strong tides in Jersey or gales blow through, there’s always so much catching up work ashore to keep us busy that you’d never have the chance of keeping another job going.

(Fisherman; <10m; western Channel; F19)

But when we fish now it’s full-time because you haven’t got time, you’re maintaining your boat, maintaining your gear, when it blows you bring a string of pots to run through.

(Fisherman; <10m; western Channel; F20)

An outcome of this scenario is that fishermen who own their vessels find themselves ‘locked in’ to a career in fishing because they need to cover their fixed costs, and are unlikely to recoup the value of their vessel should they decide to leave the industry. One respondent suggested that this situation was exacerbated by the allocation of quota, which restricts the potential earnings of a vessel and its resultant value if sold:
Because if the fishing gets worse, so we’ve got the money invested in the boats, which we built up over like, 24 years, so it’s a long time, and everything we’ve got is in the boats. And when they put a quota on then you can’t earn so much, the boat value goes down as well. So if you sell the boats, they’re not worth what they might have been worth five years ago.

(Fisherman; <10m; eastern Channel; F16)

6.5 Sociocultural Attributes

The assumption that sociocultural attributes play a significant role in determining how fishermen respond to challenges is grounded in a number of previous studies within both fisheries and agriculture. While the results of the AHP survey highlighted the importance that fishermen attribute to social constraints upon diversification; there remains a gap in knowledge of how these attributes are constructed, and their influence upon fishermen’s behaviour. To this end, the aim of this section is to investigate fishermen’s personal attitudes and beliefs with regards to different types of response strategy. The section commences by exploring the ways in which fishermen perceive their occupation, followed by a discussion of sociocultural attributes in relation to multiple-job holding and fisheries diversification respectively.

6.5.1 Perceptions of fishing as an occupation

The way in which fishermen perceive their occupation is highly subjective and likely to be shaped by a range of factors, including motives and aspirations; knowledge and experience; and the challenges faced in the industry. While consideration must be given to the individual context within which perceptions of fishing are constructed, a number of general themes emerge from the interviews with fishermen.

It is clear that the majority of respondents enjoy fishing and the benefits which it provides. When discussing the strategies that could be adopted in response to challenges, respondents expressed a desire to continue working within the industry that was frequently attributed to the job satisfaction they derived. Upon closer examination this notion of job satisfaction may be defined by a number of key principles. Respondents highlighted the independence of being a fisherman, particularly with respect to having the ability to make their own decisions. This finding reflects the fact that all of the fishermen interviewed are vessel owner-operators, and therefore hold responsibility for the management of their own businesses. One fisherman also spoke positively about the sense of independence gained from working in an occupation that was distinct from other types of work, and consequently one which other people had only a limited knowledge of:
Making your own decisions in a world which you understand very well and it's a world separate from, you know we do like the fact that we are doing something that the public doesn't fully understand, that are interested in, which is very nice and yeah we like that. And we like that it's out there on the edge and it's still a bit different and you're in it, you're out in the environment you know.

(Fisherman; >10m; western Channel; F06)

The notion of fishing having a distinct identity also manifests itself in the way that fishermen perceive their own occupation. Both fishermen and stakeholders supported the proposition that fishing represents ‘a way of life’ from which individuals derive a strong sense of identity and status – as typified in the following quotations:

Within certain stratas of the fishing community it is very strong, there’s a real pride in being a fishermen, there’s a pride in going out there. They’re the last of the hunter gatherers they are, and they face physically, emotionally and mentally trials that most of us wouldn’t face once a year, they face on a regular basis.

(Stakeholder; related organisation; western Channel; S40)

I mean I’m a fisherman by heart, so I went and did some media work and now I’m back as a fisherman. I won’t not be a fisherman. If somebody cut one of my legs off I’d still be a fisherman.

(Fisherman; <10m; western Channel; F25)

It is therefore evident that fishermen continue to gain satisfaction from their work, despite the fact that fishing may be increasingly less profitable. Consistent with this observation, a number of fishermen made reference to the trade-off they make between quality of life and earnings in choosing to remain within the fishing industry:

…well I’ll never be rich but it’s a better quality of life for me than working split shifts and this that and the other.

(Fisherman; <10m; western Channel; F01)

…you’ve got to have money to live on I know, but the quality outweighs all the money side.

(Fisherman; <10m; western Channel; F11)

Due to the high average age of fishermen interviewed, it is possible that these respondents are able to remain within the industry because their financial outgoings have reduced over time. A number of fishermen reported that reductions in profitability were less problematic because they owned their vessels outright and had paid off the mortgage on their property. As such, these individuals are likely to continue fishing for the foreseeable future because of the non-pecuniary benefits they derive.
6.5.2 Sociocultural attributes and multiple-job holding

As anticipated, the observation that Channel fishermen derive a range of non-pecuniary benefits from their occupation has significant implications for multiple-job holding. When asked to discuss their attitudes towards seeking employment that is unrelated to fishing, respondents commonly cited job satisfaction as a principal reason for remaining within the fishing industry:

I mean I've experienced some things that other people only see on Discovery Channel, so why would I want to give it up? I go out four in the morning and I see the sun rise every day. And most days I see the sun set as well unfortunately! [laughs]...every day I've done pretty much what I wanted to do. So, you can't beat that, can you? I mean, job satisfaction is just off the scale for me.

(Fisherman; >10m; eastern Channel; F05)

Significantly, the sense of job satisfaction that comes from fishing was considered by some to be strong enough to prevent fishermen from leaving the industry to earn higher incomes in alternative occupations:

I thought about it and no not really, I love the job more now than ever I've done and we're only here so long, so if I can actually do a job I like and survive it's better than doing something for twice as much money and not liking it.

(Fisherman; <10m; western Channel; F11)

Upon closer examination, this notion of job satisfaction can be broken down into a number of key concepts. Fishermen identified the independence of being self-employed as an important aspect of their occupation, particularly with respect to the greater flexibility that this method of working provides:

...personally I'd find it very hard to do anything else but fishing. I couldn't work for anybody else, that's one thing I couldn't do. I couldn't be in a job where it starts at eight and one till two is lunchtime and two till six is, and then watch the clock and then off you go. No, I couldn't do that

(Fisherman; <10m; western Channel; F21)

And of course, because they're used to freedom, it's not easy for them to transfer into a nine-to-five job where they're having to clock in and clock out and that whole mentality. So it's not just the physical thing, it's also the mindset you know and actually changing your actual psychological state to accept a total change in your way of life.

(Stakeholder; related organisation; eastern Channel; S18)

In addition to the tangible differences in working practices that exist between fishing and alternative types of employment, respondents also identified the sense of identity and community that fishing offers as a constraint to multiple-job holding. An observation was
made that fishermen who tried working in alternative roles were often drawn back to fishing by the strong affiliation they hold with this occupation:

They end up driving something, some of the guys go and become taxis drivers, they go and work in the North Sea, that's quite common but that's not always a good fit. You get quite a large percentage who then come back to fishing, simply because of lifestyle issues. Fishing is not just a job it's a lifestyle, it's a way of being. You are a fishermen a lot more than you are a call centre worker you know, it defines who you are. And they find it very hard to change.  

(Stakeholder; related organisation; western Channel; S40)

Interestingly, perceptions of role and identity were also expressed in a negative context with regards to multiple-job holding among Channel fishermen. As noted in section 6.2.1, some fishermen were critical of part-time fishing because they believed that it deprived full-time fishermen of quota which they relied upon to make a living. However, one respondent suggested that part-time fishing was practised by fishermen out of necessity due to them being ineffective at their job; thus indicating a stigma towards multiple-job holding.

6.5.3 Sociocultural attributes and fisheries diversification

Throughout this research study a clear distinction is made between fisheries diversification and multiple-job holding with respect to their link with fishing. In the previous section it was found that many respondents opposed the idea of multiple-job holding because of the benefits that they derived from fishing. Significantly, the finding that many of these benefits relate to non-pecuniary attributes such as job satisfaction and sense of identity suggests that fishermen may forgo the opportunity to earn higher incomes from onshore occupations.

Given that fisheries diversification involves moving into activities that maintain a link with fishing, it may be anticipated that fishermen find this concept more agreeable than multiple-job holding. The findings of both the inventory and qualitative phase indicate that this assumption holds true in some, but not all cases. Most notably, only one of the fisherman interviewed reported multiple-job holding, whereas all 22 reported undertaking fisheries diversification of some form. Consequently, there was a general opinion among respondents that while most fishermen would prefer to fish, they would consider diversifying if it was financially lucrative:

You know fishermen, if someone comes along and wants to do something, wants to go out on a boat and pay the bloke not to go fishing, you know, I mean someone will do it.

(Fisherman; <10m; western Channel; F07)
…they would rather stick to fishing, but if someone came along and said to them ‘I want your boat for a week it’s a thousand pound, they’re not going to turn it away are they?’

(Fisherman; <10m; western Channel; F02)

However, as with multiple-job holding, a number of respondents identified the attitudes and perceptions of fishermen as a potential constraint upon diversification. While the negative attitudes of fishermen towards multiple-job holding may be seen to stem from a more general resistance to working outside of the fishing industry per se, opposition to fisheries diversification is found to be linked to specific types of activity. For example, when discussing the possibility of fishermen diversifying into the tourism and leisure sector by operating sightseeing or angling trips, there was a perception that many fishermen would choose not to undertake these types of activities because of the customer-facing role they would have to adopt:

…a lot of fishermen aren’t suited to it because it’s a bit of a person’s business: you’ve got to be able to get on with people.

(Fisherman; <10m; eastern Channel; F15)

I haven’t even looked into it, because to be quite honest the day I have to deal with tourists to make a living on the boat will be the day I’ll be doing something else! [laughs].

(Fisherman; <10m; eastern Channel; F14)

These findings may be seen to support the existence of a ‘difference of culture’ between fishing and tourism, previously observed by Alban and Boncoeur (2004). Taking paying passengers onboard a vessel (whether tourists or anglers) requires both different skills and a shift in working practices from those used in commercial fishing. Fundamentally, this represents a loss of independence for fishermen – an attribute which many respondents identified as a positive aspect of their occupation. Consequently, it was not unexpected to find a similar opinion expressed with regards to contract working because this also involves fishermen providing a service to a paying client:

They don’t want to be told what to do by someone who’s running a wind farm or building a wind farm. They don’t want to be on call to somebody else even if the money is good. A lot of them, they want freedom, that’s why they’re fishermen.

(Stakeholder; related organisation; eastern Channel; S18)

However, unlike boat trips and recreational angling, the possibility of conducting contract work on a more casual basis means that some fishermen may still engage in this activity when the opportunity arises:
Generally, fishermen want to be fishermen, they don’t want to be contract workers. But if they’ve got the ability to do both it’s a bit of a change for them and it supplements their income really.

(Fisherman; >10m; western Channel; F06)

A similar finding is observed with respect to direct selling, which also requires fishermen to utilise different skills and develop new working relationships. As noted previously in section 6.4.2, the development of direct selling activities can require fishermen to devote a greater proportion of their day to working onshore. It is therefore inevitable that some fishermen will prefer to spend this time fishing instead, irrespective of the financial benefits that could be achieved by diversifying.

In summarising the above findings, it is clear that some fishermen are resistant to the principle of fisheries diversification because it challenges their established methods of working. Furthermore, despite the inherent differences between fisheries diversification and multiple-job holding, a consistent theme emerges with respect to the influence of sociocultural attributes upon decision making. Thus, while diversification can allow fishermen to maintain a link with their principal activity of fishing, it may still be regarded as undermining their preconceived notions of role and identity:

…a fisherman has chosen that, not as a job but as a way of life. And to offer him that opportunity, if someone offered it to me, I would probably think a few times before I said yes or no. And the likelihood is I would say no, because my passion is catching fish.

(Fisherman; >10m; eastern Channel; F05)

An extension of this principle is the proposition that fisheries diversification represents a strategy for individuals who lack the skill and ability to make a living from fishing – as demonstrated in the following quotation:

But most fishermen just want to be fishermen, so diversifying business-wise, most fishermen that do that generally aren’t very good fishermen. It’s you know, because times get tough so they decide to go and do something else. Most fishermen worth their salt…I mean when times get tough with the amount of fish that’s about, it sorts the men out from the boys.

(Fisherman; <10m; eastern Channel; F14)

This finding is notable because it reflects a similar viewpoint expressed with regards to multiple-job holding – concerning the stigma of moving into activities that fall outside the established role of commercial fishing.
6.6 Summary

Through the application and analysis of qualitative research, it has been possible to gain greater insight into the challenges and response strategies of fishermen than that provided by previous studies. While it is evident that this challenge-impact-response process is shaped by the characteristics of individual fishing businesses, a number of key themes have emerged from this phase of research.

The observation that the principal challenges faced by fishermen remain largely consistent with research conducted in other parts of the UK implies that these challenges are not endemic to the Channel fishery, but rather symptomatic of the wider fishing industry. While it is incorrect to conclude that fishing has become less profitable for all Channel fishermen, the majority of those interviewed did report a decline in profitability during their time within the industry. Furthermore, while respondents reported their intentions to remain within the fishing industry, there is widespread dissatisfaction with the way in which the industry is currently managed – particularly with respect to the inshore sector. Significantly, much of this dissatisfaction stems from domestic management practices, rather than the UK’s membership of the EC Common Fisheries Policy. The implication of these findings is that the declining profitability of the fishing industry, combined with uncertainty over its future management, may ‘push’ fishermen into developing a response strategy out of necessity rather than choice.

In examining the response strategies adopted by Channel fishermen, it is not unexpected to find that the first response of many fishermen will be to adapt aspects of their fishing activity. The findings suggest that fishermen will seek to develop the most effective response relative to their individual situation – an observation that explains both the range of strategies currently being employed, and the contradictory nature of some of these strategies (e.g. increasing effort or reducing effort). While intra-sectoral strategies appear to be relatively successful in enabling fishermen to remain within the industry, it is necessary to acknowledge the influence of individual financial circumstances upon this observation. Many of the fishermen interviewed are in the latter stages of their working career, own their vessels outright, and have reduced household outgoings. A question therefore arises regarding the longer-term sustainability of this response strategy – particularly for younger fishermen and those who have entered the industry more recently.

Significantly, the practice of multiple-job holding was notably limited among respondents – despite its potential to enable fishermen to circumvent some of the challenges encountered within the industry. Multiple-job holding was only practised by one fisherman, and the majority of those interviewed reported that they had not considered
adopting this strategy. Upon discussing their reasons for this decision, the influence of non-pecuniary aspects of fishing is noteworthy. This finding is not altogether unexpected, given that engaging in alternative employment is likely to dissipate these attributes (i.e. lifestyle, identity and role). However, respondents also alluded to a number of other socioeconomic constraints upon multiple-job holding – including lack of opportunity and limited transferable skills. Thus, it is possible that given access to new opportunities and appropriate training, more fishermen may consider seeking secondary employment.

In contrast to multiple-job holding, the practice of fisheries diversification is more prevalent among fishermen in the Channel. Furthermore, the attitudes of non-diversifiers were notably more positive towards this strategy compared with multiple-job holding. This may be explained by the fact that fisheries diversification is relatively well-established in the Channel, and thus the majority of respondents have personal experience and/or observation of its practice. Unlike multiple-job holding, diversification enables fishermen to maintain a direct link with the fishing industry and utilise their existing knowledge, skills and capital. It is feasible, therefore, that many fishermen will view diversification as a strategy that can contribute to the sustainability of their fishing activity – rather than challenging it. However, the findings of this research indicate the presence of a stigma which may ultimately discourage some individuals from developing complementary sources of income.
7. Discussion

7.1 Introduction

The aim of this chapter is to discuss the key findings of three phases of data collection and establish the foundation for a conceptual framework to understand how fishermen respond to challenges upon financial performance. The principal focus of this framework is upon three strategic outcomes: intra-sectoral response strategies; fisheries diversification; and multiple-job holding.

This chapter consists of two main sections, both of which are central to the development of the conceptual framework which is proposed in the succeeding chapter. In the first section, the findings of research with Channel fishermen and stakeholders are examined with respect to their relationship with existing research and theory. This section is followed with a discussion of key concepts that have emerged through the research process, with respect to the contextual environments within which fishermen operate; attitudes to risk; and innovation and entrepreneurship. Consistent with the two previous chapters, verbatim quotations from in-depth interviewing are included where appropriate to highlight key findings.

7.2 Relationship with existing research and theory

7.2.1 Intra-sectoral responses

In Chapter 6, descriptive analysis of interview data confirmed that it is common practice among Channel fishermen to respond to financial challenges by developing intra-sectoral strategies. These strategies take the form of four main approaches which are non-exclusive in their application: effort-based responses; diversification of species and methods; adding value; and reducing costs.

While the body of literature on this subject area is notably limited, the intra-sectoral response strategies of Channel fishermen are found to adhere to existing theoretical principles. For example, the observation by Cunningham et al. (1985) that the relocation of fishing effort represents a ‘classic response’ to economic problems remains valid today. Indeed, the findings suggest that effort-based responses are frequently the first approach taken by Channel fishermen – which may be explained by the fact that they represent a continuation of current fishing activity. Similarly, the strategy of diversifying species and methods is well-established in fisheries such as the English Channel which display
seasonality with respect to fish and shellfish distribution. However, as noted by Cunningham et al., the ability of fishermen to relocate effort (geographically or biologically) has become increasingly constrained by management-imposed restrictions on fishing activity. Alternatively, where Channel fishermen have responded to falling profitability by increasing their fishing effort, the effectiveness of this approach has been impaired by quota restrictions and rising operating costs.

Despite the difficulties faced in relocating fishing effort geographically or biologically, examples are still found of fishermen successfully adopting this strategy in the Channel. In the case of the latter, this includes the exploitation of emerging markets for seafood products. The most notable examples of this are the growing overseas markets for cuttlefish and whelks – the bulk of which is exported to East Asia and mainland Europe respectively. Such observations support the proposition by Symes (2001) that European inshore fisheries are typified by the flexible and polyvalent nature of the fleet – a finding which the author considers surprising given the tendency of small-scale economic activities to demonstrate retrenchment rather than innovation when faced with difficult conditions. Indeed, while some respondents reported that they had altered their fishing effort in response to financial challenges (e.g. by responding to rising fuel prices by fishing closer to shore); little evidence was found of the type of retrenchment observed by Pettersen (1996) where Norwegian cod fishermen responded to decreased fishing incomes by reducing their activity and seeking alternative employment and/or social security payments. This may be explained by the observation that despite increasing constraints on fishing activity, most fishermen in the Channel continue to have sufficient flexibility to diversify their fishing practices. This contrasts with Pettersen’s research subjects who were heavily dependent upon a single species, which then became subject to strict output regulations. Similarly, where Pettersen also observed the permanent withdrawal of cod fishermen in response to increased regulation, none of the fishermen interviewed in the Channel believed that they would have to leave the industry out of necessity in the future. However, this finding may be seen to reflect the age and financial profile of respondents in this sample. It is envisaged that these individuals will continue to fish until retirement, but will not be replaced to the same extent by new entrants – thereby contributing to the trend of declining employment in the catching sector discussed in section 3.2.3.

In examining the alternative response of cost reduction, a number of the strategies employed by Channel fishermen are found to be consistent with previous observations within the industry. Examples are found of fishermen seeking to generate cost savings by improving the efficiency of their fishing operations; through both technological innovation
and the withdrawal of less-efficient vessels. However, in the case of the former, this response inevitably contributes to the ‘treadmill’ effect of technological creep observed by Cunningham et al. (1985). Alternatively, the strategy of cutting costs by operating with reduced crews reflects the findings of the national study conducted by Creative Research (2009); and raises concerns regarding fishermen’s safety across the UK sector.

7.2.2 Diversification

Forms of diversification

The inventory identified 67 distinct fisheries diversification activities being practised in the Channel, comprising 14 specific activity types (table 5.1). For the purposes of descriptive analysis, activities were further classified into four main categories: market-based activities; leisure & tourism; environmental activities; and non-fishing contract work. However, in applying these findings to theoretical principles, it is possible to adopt an alternative classification according to the structure and direction of diversification.

Lipczynski et al. (2009) identified three types of diversification based upon structure: product extension; market extension; and pure diversification. By definition, fisheries diversification does not encompass the principle of pure diversification as this entails movement into unrelated activities (as may be observed in multiple-job holding). Instead, the majority of diversification activities identified in the Channel constitute product extension; in that fishermen are providing new products or services that are related to their existing ones. Consistent with the observations of Douma and Schreuder (2002), the relationship of this new product with those already in production is found to take a number of forms. For example, activities such as recreational angling and maritime festivals constitute diversification into related markets, as they maintain a direct link with fishermen’s principal role of catching fish. Alternatively, activities such as sightseeing trips, channel swimming support, surveying, and litter collection share related inputs with fishing in terms of physical capital (i.e. vessels). However, these activities also utilise fishermen as a source of labour, and thus rely upon the human capital (e.g. skills, knowledge, competencies) of these individuals. In the case of activities such as fisheries liaison, it is human capital rather than physical capital that constitutes the related input with fishing.

Although the development of labelling schemes falls within the definition of fisheries diversification, from the perspective of economic theory it may be argued that this more closely represents differentiation than diversification. Fishermen seek to distinguish their products from others by promoting non-price characteristics with respect to provenance,
traceability and/or sustainability. In contrast, the rebranding of the pilchard as a Cornish sardine is seen to constitute product extension as fishermen have effectively created a new product through this process.

The finding that examples of market extension are less common among Channel fishermen may be explained by the role that these individuals assume in the marketing and distribution of their products. Of the twenty-two respondents who completed the fishermen’s questionnaire, seven (32%) reported that they sell a proportion of their catch through fish auctions, and thirteen (59%) sell through wholesalers and/or processors. In selling through these established routes, individual fishermen have limited influence on the markets for these products; although some examples are found of fishermen responding to new export markets that have been developed by wholesalers (e.g. whelks, cuttlefish). An exception to this is found with direct selling where fishermen have actively exploited new markets themselves. Eight respondents reported selling a proportion of their catch directly to retailers (typically restaurants), and nine reported that they sell directly to the public. However, of these fishermen who sell direct, only three reported that 100% of their catch was sold by this method.

The decision of some fishermen to diversify into succeeding stages of the production process by selling direct adheres to an alternative definition of diversification based upon direction. As noted in section 3.4.1, a firm may diversify in one of three directions: horizontally, vertically or diagonally. Using this approach, the majority of fisheries diversification activities in the Channel constitute horizontal diversification as fishermen continue to fish but have diversified into providing new products and services to existing markets. These products and services include angling and sightseeing trips; marketing initiatives (e.g. labelling schemes); and chartering vessels for surveying and contract work. In contrast, diversification into processing, direct selling, and the provision of goods and services required for fishing represents diversification in a vertical direction (vertical integration). Of the fishermen that have adopted this strategy, the majority have moved into succeeding/downstream stages of production (i.e. processing and retail), rather than into preceding/upstream activities (i.e. provision of goods and services).

No examples were found of fishermen diversifying diagonally into the provision of auxiliary goods and services required for the processes or lines of production – a finding which was not unexpected. As noted by Barthwal (1984), diagonal diversification is more prevalent in new industries where providers of auxiliary goods and services (e.g. electricity generation, tool making) may be absent. This is not the case in the UK fishing industry where the provision of such services is well-established.
Motives

Economic theory dictates that the structure and direction of diversification will reflect a firm’s motives for adopting this strategy. On the basis of this relationship, understanding the motives for fisheries diversification among Channel fishermen is a key process in the development of the conceptual framework. Motives may be examined with respect to the overall aim of diversification and the objectives by which this aim is achieved. In the case of the former, a survey question to explore perceived motives for diversification among fishers identified the importance of business survival (86%) and increased profitability (58%) (figure 5.11). When these results are analysed by fishermen who reported engaging in a diversification activity, business survival (62%) and increased profitability (52%) remain the principal motives, although the magnitude of agreement is not as great.

The finding that financial factors represent a key motive for fishermen supports previous work in the agricultural sector where income was commonly cited as a key reason for diversification. However, a number of studies in agriculture (e.g. Ilbery et al., 1997b; McNally, 2001) found that diversification made a relatively minor contribution to farm profits, but nonetheless remained important to the survival of the business – particularly during periods where returns from production are reduced. In the case of Channel fishermen, analysis of survey data reveals that the relative financial contribution of diversification is highly variable. Of the 21 fishermen currently undertaking diversification activities, eight reported that they were unable to distinguish the relative contribution of these activities to their household income. The main explanation given for this was that it was not possible to provide an accurate estimate due to the sporadic nature and/or high level of variability of these activities. Of the remaining thirteen diversifiers: three reported that diversification contributed less than 25% of their household income; six reported that it contributed between 25% and 50%; and four reported that it contributed more than 50%. Five of these respondents reported that they earn more from diversification than from catching fish, although the two activities are invariably interlinked. For example, two fishermen reported that 100% of their income came from processing – resulting from (but not limited to) the processing of their own catches.

In addressing the underlying objectives of diversification among fishermen, it is possible to draw comparison with the existing theoretical literature reviewed in Chapter 3. For example, Lypczynski et al. (2009) identified the four key motives of diversification as cost savings; reduction of transaction costs; enhancement of market power; and managerial strategy. However, as noted in section 3.4.1, the applicability of this typology to the Channel fishery is somewhat limited due to the composition of the typical ‘fishing firm’.
While examples of multi-vessel firms with limited liability status are found within the English Channel (more so in the over 10m sector), the fishery is dominated by an inshore sector where the majority of fishermen are small business owners who are unable to achieve any degree of market dominance. For example, of the 22 individuals who completed the fishermen’s questionnaire, 18 of these were owner-operators of vessels under 10m in length. As such, the benefits that these individuals may derive from diversification relate more to economies of scope and risk reduction than competitive advantage.

Exploiting economies of scope is a key principle of fisheries diversification – which by definition involves fishermen developing activities that maintain a link with the products, profession or business of commercial fishing. Consequently, each of the 14 activity types identified in the Channel enables fishermen to gain economies of scope by using common factors of production; although a distinction emerges with respect to the type of production factors used. In applying the four-fold typology of production factors proposed by Douma and Schreuder (2002), we find Channel fishermen utilising specialised indivisible assets and organisational know-how, rather than technological know-how and brand names. The fishing vessel constitutes a specialised indivisible asset that may also be used for a range of alternative activities such as recreational angling, tourist boats trips, and surveying. Similarly, these activities utilise organisational know-how in the form of the knowledge and experience gained from working in the fishing industry – in addition to activities such as fisheries liaison and maritime festivals where their vessels are not used. In contrast, the utilisation of technological know-how to develop economies of scope is not evident; which may be explained by the fact that this does not constitute a key factor of production within the catching sector. Similarly, the structure of the UK fishing industry means that branding is largely absent in the catching sector; and instead is found in the latter production stages of processing and retail. Thus, where fishermen have integrated into downstream (or indeed upstream) stages of production, the principle objective is to exploit organisational know-how.

In applying these observations to Rickard’s (2006) competency approach to diversification, fisheries diversification is found to adhere most closely to strategy-B in figure 7.1. A case may be made that most fishing firms in the inshore sector are ‘multi-product’ as they target a range of species as the seasons dictate; and while the fishing vessel represents a specialised indivisible asset, it can be used for non-fishing purposes. Furthermore, the organisational know-how of fishermen has been developed over their time within the industry and is essentially a product of their observations, experiences and social relationships. To this end it may be argued that much of this knowledge is not
fungible, but instead is subjective to the fishing industry. Thus, where Rickard (2006) proposes that a firm with fungible knowledge is more likely to consider a strategy of unrelated diversification (where resources such as managerial knowledge can be utilised as a common input) fishermen are more likely to apply their knowledge to related activities that maintain a link with fishing.

**Figure 7.1: Competency approach to diversification (Rickard, 2006)**

As noted in section 3.4.1, diversification can enable a firm to reduce risk by reducing its reliance upon specific products and/or markets. In the case of vertical integration, risk reduction can be gained from greater assurance over supply and demand for its products, although this may also lead to increased risk if the firm’s operations are inefficient. Although only a minority of fishers (19%) identified risk reduction as a principal motive for diversification in the survey (figure 5.11), respondents did identify the risks associated with fishing during in-depth interviewing. More specifically, these risks were attributed to a combination of over-reliance upon some types of fishing activity and uncertainty regarding management practices. Consequently, some fishermen have sought to reduce this risk by developing complementary income sources; an example being the respondents who diversified into the leisure and tourism sector in response to increasing quota restrictions (section 6.4.2). This observation supports the proposition by George et al. (1992) that conditions of risk and uncertainty are important motives for diversification.

In the case of vertical integration, limited evidence is found of fishermen moving into upstream activities to reduce risk. The inventory revealed a small number of examples, including a fisherman who builds and repairs fishing vessels, and fishermen in the Channel Islands supplying by-catch from trawling as bait for pot fishermen; although the scale of the latter is unlikely to make a significant contribution to incomes. One
explanation for this finding is that the upstream sector providing goods and services to the fishing industry is well-established in the UK. Consequently, integration into these activities may actually increase risk if fishermen are unable to compete with existing providers.

In contrast, integration into downstream activities is notably more prevalent, although reducing risk by assuring demand for products was also not identified as a key motive for diversifying. This may be explained by the fact that the majority of fishermen who sell through the established routes of auctions or wholesalers/processors did not identify lack of demand as problematic. However, an exception to this was found with respect to less-marketable species. Through downstream integration into direct selling, fishermen are able to promote these products and receive higher prices than previously possible – as demonstrated in the following quotation:

...to start off with it was so I could sell the crap fish, flounders, dabs, you don’t get a lot of money for abroad. And it sort of took off from there, and now what I sell on a Saturday counts for probably thirty, thirty-five percent of my week’s grossings.

(Fisherman; <10m; eastern Channel; F14)

Despite its potential contribution to risk reduction, the motive of integrating downstream to create demand for less-marketable products was only cited by a minority of respondents. Instead, the results indicate that the key motive for diversifying into processing and direct selling is to add value. As discussed in section 6.4.2, fishermen practising these activities reported that they were receiving higher prices for their products as a result; although this also requires the commitment of financial and human capital. As such, the financial benefits of downstream integration can act to reduce the risks associated with fishing, but conversely may lead to increased risk if the operation of these activities is inefficient.

Incentives and constraints

In analysing the incentives and constraints that Channel fishermen face in diversifying, it is beneficial to explore comparisons with studies from both the fisheries and agricultural sectors – particularly given the limited body of literature in the former. In one of the earliest references to fisheries diversification, Cunningham et al. (1985) observed little evidence of fishermen diversifying horizontally in order to realise economies of scale and/or market power, which remains the case in the Channel fishery. Similarly, the authors’ explanation that economies of scale may be non-existent or unimportant to fishermen, and that the majority of fishing firms are too small to achieve individual dominance remains equally valid. As noted in the previous section, fishermen are more
likely to utilise their factors of production in diversifying horizontally to exploit economies of scope.

In their exploration of vertical integration within the fishing industry, Cunningham et al. (1985) concluded that the majority of fishing firms showed no propensity to integrate forwards into processing, marketing and distribution. While this is clearly no longer the case within the Channel – as the practice of processing and direct selling demonstrates, the four possible explanations proposed by the authors do retain some relevance. The suggestion that fishermen may have difficulty raising capital to invest in downstream activities is supported by the findings of the AHP survey, where both fishers and non-fishers attributed the greatest importance to ‘lack of capital finance’ as an economic constraint (table 5.9). In the case of the qualitative phase of research, a distinction emerges with respect to the level of investment in developing processing and direct selling. For example, of the 17 respondents who have moved into downstream activities, 10 have developed distinct processing and/or retail facilities, while the remainder undertake these activities on a more informal basis.

The second explanation – that the opportunistic nature of some types of fishing does not lend itself to processing due to issues with the continuity and uniformity of supply – remains particularly valid in the Channel fishery which is characterised by a large inshore sector targeting seasonal stocks. Consistent with this observation, the respondents who had moved into processing were shellfishermen who targeted only one or two species i.e. scallops or lobster and crab. Similarly, the explanation that fishermen may be reluctant to develop downstream activities due to uncertainty of supply is also valid given the concerns that some respondents raised with respect to changing management practices:

...as the year goes on, rules alter and morph into other types, and on January the first in the following year, it all changes again. So it's an impossibility to actually make informed, logical business decisions in the fishing industry.

(Stakeholder; fishermen’s representative; eastern Channel; S39)

The final suggestion proposes that fishermen may be reluctant to integrate downstream because they are accustomed to the short timescale in fishing between inputs and outputs, and the planning flexibility that this provides. In contrast, activities such as processing and retail require the commitment of resources in advance – when future market conditions are uncertain. While it is difficult to establish the validity of this argument from the interview data, a number of respondents did highlight the difference in working practices that integration requires. This included the loss of flexibility that arises when fishing is combined with processing or direct selling, due to the need to ensure continuity of supply and product quality. As noted in section 6.4.2, fishermen have
responded to this problem in one of two ways: by maintaining downstream activities at a scale that allows them sufficient flexibility in their fishing; or by employing staff. Despite these measures, the risk associated with committing resources in advance remains a disincentive to fishermen adopting this strategy. Hesitancy to take risks was also identified as a constraint upon fisheries diversification by Merrien et al. (2008) in their study of fishermen in Brittany. While Channel fishermen did not explicitly identify financial risk as a key constraint upon diversification, they did highlight the potential risk of losing their entitlement to fish if they reduced fishing activity in favour of alternative activities.

The issues associated with fishermen having to adopt different working practices when diversifying were also explored by Alban and Boncoeur (2004) with respect to physical capital. Fishermen with vessels under 10m in length, and those using static gear expressed a greater level of interest in diversifying into the leisure and tourism sector – which the authors attribute to the ease at which fishermen can adapt their vessels to alternative purposes. As such, this finding remains consistent with studies in agriculture where physical characteristics of the business such as farm size, farm facilities, and importantly farm location, are found to determine the feasibility and subsequent uptake of diversification (Gasson, 1998; Ilbery, 1991; Ilbery & Bowler, 1993). Diversification in the Channel clearly follows a similar theme; the inventory revealed that both vessel size and geographical location are key determinants upon diversification practices (section 5.2.3). While the relative dominance of diversification among the inshore sector may be explained by the greater suitability of these vessels to alternative activities, the interview findings also indicate a difference in attitudes between fishermen in the under 10m and over 10m sectors. More specifically, inshore fishermen may be more inclined to consider diversification because they adopt a more flexible approach to fishing by diversifying their methods throughout the year. Furthermore, as noted in section 6.4.2 with respect to contract work, the relative financial contribution of diversification activities to the income of the fishing business may be greater for fishermen in the inshore sector.

Turning to the influence of individual/household characteristics upon diversification, Alban and Boncoeur (2004) observed that younger skippers (under 30 years old) expressed a greater interest in diversifying into tourist boat trips than those in older age groups. The authors suggest that older skippers may be less prone to change their habits with age; or alternatively that this observation reflects a shift in attitudes between generations of skippers which manifests itself as a ‘difference of culture’ between fishing and tourism. In applying these findings to the Channel fishery, the influence of age upon fishermen’s attitudes to diversification is inconclusive. This may be explained in part by the older age profile of the sample (figure 5.3); although the respondents who have diversified are found
to fall across a range of age groups – which suggests that older age is not a notable constraint.

The influence of household composition upon diversification among Channel fishermen is more difficult to ascertain. None of the fishermen interviewed reported that they had engaged in diversification specifically to support children in the household. Similarly, although business survival was identified by fishers and non-fishers alike as a principal motive for diversification, respondents did not indicate that they had diversified to ensure their fishing business could be passed to their children. Indeed, evidence was found to the contrary; with some respondents reporting that they had discouraged their children from entering the industry as they believe it no longer represents a suitable career prospect. The observation in agriculture of family members assuming an active role in the running and decision making of farm diversification activities (Ilbery & Bowler, 1993; Ilbery et al., 1997b) does emerge with respect to Channel fishermen; although this involvement is dependent upon activity type. While the involvement of family members is generally absent in the case of collective and/or passive activities, a number of cases are found where family members contribute to the running of individual activities that fishermen have actively developed (Appendix H).

In contrast to studies in agriculture (e.g. Ilbery & Bowler, 1993) the education level of fishermen does not appear to influence attitudes or engagement in diversification. One reason for this may be because diversification activities typically involve fishermen utilising the knowledge and skills learned through their time in the industry. This contrasts with fishermen seeking unrelated job opportunities which may require formal qualifications – a constraint previously identified with respect to multiple-job holding (section 6.4.3). Similarly, respondents did not identify lack of skills as a notable constraint upon diversification, which remains consistent with the observations of Sharpley and Vass (2006) in agriculture. As such, the influence of personal characteristics manifests itself more strongly through a difference of culture between fishing and diversification activities. For example, respondents suggested that some fishermen would be reluctant to diversify into activities such as tourism which require them to adopt a customer-facing role which they may be unfamiliar and/or uncomfortable with. Similarly, evidence was also found that some individuals may be resistant to engaging in activities which are perceived to undermine their role and identity of being a fisherman. To this end these findings are seen to be consistent with studies in agriculture (e.g. Burton, 2004; Sharpley & Vass, 2006) in which farmers indicated that they wished farming to remain their principal activity; and expressed concerns regarding the loss of identity and sociocultural rewards of farming that could result from diversification.
Consistent with these findings, the observation by Halliday (1989) that diversification is subsequently regarded by farmers as a small satellite activity, rather than a restructuring of the farm business, is applicable to Channel fishermen in many – but not all cases. During interviewing, fishermen frequently spoke of diversification activities in the context of an addition to the fishing business rather than being integral to it. This was particularly notable among respondents who participated in collective and/or passive activities such as labelling schemes and contract working. In contrast, where fishermen had displayed entrepreneurial behaviour in establishing standalone enterprises such as processing/retail facilities, these forms of diversification were regarded as a key component of the fishing business. This is further reflected by both the level of investment (and associated risk) in these activities, and their financial contribution to the fishing business.

7.2.3 Multiple-job holding

One of the key findings to emerge from interviews with fishermen is that multiple-job holding does not appear to be widely practised in the Channel. As noted in section 6.4.3, only one respondent reported being currently engaged in multiple-job holding – by combining onshore painting and decorating work with fishing on a seasonal basis. Furthermore, when asked to discuss their observations of multiple-job holding among fellow fishermen, only a small number of examples were cited. While this lack of data creates a limitation upon examining the applicability of multiple-job holding theory to current practices, it is still possible to address this objective by analysing the previous experiences of respondents and their attitudes towards adopting multiple-job holding in the future.

The explanation of multiple-job holding centres upon two main theories: the ‘hours-constrained’ motive and the ‘heterogeneous-jobs’ motive; although this theoretical basis has been extended to consider additional explanations. In the case of the hours-constrained motive, an individual seeks additional employment because they are unable to work the desired number of hours in their primary job to earn an income level that optimises their utility. Given that all of the fishermen interviewed were self-employed owner-operators, they do not face an hours-constraint with respect to labour supply. However, it is possible that Channel fishermen who work as crew members may be unable to find the desired number of hours employment within the industry. For vessel owner-operators, a constraint on hours is more likely to result from alternative factors such as economic conditions and institutional factors (Conway & Kimmel, 1998). This proposition is supported by respondents’ personal experiences of multiple-job holding, where secondary employment was found during the winter months as a response to being
physically unable to fish full-time due to weather conditions. Furthermore, when
discussing their observations of multiple-job holding among fellow fishermen, respondents
frequently attributed this practice to inshore fishermen due to the smaller size of their
vessels, as demonstrated by the following quotation:

I think the small guys here all have two jobs. You know, like I said, they’re either on
building sites or they’ve got a plot that they’re working on, or they’re gardening, or they’re
doing tree work. So they tend to have other ones that they’re doing when the weather’s
bad or they can’t go fishing.

(Fisherman; <10m; western Channel; F09)

On this basis, multiple-job holding constitutes a short-term measure borne out of necessity
to maintain an adequate (although not necessarily optimal) level of income. This practice
supports the hypothesis of Kimmel and Conway (2001) in which the hours-constrained
motive contributes to shorter, temporary episodes of secondary employment; as workers
faced with longer-term constraints are more likely to develop an alternative response
strategy. In the fishing industry, these longer-term constraints may constitute challenges
such as quota restrictions and rising operating costs which, unlike poor weather
conditions, are omnipresent. Indeed, in their analysis of problems in fishing, Cunningham
et al. (1985. p.125) make a distinction between short-term challenges that constitute
“occupational hazards” and longer-term challenges that represent a growing threat to
commercial viability.

In the alternative theory of multiple-job holding based on the heterogeneous-jobs motive,
an individual seeks secondary employment in order to gain non-pecuniary benefits that
are absent in their primary occupation. As with the hours-constrained motive, the
objective of this strategy is to maximise utility, but the difference lies in the fact that the
decision to take a second job is not related to the hours or earnings of the primary job.
Instead, the reasons may include gaining experience, indulging personal interests,
increasing job satisfaction, and greater flexibility. Examining the experiences,
observations and attitudes of Channel fishermen to multiple-job holding reveals little
support for the heterogeneous-jobs motive; which is not entirely unexpected given the
emerging themes of the interview data. In section 6.5.1, analysis of respondents’
perceptions of fishing as an occupation highlighted a range of non-pecuniary benefits that
fishermen gain from their occupation, including job satisfaction, sense of identity and
independence. Given that these benefits exist for many fishermen within their primary
occupation, it may be assumed that few fishermen will seek them in secondary
employment also. An exception to this finding is identified in the case of the respondent
who stated that he would consider multiple-job holding by working in an
advisory/consultancy capacity to the fishing industry – allowing him to contribute his knowledge and experience to fisheries management. However, despite this example, the data suggests that the majority of fishermen have not considered finding secondary employment in order to maximise utility with respect to non-pecuniary attributes. Indeed, for some individuals the non-pecuniary benefits of fishing are sufficiently great that they are willing to accept lower wages than could be earned in alternative occupations – as typified by the following quotation:

I love the job more now than ever I’ve done and we’re only here so long, so if I can actually do a job I like and survive it’s better than doing something for twice as much money and not liking it.

(Fisherman; <10m; western Channel; F11)

As noted in section 3.5.1, the theoretical basis of multiple-job holding has been extended beyond the hours-constrained and heterogeneous-jobs motives to consider additional explanations. Wu et al. (2009) propose a ‘main job insecurity hypothesis’ in which an individual seeks secondary employment – either as a hedge against losing their first job, or in response to uncertain incomes. The first scenario is not supported by interview data, which may be explained by the fact that each of the fishermen interviewed is a self-employed owner-operator. While it is feasible that these individuals may have to cease operating if their business becomes financially unviable, the research findings suggest that Channel fishermen are still able to operate profitably – despite many reporting a fall in profitability over time. Instead, the risk of redundancy represents a greater threat for crew members given that one response to falling profitability is to cut costs by reducing labour. However, none of the respondents reported observing crew members responding to job insecurity by combining fishing with secondary employment.

The second scenario, whereby individuals seek secondary employment in response to uncertain incomes has greater relevance to the fishing industry; on account of the fact that fishermen’s earnings are directly related to catches and thus highly variable. When these earnings are further constrained by rising operating costs and quota restrictions, one response may be to seek secondary employment – particularly if the traditional responses to such constraints (e.g. increasing or relocating effort) are restricted. Despite the theoretical relevance of this hypothesis to the Channel fishery, no evidence is found of respondents adopting or considering this approach. One explanation for this is that owner-operators must overcome the fixed costs of operating a vessel in order to make a profit. In a context of rising operating costs, the outcome of this situation is that respondents have to fish full-time in order to make their business viable – as demonstrated by the following respondent:
But really to put a boat in the water you've got to insure it and you've got to pay mooring fees. It's a deteriorating asset so you either work it or you sell it, you know? It is very hard to have a boat and the cost of it and just go out six weeks a year or something.

(Fisherman; <10m; western Channel; F03)

This finding supports the observation by Symes and Frangoudes (2001) that fishing has developed over time into a specialised full-time occupation; although in this case fishermen have to work full-time in order to make their occupation viable. Consistent with the previous scenario, this would not apply to fishermen who work as crew members and do not own a share in a fishing vessel. However, respondents did not identify this practice among crew members when discussing their observations of multiple-job holding.

The fourth hypothesis to explain multiple-job holding proposes that an individual will seek to satisfy their target level of income by selecting an appropriate combination of work on different jobs. In the case of a primary job associated with non-pecuniary benefits, a fall in earnings will lead the rational worker to seek secondary employment. Conversely, where the primary job does not provide non-pecuniary benefits, the rational worker will respond to a fall in earnings by leaving the job altogether. Some support for this hypothesis is observed in the fishermen’s survey, where respondents were asked to identify the strategy that they would be most likely to adopt if their current fishing activities became unprofitable (figure 5.13). Although the majority of fishermen (68%) reported that they would continue fishing but find a more profitable species or method; 22% reported that they would seek to supplement their income with other non-fishing related employment; and 5% reported that they would leave the industry altogether and find a different job. It is likely that the reluctance among respondents to leave the fishing industry is indicative of the non-pecuniary benefits of fishing – a finding supported by subsequent in-depth interviewing (in addition to previous research). However, the survey results also suggest that only a minority of fishermen would respond to financial difficulties by adopting a strategy of multiple-job holding. Despite citing a general trend towards declining earnings and profitability, none of the respondents reported that incomes had become too low to remain within the industry. It is also clear that a proportion of these respondents trade-off their earnings from fishing with job satisfaction. From a financial perspective, this behaviour may be viewed as irrational if fishermen intentionally decide to forgo higher opportunity incomes. However, if we define ‘target income’ as including both pecuniary and non-pecuniary benefits, then the hypothesis remains valid.

While the non-pecuniary benefits of fishing constitute a particularly strong incentive for many fishermen to remain within the industry, it is necessary to consider other factors that may determine the likelihood of fishermen seeking secondary employment. Previous
studies that examine the influence of household composition suggest that multiple-job holding among males is positively related with the number of children in the household (e.g. Dickey et al., 2011; Kimmel & Conway, 2001); however, this issue did not arise during discussions with fishermen on their experiences and observations of multiple-job holding. In contrast, there is some evidence that fishermen are less inclined to consider multiple-job holding as they progress in age and/or experience. In their study of agriculture, Mishra and Goodwin (1997) observed that farmers with greater years of experience are less likely to engage in secondary employment – which they suggest may be indicative of similar marginal returns from on-farm and off-farm activities. Similarly, when asked to discuss the reasons why they would not consider multiple-job holding in the future, respondents explained that they did not need to because they earned a sufficient income from fishing. As noted in the previous section, the challenges encountered by these individuals are not of a sufficient magnitude to make them leave the industry – as was the case in Pettersen’s (1996) study in Norway. Upon further analysis, this finding is indicative of age and experience because many respondents in the latter stages of their careers indicated that they have a greater degree of financial security – as typified in the following quotation:

I couldn’t afford to do this if I still had a young family and a mortgage, it’s only the fact that the mortgage is paid off and the kids have left home that I can just earn a living.

(Fisherman; <10m; eastern Channel; F14)

Finally, although the majority of respondents had not considered seeking secondary employment, a number of them suggested that opportunities to engage in non-fishing work were often limited; due to a lack of formal qualifications and training, and labour supply issues (particularly in more peripheral regions). This observation is significant because it highlights an issue that receives little attention in the current literature on multiple-job holding. Thus, the decision to refrain from engaging in multiple-job holding may be determined both by the endogenous attributes of fishing as an occupation, and exogenously by the characteristics of the wider labour market.

7.3 Emerging concepts

7.3.1 Contextual environments

It is clear from the analysis of interview data that the challenges faced by fishermen; their impact upon the fishing business; and the strategies adopted in response are subjective to
individual characteristics. Upon further examination, these characteristics are found to operate within a number of distinct contextual ‘environments’. This observation invites comparison with the conceptual frameworks proposed by Evans and Ilbery (1989) and Ilbery et al. (1997b); in which agricultural diversification is viewed as the outcome of factors operating externally and internally to the farm household. As noted in section 3.4.3, Ilbery et al. identify an external environment consisting of three levels: a macro-scale context within which decisions are made by external agencies; a series of local, regional and national institutions providing information, advice and funding; and a more informal information environment within which the exchange of ideas takes place. In contrast, the internal environment consists of attributes which influence the stimulus to make a decision; the search for a satisfactory solution; and the choice of solution from the options available. These attributes relate to both the farm business (e.g. farm size, tenure), and the farm household (e.g. occupancy, age, education).

The concept of external and internal environments proposed by Ilbery et al. (1997b) has particular relevance to the fishing industry – not only with respect to how fishermen respond to challenges, but also in terms of the origins and impact of those challenges. In Chapter 6, a typology of challenges was proposed consisting of four categories: administrative; economic; biological and environmental. Examining these challenges with respect to their contextual environment reveals a distinction between those operating externally and internally to the fishing business. For example, the key challenges relating to quota management, operating costs, and pricing are situated within an external environment over which individual fishermen have limited or no control. Consistent with Ilbery et al., these challenges relate to a macro-scale context as well as national, regional and (to a lesser extent) local institutions. An example of this is found in the case of quota management, where the Total Allowable Catch (TAC) for each species is determined at the European level by the EU Council of Fisheries Ministers; provided to the UK in the form of national quotas; and then allocated regionally. The actual impact of such challenges, however, will be determined internally by the characteristics of individual fishing businesses. This ‘internal environment’ includes both characteristics of the fishing business (e.g. vessel size, type and location); and those of individual fishermen (e.g. age, experience, household composition).

Similarly, the strategies that fishermen adopt in response to challenges are also subject to a number of contextual environments. Analysis of the responses adopted by Channel fishermen in Chapter 6 identified three main strategies: intra-sectoral responses; fisheries diversification; and multiple-job holding. Further investigation reveals that the practices, observations, and attitudes of fishermen towards these strategies are determined by
factors that operate externally and internally to the fishing business. For example, the ability of fishermen to engage in established intra-sectoral responses such as increasing/relocating effort or diversifying their target species is increasingly constrained by an external environment that encompasses management-imposed restrictions on fishing activity. However, the viability of intra-sectoral response strategies is also determined by internal characteristics of the fishing business – such as vessel type and location. Despite their marked differences, a similar process is observed with respect to both fisheries diversification and multiple-job holding; in that both the ability and decision of fishermen to engage in these strategies is subject to external and internal contextual environments. Instead, the distinction lies in the relative influence of these environments upon specific outcomes. In contrast to intra-sectoral response strategies, the results suggest that fisheries diversification and multiple-job holding are more heavily influenced by internal characteristics relating to individual fishermen – such as perceptions of identity, role, and job satisfaction.

While the conceptual framework proposed by Ilbery et al. (1997b) is undoubtedly of use in understanding how fishermen respond to challenges, it also has a number of limitations. Firstly, the framework emphasises diversification as the outcome of a range of factors operating externally and internally to the farm household. As has been discussed above, the challenges faced by fishermen and the strategies adopted in response to these challenges are both determined by the contextual environments within which fishermen operate. As such, these different environments are seen to display a high degree of interrelationship within the fishing industry, which it is necessary to capture. Secondly, where Ilbery et al. identify an internal environment encompassing both the farm business and farm household, a case is made for separating these due to the significant distinction between economic and sociocultural characteristics of the fishing business. Furthermore, the analysis of interview data suggests that the 'household' is less integral to the typical fishing business (in terms of both physical and human capital) than it is to the farm. Although some respondents did make reference to the role of household members in the operation of their fishing business – most notably with respect to entrepreneurial activity (discussed in the following section), the emerging theme from interviewing is one of the individual fisherman, rather than the household, being the principal decision-making unit.

In light of these observations, the development of a conceptual framework to explain how fishermen respond to challenges upon financial performance should acknowledge the interrelationship between the following three contextual environments:
1) An ‘External context’ defined by the economic, administrative, environmental and biological parameters within which all fishermen operate;

2) A ‘Business context’ defined by the characteristics of the individual fishing business under study;

3) An ‘Individual context’ defined by the psychological and non-psychological attributes of the fisherman who owns and operates that business.

These three contextual environments and their impact upon both challenges and responses are discussed in greater detail in the following chapter.

7.3.2 Attitudes to risk

Risk is an inherent attribute of commercial fishing that exists on two principal levels: the risk of physical harm when working at sea; and the financial risks of operating within an industry characterised by a high degree of variance and uncertainty. Examining attitudes to risk is particularly relevant to the construction of a conceptual framework, because the way in which fishermen perceive physical and financial risk will influence the types of response strategy that they adopt.

While respondents were aware of the physical risks of fishing and accepted this as an inherent aspect of their occupation, none of the fishermen interviewed admitted that their response strategies directly increased the probability of physical harm. This suggests that fishermen are typically averse to physical risk, although similarly it is possible that considerable variation in responsiveness to risk exists among individual fishermen in the Channel. The observation made by a number of respondents that some fishermen are now operating single-handed in order to reduce costs is one such example.

The financial risks associated with owning and operating a fishing business are both inherent to the industry, and reflective of the external environment within which fishermen work. In the case of the former, the act of harvesting a mobile natural resource in the absence of property rights means that fishing outputs have always been subject to variance and uncertainty. However, the effects of this variance and uncertainty are exacerbated by the administrative, economic, biological and environment challenges faced by fishermen. In light of the widely-held belief that fishing has become less profitable in recent years (section 6.3.1), the way in which fishermen perceive financial risk is likely to be key determinant of how they respond.

The findings of previous research on this subject suggest that fishermen frequently demonstrate risk-averse behaviour when making decisions about target species
(Bockstael & Opaluch, 1983); the type of gear used (Eggert & Martinsson, 2004); and the location of their fishing activity (Mistiaen & Strand, 2000). Analysis of interview data reveals support among Channel fishermen for these types of risk aversion. While fishermen frequently stated that they would respond to financial challenges by seeking an appropriate intra-sectoral response, a number of respondents highlighted the potential risks associated with this strategy. As noted in section 6.4.1, the ability of fishermen to diversify their target species may be constrained by management restrictions such as licence capping and quota allocation. In the case of the latter, fishermen may choose to lease or purchase quota from other holders, although some have decided against this strategy due to the perceived risk of this investment:

I wasn’t prepared to start leasing because at the moment to lease a tonne of soles just so you can go and catch the bloody things is two thousand quid, two pound a kilo you know. Prices are pretty stable at the moment but if you get a price crash and you’re looking at maybe only getting six-fifty, seven pounds a kilo, two pound a kilo is going in leasing costs.

(Fisherman; <10m; eastern Channel; F14)

Similarly, fishermen also identified the risk associated with investing in different fishing gear to target alternative species. This risk was attributed to management practices in the industry, which have created a perception of uncertainty among fishermen:

...there is still a lot of uncertainty in the fishing industry. And that does affect profitability because you’re never, and this includes us and everybody else in the fishing industry in the English Channel, you’re never 100 per cent sure whether you should invest. Whether that’s in new boats, or new gear, or refits, or re-engineering, or whatever you want to do, because they change the bloody rules every year.

(Fisherman’s representative; eastern Channel; S39)

The way in which Channel fishermen perceive the financial risks of relocating fishing effort geographically are less clear to interpret, due in part to the inherent uncertainty of targeting a mobile natural resource. For example, while some fishermen reported that they had responded to financial challenges by trying to reduce their fuel costs by fishing closer to shore; others have adopted a riskier strategy of fishing further afield in the hope of increased catches:

We haven’t increased the number of pots that we’ve used, we’ve just taken them to more productive ground, which is always further away. And obviously that increases your running costs by it being further away, but the gamble normally pays off because, well the catch rate is, it far outweighs the extra running costs.

(Fisherman; <10m; western Channel; F19)

Given that fishermen typically exhibit risk-averse behaviour in their fishing practices, it may be assumed that similar attitudes are evident towards fisheries diversification –
especially as some of these activities may require fishermen to move into sectors in which they have less knowledge and experience. With regards to the typology of diversification presented in section 5.2.4, financial risk is anticipated to vary according to the type of strategy being pursued. For example, collective-active activities such as labelling schemes are typically co-ordinated by organisations, thereby reducing the financial and administrative commitment required by individual fishermen. In contrast, individual-active activities such as direct selling or tourist boat trips require the individual fishermen to bear the majority (or all) of the associated risk. When viewed within the context of potential earnings, a paradox emerges whereby activities that make a greater contribution to the income of the fishing business (thereby reducing the risk of overreliance upon catching) invariably incur risk with respect to the investment of financial and human capital. Furthermore, where these activities constitute downstream integration into succeeding stages of production, reliance upon catching may be increased.

Interestingly, fishermen did not frequently identify financial risk as a key constraint upon diversifying into related activities although some evidence does emerge from the interview data. Consistent with the typology of diversification activities, one fisherman in the western Channel reported that he had decided against diversifying into the leisure and tourism sector because the risk of not making a profit was too great:

Yeah, I've thought about running a glass-bottomed boat like they do up at Looe, there's three up at Looe. I've thought about that but the season's too bloody short...here you're season would only be six weeks while the kids were off. So for the investment it's too short a season.

(Fisherman; <10m; western Channel; F07)

Similarly, another western Channel fisherman reported that he had selected a lower-risk strategy of investing in property rather than purchasing an additional vessel for recreational angling and tourist boat trips:

Probably three years ago I was looking at getting another boat, it would have been pretty much solely for angling, or tourism. But since then we've put our money into another property because it's much more secure, you know. And by letting a property out it gives you a steady income, and you've still got the house to sell at the end of the day.

(Fisherman; >10m; western Channel; F08)

Evidence of risk-aversion was also found with respect to downstream integration. A number of respondents identified the practice of selling directly to restaurants as financially risky because unlike selling to the public, fishers would invariably have to wait to receive payment – as highlighted by the following quotation:
...if you go to sea worrying about your last lot of fish you caught and sent down the road, and it might be worth 20,000 quid, if you’re worried about getting paid for that it doesn’t motivate you to catch a load more and send it.

(Fisherman; <10m; western Channel; F21)

The observations of risk-averse behaviour noted above may contribute to explaining the status of diversification as a minority strategy, although it is evidently only one of a number of factors. However, it is clear that a proportion of fishermen have displayed risk-taking behaviour by diversifying into related activities – particularly those of an entrepreneurial nature where risk-bearing is an inherent aspect. In summary, the findings suggest that fishermen will carefully consider the risks associated with an opportunity before deciding whether to pursue it. As such, the decision to bear risk will be influenced by the opportunity itself, and the individual’s perceptions and propensity towards risk-taking – as highlighted in the following quotation from a fisheries stakeholder:

...people are not going to take risks in committing themselves to something which is not likely to be long term. They're not going to, for instance, if there's a one-off situation like a pipe is being laid, they're happy to do that if there's no investment for them. So laying some buoys or acting as a guard boat, there's no big deal. For a longer term commitment, i.e. servicing a wind farm, they might be willing to invest money because it will be an ongoing opportunity. So it's all down to how they perceive things.

(Stakeholder; related organisation; eastern Channel; S18)

7.3.3 Innovation and Entrepreneurship

In section 3.4.4, a review of existing literature examined the principles of innovation and entrepreneurship, together with the range of attributes that influence entrepreneurial behaviour. These themes are revisited below with respect to innovation and entrepreneurship among fishermen in the Channel. Although innovation is clearly a key component of fisheries diversification, fishermen may also display innovative behaviour in their day-to-day fishing activities. This section therefore commences with a discussion of how Channel fishermen perceive innovation and its importance to their occupation. This is followed with an examination of entrepreneurship and fisheries diversification, which includes the nature and existence of opportunities; the role of individual characteristics; and the influence of industrial and environmental contexts upon entrepreneurial behaviour.

Perceptions of innovative behaviour

When asked to discuss their perceptions of innovative behaviour among Channel fishermen, respondents expressed a strongly-held belief that innovation was a requisite of success in the fishing industry. This belief is founded upon the inherent uncertainty of
fishing as an occupation; characterised by harvesting a mobile (and frequently seasonal) resource in the absence of individual property rights. This notion of uncertainty is commonly exacerbated by management-imposed restrictions on fishing effort and output; resulting in fishermen responding by diversifying their target species and fishing methods:

That’s the nature of the business, they’re born innovators, some more than others. But you know they’ll always diversify into something else that has got potential returns.

(Fisherman; <10m; western Channel; F19)

They’re quite good at evolving their fishing methods. You know, if the fishing gets slack we tend to find better ways of catching fish

(Fisherman; <10m; eastern Channel; F14)

Significantly, respondents believed that fishermen currently operate within an environment where innovation is crucial to the survival of fishing businesses – particularly in the inshore sector which is characterised by small one-vessel enterprises. As such, the development of intra-sectoral responses has increasingly become a strategy of necessity:

Yeah I think you’ve got to be, because they’ve got to survive…especially small boat fishermen, they chop and change.

(Fisherman; <10m; western Channel; F11)

Because you have to be adaptable in many ways. Not only adaptable to seasonality of something, but we’re talking about the availability of quota, and you know, you’re tested continually. Otherwise you’re going to go broke.

(Fisherman; <10m; eastern Channel; F05)

Although respondents believed that innovation was an inherent and necessary attribute of being a fisherman, a theme emerges with respect to the magnitude of innovative behaviour displayed by individuals. A distinction was made among fishermen with respect to the minority of ‘leaders’ who are active in developing innovative fishing practices, and the majority of ‘followers’ who adopted these practices upon seeing the benefits that could be gained. As such, these observations support the typology of ‘leaders’, ‘lieutenants’ and ‘followers’ proposed by Creative Research (2009):

Fishermen are very astute at knowing what’s going on, and they don’t always necessarily want to be the first to jump into something, but they want to be a close second if there’s money in it.

(Fisherman; <10m; western Channel; F02)

There’s the sheep that follow the pack, but there’s the ones that, you know, the ones that led and I’d put myself as one.

(Fisherman; <10m; western Channel; F22)
The observation that respondents typically made reference to intra-sectoral responses when asked to cite examples of innovative behaviour, may be seen to reinforce its status as the first strategy of choice for those facing financial challenges. However, in light of the constraints that fishermen face in developing such responses, it may be argued that fisheries diversification provides scope for the emergence of a new generation of fishing entrepreneurs – who move outside the established confines of the catching sector to exploit new opportunities. These individuals form the basis of discussion in the following section.

*Entrepreneurship and fisheries diversification*

In examining the role of innovation in entrepreneurship, Shane (2003) notes that while the entrepreneurial process requires some form of innovation, the type of innovation involved may be variable. The author makes reference to innovation in terms of its magnitude, by citing ‘milder’ forms of innovation such as placing a restaurant on a different corner of an intersection from existing restaurants (2003, p.8). This notion of a magnitude of innovative (and entrepreneurial) behaviour is evident among fishermen; not only in the shift from intra-sectoral response strategies to fisheries diversification, but within the types of diversification activity practised. The typology of diversification presented in section 5.2.4 identifies four distinct strategies according to the involvement of fishermen (individual or collective) and the nature of their actions (active or passive). On this basis, it may be argued that the magnitude of innovative behaviour is greater among those fishermen who have actively identified diversification opportunities, rather than exploiting opportunities provided by others. Similarly, while entrepreneurial efforts can be undertaken by more than one individual, it stands to reason that not all of the fishermen who participate in collective fisheries diversification activities will have been influential in their initial development. For these reasons, fishermen who have undertaken an individual-active strategy of diversification are of particular interest when examining entrepreneurship.

Of the 22 fishermen interviewed, 13 were identified as having adopted an individual-active diversification strategy by developing distinct ‘standalone’ activities that are conducted in addition to their fishing activity:

- Two of these individuals operate recreational angling charters;
- One operates tourist boats trips;
- Two undertake processing of seafood products;
- Nine undertake direct selling: three through a shop; four through a trailer or stall; and one via their own restaurant.
Interviews with fishermen, including these 13 individuals, were analysed in line with Shane’s (2003) individual-opportunity nexus in order to explore the influence of both individual and external forces upon entrepreneurial behaviour. The findings of this analysis are discussed below, together with key observations from the inventory and survey phases where applicable.

**Nature and existence of opportunities**

Shane (2003) defines an entrepreneurial opportunity as: “a situation in which a person can create a new means-ends framework for recombining resources that the entrepreneur believes will yield a profit” (p.18). It is the creation of this new means-end framework that distinguishes an entrepreneurial opportunity from a scenario where an individual seeks to optimise profit within an existing framework.

Upon examining the research findings, opportunities for entrepreneurship through fisheries diversification appear to adhere more closely to the Kirznerian rather than Schumpeterian perspective. The inventory of existing diversification activities in the Channel (section 5.2) reveals that fishermen have principally undertaken horizontal diversification into related products and/or markets, or vertical integration into succeeding stages of the production process. In the majority of cases, fisheries diversification activities are found to replicate existing forms because activities such as tourist boats trips, recreational angling, processing and retail are historically well-established in the Channel. Opportunities for fishermen to diversify into these types of activity are therefore anticipated to arise through differential access to existing information, rather than the introduction of new information. Consequently, it may be argued that the activities arising from this process are less innovative, and more imitative.

However, upon further examination, some evidence is found of fishermen exploiting opportunities which appear to be more Schumpeterian in nature. Schumpeter (1934) proposed that entrepreneurial opportunities arise through the introduction of new information, which results from factors such as changes in technology, political forces, regulation, macro-economic factors and social trends (Shane, 2003, p.20). In the case of the 13 fishermen who have developed standalone diversification activities, a number of examples are found where activities have been developed in response to the introduction of information. For example, two respondents have displayed entrepreneurial behaviour by developing downstream processing activities (one of whom also practises direct selling) in response to shifting social trends. In both cases, these fisherman have responded to new information regarding consumer demand for seafood produced in a more sustainable and traceable manner. Through the application of innovative behaviour,
these fishermen have clearly challenged existing forms of downstream integration in a manner consistent with Schumpeterian entrepreneurship.

Irrespective of whether fisheries diversification activities adhere to a Kirznerian or Schumpeterian perspective, a notable observation emerges with respect to fishermen's perceptions of the opportunities to diversify. The AHP survey revealed that lack of opportunity was identified by fishermen as an important constraint upon diversification (table 5.7), and this finding is supported through interview data. For example, while there was widespread agreement among respondents that fishermen were inherently innovative in their working practices, opportunities to develop innovative and entrepreneurial behaviour were perceived to be finite – as typified in the following quotation with respect to vertical integration:

I mean, they are quite clever guys, and a lot of them have gone into marketing or getting more money for their catch, but there's only a certain amount of avenues in that direction.

(Fisherman; <10m; eastern Channel; F15)

Additionally, respondents suggested that even where new opportunities are found, increased regulation may act to deter fishermen from exploiting them:

If you've looked for the opportunity, there has always been something there, but now of course, legislation, vessel brown coding and everything else has come in, you can't. The noose has tightened on the opportunities.

(Fisherman; <10m; eastern Channel; F12)

They're resilient; yes, they're resourceful; yes, given the freedom or given the flexibility, they will sort themselves out to be able to diversify in a direction, whether that be marketing, whether that be fishing, whether that be going and finding these contracts. But there is so much restriction by the regulation that the resourcefulness has almost been beaten out of them.

(Fishermen's representative; eastern Channel; S39)

**Individual characteristics**

The review of existing literature in section 3.4.4 identified a range of individual characteristics which are found to influence entrepreneurial behaviour – comprising both psychological and non-psychological factors. While the interview guide was not designed to examine each of these individual characteristics explicitly, the use of a semi-structured format did allow key characteristics to emerge through the interview process.

Shane (2003, p.96) notes that psychological factors can influence the likelihood of entrepreneurship by leading people to make different decisions and opportunities than others who possess the same information and skills. Analysis of interviews with
fishermen identifies a number of aspects of personality and motives that are present among those who have displayed entrepreneurial behaviour – most notably with respect to risk-taking propensity and a desire for independence. As previously noted, respondents identified a distinction between ‘leaders’ and ‘followers’ with respect to innovation in fishing – which is evident among those who have developed standalone activities:

It’s putting yourself forward, all that type of stuff really. Sticking your neck out.

(Fisherman; <10m; eastern Channel; F03)

If we don’t move it forwards then it’s time to sell up and get out…it was ‘drive it forward, don’t miss the opportunity’, because if we didn’t build this we wouldn’t have got the opportunity again.

(Fisherman; <10m; eastern Channel)

When discussing the origin and development of their diversification activities, fishermen also made reference to a range of extroversion attributes. Examples of initiative and activeness emerge through a process whereby fishermen identify the potential to exploit new opportunities and develop an appropriate response:

I realised that there were sort of inherent problems with, in those days, with marketing...We didn’t have the buyers around then that we have now, and the demand wasn’t as good, so I started selling my own catch.

(Fisherman; <10m; eastern Channel; F15)

…one of the lads invited me out and we had a good day’s fishing. And I used to crew for him quite a bit and he wasn’t very socially compliant with the general public, so I thought, well I could see something there.

(Fisherman; <10m; western Channel; F01)

Diversifiers also made reference to aspects of sociability and talkativeness with regards to identifying entrepreneurial opportunities for exploitation; an observation which corresponds with the perception that some fishermen may be deterred from diversifying into activities that require a customer-facing role (section 6.4.2):

…I was a chef and had my own restaurant in the town here, and we had customers come in because I did a lot of seafood and, you know, you get the gift of the gab.

(Fisherman; <10m; western Channel; F01)

Well again, when I was hawking my prawns around I sold to one main wholesaler but there was lots of restaurants that would take them as well, and I just got generally interested in restaurants and talking to chefs.

(Fisherman; <10m; eastern Channel; F04)
Finally, notions of ambitiousness are identified among a number of fishermen in that they discussed diversification in the context of an ongoing process of development and expansion, rather than a ‘one-off’ activity:

We’ve had this facility for four years, but for 20 years we’ve been adapting.

(Fisherman; <10m; eastern Channel; F03)

So we got the boat licensed for charter fishing, and that’s grown really out of proportion to the commercial side now. So we’ve got the commercial fishing, we’ve got the charter fishing, and we’ve got the marketing tool to sell the fish.

(Fisherman; <10m; eastern Channel; F15)

In contrast to psychological factors, the relationship between non-psychological factors and entrepreneurship was easier to examine because data on the non-psychological attributes of fishermen was explicitly collated through the interview process. Analysis of this data reveals a number of notable findings; with respect to education, experience, age, and the role of the family.

**Education**

Shane (2003, p.69) notes that education increases a person’s stock of information and skills, including those required to successfully exploit entrepreneurial opportunities. As such, people who have been educated with relevant information and skills are more likely to exploit opportunities than those who lack them. Samuelsson and Davidsson (2009, p.233) also suggest that formal education is geared towards the systematic acquisition of declarative and explicit knowledge applied in the development of innovative ventures. The educational qualifications of fishermen who have displayed entrepreneurial behaviour appear to support this proposition. Of the thirteen fishermen who have developed standalone diversification activities: two have a degree; four have a professional qualification in a subject outside the fishing industry; and five hold secondary-school level qualifications (Appendix G). Furthermore, of those holding higher-education qualifications, a relationship emerges with respect to the educational subject and the characteristics of their diversification activity. Examples include a degree in economics (processing and direct selling); a degree in advertising (direct selling); catering qualifications (direct selling, running a restaurant); and a qualification in management & accountancy (processing). This finding is particularly significant in light of previous findings which suggest that the levels of educational attainment among UK fishermen are relatively poor (Creative Research, 2009).
Experience and age

In contrast to formal educational qualifications, the relationship between experience and entrepreneurial behaviour relates more with the procedural and tacit knowledge that individuals develop through their careers. Shane (2003) identifies five main types of career experience that encourage the exploitation of entrepreneurial opportunities: general business experience; industry experience; functional experience; start-up experience; and vicarious experience. Given the relationship that typically exists between experience and age, it is useful to examine the effects of these two attributes together. However, while experience is found to have a positive effect on entrepreneurial behaviour, the effect of age is curvilinear; entrepreneurial behaviour increases with age as individuals gather information and skills, but then decreases with age as their willingness to bear uncertainty declines.

Of the thirteen fishermen who have developed standalone diversification activities: five fall within the 35 – 44 age bracket; six fall within the 45 – 54 age bracket; and two fall within the 55 – 64 age bracket. Analysis of their time spent within the industry reveals that twelve of these individuals have at least 20 years experience of fishing (six of these have more than 30 years experience) and only one has been fishing for less than 10 years. In their study of diversification among fishermen in the Iroise Sea, Alban and Boncoeur (2004) suggest that older fishermen may be less inclined to consider diversification due to a shift in attitudes between generations. The findings in the English Channel do not appear to support this proposition. The observation that these respondents fall largely within the middle range of a typical working career suggests that they have developed considerable experience within their occupation, yet are willing to develop their fishing businesses in new directions prior to retiring.

Given that fisheries diversification involves moving horizontally into related products and/or markets; or vertically into preceding or succeeding stages of production, it may be assumed that fishermen will have developed experience of these sectors during their time in the industry. However, the extent to which this industry experience has influenced entrepreneurial behaviour among fisherman is difficult to ascertain. In contrast, a number of fishermen made reference to the link between their functional experience and the development of diversification activities. In some cases, this also includes experience of starting up similar ventures. For example, one fisherman who has diversified into providing tourist boat trips explained that he used to operate a similar venture when he was younger:
Well years and years ago when I was a kid, we first started doing it with a little punt and outboard.

(Fisherman; <10m; western Channel; F11)

Similarly, another fisherman who runs a restaurant through which he sells his catch explained that he gained functional experience by working within the industry as a part-time employee:

I fancied a fish restaurant, and an opportunity came where I helped out – one opened and I was their partner, I didn’t have money to fund myself so I helped out for many years part-time and then when it came up I bought it.

(Fisherman; <10m; eastern Channel; F04)

While much of this experience evidently takes the form of tacit knowledge, it is logical to assume that some fishermen will have gained experience of diversification vicariously – through the observation of colleagues and contacts within both fishing and related sectors.

**Family**

The role of the family is anticipated to influence entrepreneurial behaviour on a number of levels. Shane (2003) notes that being married and having a working spouse increases the likelihood of entrepreneurship by reducing the premium for bearing uncertainty; in this sense the provision of an additional household income can encourage an individual to bear the risks associated with exploiting new opportunities. However, in addition to providing financial support and security, the spouse may play an active role in development and operation of entrepreneurial activities. In the agricultural sector, a number of studies identified the active role of the farmer’s spouse in diversification activities – including the existence of gender-role differences (e.g. Ilbery & Bowler, 1993; Ilbery et al., 1997b). Examining the role of the family in the development of entrepreneurial activities among Channel fishermen reveals some support for the above observations. Of the thirteen fishermen who have developed standalone diversification activities, seven reported that a member of their family supported them in this activity. In each of these seven cases it is the fisherman’s spouse who takes a supporting role, although support is also provided by parents (one case), children (one case) and siblings (one case). The roles played by these family members include administrative/office-based support; retail and marketing roles; and in one case the fisherman’s spouse is responsible for running the diversified enterprise. Significantly, five of the seven fishermen who receive support from a family member agreed that the involvement of family members was essential to the operation of their activity (Appendix G):
We do it because we’re a family where everyone does something to make it work…If you’re one man and then you took on employees, it’s difficult.

(Fisherman; <10m; western Channel; F10)

 […] is absolutely invaluable to that. The thing is, she’s on the telephone so between us we know what’s coming in off the boats. When that phone rings it’s a restaurant; ‘what have you got?’ ‘what can I have?’, and she will know.

(Fisherman; <10m; eastern Channel; F03)

In their study of agricultural diversification, Evans and Ilbery (1989, p.262) note that family labour can be advantageous due to its cheapness, loyalty and commitment – which contributes to “a level of self-exploitation often necessary for survival”. Consistent with this observation, one fisherman highlighted the financial benefits of involving family members in entrepreneurial activity:

It looks like a great family business where, you know, it’s a shed in your garden and you’re doing all the processing and filleting and the whole family’s involved. But you’re not actually paying the whole family, you’re not paying them a living wage.

(Fisherman; <10m; western Channel; F09)

In the case of the five fishermen who reported that their spouse did not support them with their diversification activity, analysis reveals that the spouse undertakes an alternative form of employment which contributes to household income. While it is not possible to examine the relationship between spousal income and entrepreneurial behaviour explicitly, these observations do support the notion that the premium of fishermen to bear uncertainty may be reduced by their wife’s earnings.

In addition to the role of the spouse, the presence of children in the household is also found to be influential upon entrepreneurship, although the nature of this influence may be variable. For example, while Ilbery et al. (1997b) found that diversifiers tended to be couples with children of all ages, Halliday (1989) identified the presence of young children as a reason for not considering diversification. In the case of Channel fishermen, eight of the thirteen respondents were found to have children under the age of 18 living in the household with them: seven have two children, and one has one child. It is difficult to ascertain the influence of children upon fisheries diversification behaviour as respondents made little reference to this issue during interviewing. However, one finding of note does emerge with respect to the survival of the fishing business. Where Ilbery and Bowler (1993) found that a greater proportion of farm diversifiers had children wishing to continue the farm business; evidence suggests that fisherman may discourage their children from entering the fishing industry due to concerns about its viability as a career choice – as typified by the following quotation:
He wanted to come to sea and I just said no it’s not for you. I sort of advised him against it, because I didn’t think it a very sensible future.

(Fisherman; >10m; western Channel; F08)

**Industrial and environment context**

The industrial and environmental context is influential upon entrepreneurship because individuals do not make decisions to exploit entrepreneurial activities in a vacuum (Shane, 2003, p.118). In the case of the industrial context, factors that may influence entrepreneurial behaviour include industry structure, industry life-cycle, and demand conditions. The structure of the English Channel fishing industry may be seen to influence entrepreneurship in the form of a distinction between vessels in the under 10m and over 10m sectors. As noted in section 3.2, this distinction exists with respect to typical vessel characteristics, and management-imposed restrictions on fishing activity in the form of quota allocation. The inventory revealed that the majority of fisheries diversification activities were conducted by vessels in the under 10m sector. Possible explanations for this include the physical suitability of these vessels for certain types of activity; the flexibility associated with operating as a day-boat; and the propensity of individual fishermen to consider diversification as a strategy. These findings remain consistent among those fishermen who have developed standalone diversification activities: twelve of the thirteen fishermen are owner-operators of under 10m vessels operating as day boats. The remaining fisherman operates a vessel which falls slightly outside this sector (at 11m) but reported that he also operates on a day-boat basis.

In section 3.4.1, the relationship between industry life-cycle and diversification was discussed with respect to De Jong’s (1993) proposition that both horizontal diversification and vertical integration increase as an industry enters its mature phase. The explanation that these strategies arise as an outcome of rising input prices is particularly relevant to Channel fishermen. It is clear from the interview data that operating costs have risen sharply in recent years, resulting in a widespread scenario of reduced profitability. One response of fishermen to this situation is to develop complementary income sources through the exploitation of entrepreneurial opportunities.

The influence of demand conditions upon entrepreneurship relates to changes in culture, tastes, mood or attitudes that can lead to the generation of new opportunities (Shane, 2003). As such, these factors are reflective of the sociocultural environment within which the entrepreneur operates. Examination of the standalone diversification activities developed by Channel fishermen reveals some support for this relationship – most notably with respect to the downstream activities of processing and direct selling. As noted in
section 6.4.2, the decision to diversify into these areas reflects a shift in consumer attitudes towards pre-prepared products, and greater traceability. The environmental context of entrepreneurship is not limited to sociocultural factors, however, but also includes the economic and political environment within which fisherman operate. Given that the management of the UK fishing industry is directly influenced by economic and political forces; the challenges faced by fishermen and the strategies they adopt in response (including entrepreneurship) are evidently shaped by this context.

7.4 Summary

The main aim of this chapter is to examine the findings of three phases of data collection with Channel fishermen and stakeholders, in order to establish a foundation for the conceptual model presented in the following chapter. This was achieved by satisfying two key objectives: analysing the research findings with respect to existing empirical studies and theoretical principles; and identifying the key concepts that have emerged through this research process. The key outcomes of this chapter are briefly summarised below:

- Consistent with the observations of Cunningham et al. (1985), intra-sectoral strategies remain the ‘classic’ response of fishermen faced with declining financial performance. The findings suggest that the increase/relocation of fishing effort is frequently the first type of strategy adopted. However, the ability of fishermen to successfully adopt this approach has become increasingly constrained by management-imposed restrictions.

- Where fishermen have chosen to diversify into related activities, the structure and direction of diversification is found to reflect both the individual motives and attributes of the diversifier, and the wider industrial and environment contexts within which they operate. More specifically, the influence of these contexts upon entrepreneurship and perceptions of risk may be used to explain the range of diversification activities observed in the Channel fishery.

- The finding that multiple-job holding is not widely practised among Channel fishermen constitutes a limitation in examining the applicability of this strategy to existing theoretical principles. Nonetheless, the analysis of respondents’ experiences and attitudes indicates that fishermen are more likely to adopt multiple-job holding in order to maintain their income level (i.e. ‘hours-constrained’ and ‘target-income’ motives) than for reasons of job insecurity or the pursuit of non-pecuniary benefits.
Finally, irrespective of the type of strategy adopted, it is evident that the process by which fishermen respond to challenges is subject to multiple contextual environments. Response strategies are shaped by the psychological and non-psychological attributes of fishermen, which are situated within the context of their fishing business and the wider ‘external’ environment. To this end, the conceptual frameworks previously developed to explain agricultural diversification (Ilbery et al. 1997b) and entrepreneurship (Shane, 2003) have notable relevance.
8. A Conceptual Framework to understand how fishermen respond to challenges upon financial performance

8.1 Introduction

In the previous chapter, the findings of research with Channel fishermen and stakeholders were discussed in order to analyse their relationship with existing research and theory. The aim of this analysis was to identify the key concepts that could contribute to understanding the challenges faced by fishermen, and how they respond to such challenges. The purpose of this chapter is to develop this analysis further, by proposing a framework that conceptualises the 'challenge-impact-response' process experienced by fishermen. To this end, the chapter consists of four distinct sections which are briefly outlined below.

The first section summarises the process by which the conceptual framework was constructed, using the computer software package NVivo 9 to analyse qualitative data derived from in-depth interviewing. The resultant framework is then presented in the second section; in the form of both a written explanation and a visual representation. Having proposed a framework to understand the challenges and responses of Channel fishermen, the third section provides a discussion of the wider applicability of this framework to fisheries outside the study area. In the fourth section, this discussion is extended to consider the implications of the framework for the future of the UK’s commercial fishing industry.

8.2 Constructing the framework

The construction of a conceptual framework to understand the challenges faced by fishermen and their resultant response strategies is the outcome of a systematic process of data analysis – conducted in-line with the quasi-grounded theory methodology detailed in Chapter 3. As previously discussed, conducting this process using specialised computer software has a number of advantages; most notably with respect to the speed at which data can be coded, and the rigour that results from having a documented ‘audit trail’. In examining the latter, the development of the conceptual framework is found to consist of a number of distinct stages which are detailed below.

Upon transcribing the in-depth interviews with fishermen and fisheries stakeholders a preliminary stage of open coding was conducted. The purpose of this coding was to
identify the basic concepts that were present within each transcript, and to establish the inherent attributes of these concepts and the dimensions within which they exist. Through a process of comparison, reflection and revision, a total of 89 open codes (referred to as ‘free nodes’ in NVivo 9) were identified – a summary of which is provided in Appendix H. These codes were used to label and categorise sections of interview text on the basis of pertaining to a similar phenomenon (Strauss & Corbin, 1990). Typical examples include ‘fuel costs’, ‘quota’, and ‘gear restrictions’.

The second stage of analysis involved the process of axial coding, in which open codes are clustered into a series of higher-order categories that encompass the interrelationships that are found to exist between emerging concepts. Consistent with Goulding (2002, p.78) each category was developed by specifying “the conditions that give rise to it, the context in which it is embedded, and the action/interactional strategies by which it is handled, managed and carried out”. The outcome of this process was the creation of 11 axial codes (‘tree nodes’ in NVivo 9) under which the original open codes were revised and grouped (Appendix-H). Significantly, it was through this process of axial coding that the foundations of the conceptual model began to emerge as many open codes were found to adhere to one of three underlying concepts: challenges, impacts, and responses. However, the final stage of selective coding involved developing the emerging categories, sub-categories and relationships further into a theoretical form.

In NVivo 9, the final stage of selective coding was conducted through the use of ‘sets’ which enable the researcher to identify and define the meaningful relationships that exist within and between axial codes and free codes, thereby moving beyond description into theorizing (Bazeley, 2007, p.111). As noted previously, through the process of coding data into free codes and axial codes, three underlying concepts began to emerge with respect to the challenges faced by fishermen, the impact of these challenges upon their fishing businesses, and the measures that fishermen adopt in response. It was evident that a high degree of interrelationship existed between these key concepts, but also that these interrelationships occurred within (and were influenced by) wider ‘environmental’ contexts. Through the process of recording these relationships in NVivo, three principal contexts were identified: an external context; a business context; and an individual context (figure 8.1). The composition of these contexts, and their influence upon the challenge-impact-response process experienced by fishermen is explored in the following section.
8.3 Conceptual Framework

Through a systematic process of coding qualitative data into categories and sub-categories, and then interrogating this data to identify meaningful concepts and relationships, the theoretical basis of the framework began to emerge. The framework is based upon a series of interrelationships: in that the challenges faced by fishermen; the impact of these challenges; and the way they respond are interrelated; but themselves influenced by the contextual environments within which they occur. As noted in the previous section, three distinct contexts emerged from the coding process: an external context; a business context; and an individual context. Each of these contexts is composed of key variables that exert influence upon the challenge-impact-response process experienced by fishermen. Interrelationships are found to exist between these variables – both within and between different contexts. The three distinct contexts, and the variables of which they are composed are examined below.

8.3.1 External context

The external context plays a pivotal role in determining both the origins of challenges faced by Channel fishermen, and the scope to develop an appropriate response strategy. The notable characteristic of this external context is that it is composed of variables over which individual fishermen have limited or no control – although these variables may be influenced by the wider collective actions of these individuals. To this end, the external context includes variables that are determined indigenously and exogenously to the
The fishing industry. The external context is composed of five key variables: fish stocks; fisheries management; quota management; operating costs; and the labour market. Although the status of fish stocks was not identified as a significant challenge facing Channel fishermen, this variable directly influences management-imposed restrictions on fishing effort and output. The management of the Channel fishery reflects a multi-level governance framework in which local and regional regulation is embedded within national and European legislative systems (Phillipson, 2002, p.18). At the European level, the EC Common Fisheries Policy (CFP) aims to achieve rational and sustainable exploitation of fish stocks through conservation and management policies (Defra, 2012b) – of which vessel licensing and quota management are principal tools. Within the UK, the management of licensing and species quota is conducted nationally by Defra, with a more localised level of fisheries management provided through regional Inshore Fisheries and Conservation Authorities (IFCAs). To this end, the status of fish stocks, and the implementation of European, national and regional fisheries management policy and practice are inextricably related. Quota management is clearly a key aspect of this relationship; the majority of respondents identified the availability and allocation of quota as one of the main challenges faced by fishermen. More specifically, it is the relative allocation of quota to vessels in the under 10m sector which represents a significant challenge upon profitability.

Despite the impact of quota management upon the financial performance of fishing businesses, it is important to note that many fishermen in the Channel make their living by targeting non-quota species. However, these individuals are subject to a range of management measures related to their target species, including licensing restrictions/requirements and restrictions on fishing gear (e.g. net mesh size). Such measures are equally applicable to fishermen targeting quota-species, and may also restrict these individuals from relocating their effort to non-quota stocks. The fisheries governance framework may also impose alternative restrictions on the ability of fishermen to catch their target species. One such example is through the European Union’s Marine Strategy Framework Directive, which requires member states to establish strategies to achieve ‘good environmental status’ in the marine environment by 2020. As noted in section 3.2.2, the designation of Marine Conservation Zones (MCZs) is identified as a key tool of the Directive, and further demonstrates the process through which European legislation is interpreted at a national level and implemented regionally to create local impacts upon fishermen.

Upon returning to port, the price that fishermen receive for their catch will be determined by a number of variables, including the type of species caught and the methods by which
it is sold. The majority of Channel fishermen (and those in the UK) sell their catch through two established routes: either to wholesalersprocessors or through fish auctions. In both of these cases, the typical fishing business is too small to be able to significantly affect the price they receive for their products. Instead, price is determined by the market forces of supply and demand operating outside of the individual fishing business. As such, the fisherman becomes a ‘price-taker’ – a situation exacerbated by the oversupply of certain species during periods of relative abundance. This scenario is supported by the finding that Channel fishermen identified low prices as a key challenge, especially for crab and lobster – two species that are not currently subject to output restrictions. Fishermen who sell directly to the restaurantcatering industry or to the public, may have greater influence over pricing, although this will be limited by the presence of competitors. The competitive nature of the fishing industry means that this remains applicable even where fishermen have specialised into catching and supplying niche products.

In contrast to the above variables that are determined indigenously to the UK fishing industry, operating costs and labour market characteristics are determined by factors outside the industry. Although fishermen identified a range of operating costs that impacted upon profitability (section 6.2.2), the price of fuel was widely identified as a major challenge – particularly given that fuel represents one of the largest variable costs faced by fishermen. As such, rising fuel prices have had a universal impact upon the fishing industry, although the magnitude of this impact is dependent upon vessel size and the type of fishing practised. Nonetheless, the rate at which fuel prices have increased in relation to fish prices has resulted in many Channel fishermen observing a resultant decrease in profitability. As noted by Abernethy et al. (2010) in their study of Newlyn fishermen, fuel prices increased by more than 350% between 1998 and 2008 while fish prices remained relatively stable. The impact of rising fuel prices is exacerbated by the widespread use of oil-based fishing gear (e.g. nets and ropes), for which fishermen reported similarly rapid price increases. The cause of these increases is not attributed to fishing industry – but rather the market forces and political events that influence the price of crude oil and refined diesel on the world market. However, the outcome of rising operating costs is found to have a direct impact upon fisherman’s behaviour. The emerging theme from in-depth interviewing is that fishermen have responded to this challenge by changing the way they fish; including a reduction in the hours spent at sea and the distances travelled to fishing grounds.

While the majority of Channel fishermen expressed their intention to remain within the industry, a number of issues associated with the wider labour market were identified during interviewing. Labour market conditions are found to influence fishermen in two
main ways: firstly, respondents linked the decline in young people entering the fishing industry to the appeal of on-shore alternatives with high starting wages, and preferable hours and conditions of work. Conversely, when asked to discuss their attitudes towards multiple-job holding, fishermen expressed a belief that they would be restricted from adopting this strategy due to the lack of alternative opportunities. This belief was attributed to both a lack of employment opportunities in peripheral regions, and the difficulty of applying the skills and experience gained in fishing to onshore occupations. In conclusion, it is clear that the availability of job opportunities in alternative sectors to fishing will be influenced by economic conditions operating at a local, regional and national level.

8.3.2 Business context

In contrast to the external context, the business context is defined by the characteristics of individual fishing businesses. These characteristics relate to the physical, financial and human capital of the business that influences the nature and impact of the challenges faced, and the viability of developing an appropriate response strategy. For the purposes of the conceptual model, emphasis is placed upon owner-operators of single-vessel enterprises when defining the business context. As noted in section 2.4, these enterprises typify the inshore fishing sector – which comprises the majority of vessels registered at Channel ports (and indeed the UK industry). In such cases, the fisherman who owns and operates his own vessel assumes the status of a self-employed sole trader, invariably with full-responsibility for decision making. This contrasts with some multi-vessel fishing firms where skippers are employed as part of a hierarchical organisational structure. While the underlying basis of the conceptual model retains relevance to such firms, the nature of their physical, financial and human capital is markedly different.

Five key variables are identified within the business context: vessel length; vessel type; vessel location; crew structure; and financial status. Given that the vessel invariably represents the main physical asset of the fishing business, it stands to reason that vessel characteristics will influence the nature and extent of the challenges faced by fishermen, and their ability to respond. Vessel length is particularly influential because it determines whether a UK vessel belongs to the under 10m or over 10m sector for the purposes of quota management. Although the issue of quota availability presents a challenge to fishermen in both of these sectors, the process through which this quota is allocated is especially problematic for those with vessels under 10m in length (see section 6.2.1). The length of the fishing vessel will also determine the weather conditions and distance from
shore in which the operator can fish safely. For these reasons, it is not uncommon for
owner-operators of inshore vessels (particularly those under eight metres in length) to
refrain from fishing during the winter months. Vessel length is also linked to vessel type
with respect to fishing methods, although the diversity of the UK fleet means that the
principal active and passive methods are practised by vessels throughout the under 10m
and over 10m sectors. Nonetheless, a number of relationships between vessel length and
type are evident in the Channel fishery. For example, handline fishing is widely practised
by open-decked vessels of less than 6m in length; whereas trawling (particularly beam
trawling) is a dominant method among vessels in the over 10m sector. The length and
type of vessel will also determine its suitability to engage in diversification activities. For
example, the inventory of diversification activities in the Channel revealed that recreational
angling and tourist boat trips are typically conducted by inshore vessels with open decks
which are well-suited to this purpose (section 5.2.3). Similarly, opportunities to undertake
contract work are determined by the vessel specifications required by the client, making
this an unviable option for many fishermen.

The location where the vessel is moored or launched is also influential in determining the
challenges faced by fishermen. Changes in biogeography that occur through the length of
the Channel determine the variety and location of target species in different regions.
However, for the purposes of the quota management the Channel fishery is split into two
areas defined by the International Council for the Exploration of the Sea (ICES): VIIId
(eastern Channel) and VIIle (western Channel). For some species such as sole and cod,
quota is allocated to these areas separately according to the condition of fish stocks,
which may result in a notable difference in allocation between the two areas. At a more
localised level, vessels are subject to additional management controls imposed by six
regional Inshore Fisheries and Conservation Authorities (IFCAs) that cover the Channel
coastline. As such, the location in which a fishing vessel is based will influence not only
the type of species that can be targeted and the methods it can use, but importantly the
physical quantities that can be landed. Location is also highly influential in determining
the opportunities for fishermen to respond to challenges through fisheries diversification.
The inventory of diversification activities revealed that opportunities for many activities in
the Channel are highly localised, and only feasible where sufficient demand exists and
fishermen can compete with existing providers (section 5.2.3).

The crewing structure of fishing vessels is directly related to the length of the vessel and
the methods practised. The nature of fishing conducted by vessels in the over 10m sector
means that the skipper works with a number of additional crew members; for example, a
typical 20m trawler would normally be operated by the skipper and a crew of three others
(Newlyn Harbour, 2011). In contrast, many vessels in the inshore sector are operated by only one or two individuals (Symes & Frangoudes, 2001). Where vessels are operated by the skipper and one or more crew members, the employment of these individuals presents two main challenges. Firstly, crew members are typically paid a share of the revenue from each trip, although some respondents explained that they had to pay crew a fixed daily wage to secure their employment. In both cases, crew represents a financial cost to the fishing business – although the payment of a fixed wage may be more beneficial to the employer or employee depending upon revenue. Consequently, some fishermen have responded to declining profitability by reducing the number of crew they employ on their vessels – with resultant consequences for their safety (section 6.4.1). The second crew-related challenge arises in a converse scenario where the profitability of vessels is constrained by difficulties in recruiting experienced and reliable crew members. Not only does this represent a financial challenge for these vessels in itself, but it also restricts the ability of the owner to develop intra-sectoral response strategies such as increasing or relocating fishing effort.

Finally, the financial status of a fishing business is critical to its long-term survival; influencing both the impact that financial challenges have upon the business, and the ability of fishermen to invest in an effective response strategy. Data collected through in-depth interviewing indicates that the financial status of fishing businesses is linked to both the amount of time that fishermen have spent within the industry, and their household circumstances. For example, fishermen in the older age-groups of the sample (i.e. 55 and above) are typically in a position where they own their vessels outright and have and paid off (or are close to paying off) the mortgage on their houses. These respondents spoke of the ‘boom periods’ of fishing that they had experienced during their time in the industry, and the contribution they made to their current position of relative financial security. Fishermen in these older age-groups also tend to have children who have left home, thereby reducing household expenditure and leaving them better positioned to cope with a decline in profitability. As noted in section 6.5.1, a number of older respondents reported that they would continue to fish until they retired – despite witnessing a decline in profitability, but acknowledged they were only able to do so because of their financial status. The sample contained a relatively small proportion of younger owner-operators who have the majority of their working careers ahead of them. In light of the challenges facing these younger fishermen, a strong financial position is anticipated to be key to their long-term career prospects; allowing them to continue operating during unproductive or unprofitable fishing periods, and to respond to future challenges.
8.3.3 Individual context

The individual context is defined by sociocultural factors that relate to individual fishermen, shaping their attitudes, beliefs and subsequent behaviour. In contrast to the external context and business context which are comprised of quantifiable variables, the individual context includes both quantitative and qualitative variables. Seven key variables are identified: age; experience and qualifications; household composition; attitudes to risk; entrepreneurship; and job satisfaction.

Age and experience are invariably related in the fishing industry, given that fishermen typically enter the profession at an early age, working as crew to gain experience prior to becoming skippers or skipper-owners. Experience is therefore a crucial determinant of success in fishing, particularly in multi-species fisheries such as the English Channel where fishermen diversify their methods and target-species throughout the year. While the harvesting of a mobile natural resource arguably involves an element of ‘luck’, it stands to reason that fishermen with greater experience will be better equipped to develop inter-sectoral responses when faced with challenges upon financial performance. Where fishermen choose instead to undertake fisheries diversification, their functional experience of alternative sectors can be influential – particularly when developing entrepreneurial activities (Shane, 2003). Similarly, the possession of relevant qualifications is likely to influence the type of diversification activities developed. As noted in section 7.3.3, a number of the Channel fishermen who have developed standalone diversification activities hold formal qualifications in related disciplines.

Consistent with fisheries diversification, the decision to engage in multiple-job holding, and the type of secondary employment sought, is likely to be determined by the experience and qualifications that can be applied to alternative forms of work. However, if we assume that age and experience are positively related then it is feasible that older fishermen with more experience are less likely to engage in fisheries diversification or multiple-job holding – for reasons other than financial security. For some fishermen, diversification into related activities or unrelated secondary employment represents a challenge to their perceived role and identity as fisherman. Indeed, Alban and Boncoeur (2004) attributed the difference in opinion towards diversification between younger and older fishermen to shift in attitudes between generations. Shane (2003) also observes a curvilinear relationship between age and entrepreneurship, whereby entrepreneurial behaviour increases with age as individuals gather information and skills, but then decreases with age as their willingness to bear uncertainty declines.
Household composition has the potential to exert influence upon the challenges faced by fishermen and their response strategies in a number of forms. In the previous section, a link was made between the financial status of fishermen and household composition with regards to demands upon the number of people that the income from fishing has to support. An observation was made that fishermen in older age groups with children who no longer live at home may be better positioned to cope with declining profitability because their household expenditure is reduced. However, it is not only the presence of children that influences the financial status of the fisherman’s household, but also the income contribution of other household members. Where fishing is not the sole source of household income, it is the contribution of these other household members (typically the fishermen’s spouse/partner) that determines the wider impact of the financial challenges that fishermen encounter. Indeed, anecdotal evidence collated through in-depth interviewing highlights a number of examples where fishermen earn notably less than their spouses.

Household composition is also anticipated to influence how fishermen respond to the challenges they encounter in the fishing industry. From a financial perspective, the relative contribution of other wage-earning household members will determine the importance of maintaining a given level of earnings from fishing. When fishermen are required to respond to a decline in this level of earnings, the income of other household members may be used as a source of capital to develop response strategies. As noted in section 7.3.3, the provision of additional household income can encourage an individual to bear the risks associated with exploiting entrepreneurial opportunities. However, in addition to the provision of financial capital, household members also represent an important source of labour. This is particularly relevant to fisheries diversification, with evidence suggesting that the involvement of the fishermen’s spouse and/or other family members can be crucial to the success of diversified business activities. Finally, the presence of children in the household may influence decision-making among fishermen with regards to ensuring the long-term future of the family fishing business. Although some respondents reported that they had discouraged their children from entering the fishing industry, the strong family tradition that exists within fishing means that others will inevitably seek to pass their business on to a successive generation.

Risk is an inherent aspect of commercial fishing that operates on two principal levels: financial risk and physical risk. The way in which fishermen perceive and respond to these forms of risk will therefore determine their fishing practices – including when and where they fish, the species they target, and the type of gear they use. While previous research suggests that fishermen are typically risk averse in their decision making,
examples are found where fishermen have benefitted from taking financial risks (e.g. investing in new gear to target an alternative species). To this end, the impact of challenges upon individual fishermen may be indirectly linked to their attitudes towards risk and subsequent fishing behaviour. Similarly, attitudes to risk will influence how fishermen actually respond to these challenges – particularly with regards to innovation and entrepreneurship. In section 7.3.3, the analysis of interview data identified a strongly-held belief among respondents that innovation is a requisite of success in fishing. However, the fishermen interviewed also made a distinction between the minority of risk-taking ‘leaders’ who are active in developing innovative fishing practices, and the majority of ‘followers’ who are more risk-averse. The same principle applies to fishermen displaying entrepreneurial behaviour by diversifying into related activities. Where opportunities exist for entrepreneurship, the likelihood of an individual exploiting an opportunity will be subject to a range of psychological and non-psychological characteristics. Attitude to risk is arguably one of the key determinants of entrepreneurial behaviour because risk-bearing is an inherent aspect of entrepreneurship. While other characteristics such as age, experience and household composition will inevitably influence the propensity of fishermen to develop entrepreneurial activities, it is their attitude to risk that acts as the stimulus for decision making.

Finally, the way in which fishermen perceive their own occupation is anticipated to influence how they respond to challenges – with respect to whether they seek to stay in the fishing industry or find alternative employment. The non-pecuniary benefits of fishing are well-established, and interviews with Channel fishermen confirmed that many fishermen wish to remain within the industry despite experiencing declining profitability. Fishermen spoke positively of the ‘job satisfaction’ they derive from fishing, which upon closer examination is found to comprise of a range of attributes. These include the independence gained from managing their own businesses, the sense of identity derived from fishing, and the distinct social role that distinguishes fishing from other professions. The strong sense of job satisfaction expressed by respondents suggests that fishermen may be reluctant to pursue response strategies that detract from their fishing practices. In such cases, diversification is envisaged to have greater appeal than multiple-job holding because it maintains a link with existing fishing activity. However, a number of respondents expressed an opinion that Channel fishermen would still prefer to concentrate their efforts upon fishing, rather than diversify – although this opinion was linked to the type of activity being practised. Most notably, the reluctance among some fishermen to engage in activities that require a customer-facing role (e.g. tourist boat trips) is indicative of a ‘culture of difference’, as observed by Alban and Boncoeur (2004) in the Iroise Sea.
8.3.4 Response strategies

When faced with challenges that impact upon the profitability of their fishing business, fishermen have the option of adopting a number of different response strategies. However, it is also possible that some fishermen will choose not to respond, but instead continue their fishing practices unchanged. While this may be viable when faced with challenges that only affect profitability in the short-term (e.g. adverse weather conditions), a longer-term decline in profitability will inevitably stimulate some form of response strategy among fishermen. In developing a conceptual model to understand these response strategies, it is necessary to acknowledge that fishermen may choose to withdraw from the fishing industry altogether. It is difficult to ascertain the extent of withdrawal among UK fishermen because existing evidence appears contradictory. It is clear that the number of fishermen has fallen consistency over the last forty years (figure 3.2); although none of the fishermen interviewed expressed an intention to leave the industry – a finding that supports previous research in the UK (e.g. Creative Research, 2009). Instead, it is possible that most fishermen remain within the industry until they retire but are not being replaced by new entrants. In the case of the English Channel, the relatively high average age of the sample, together with a perception among respondents that fewer young people are entering the industry appears to support this proposition. Given that withdrawal is not widely practised among fishermen of working-age, and indeed is likely to represent a strategy of last resort in light of the job satisfaction reported by respondents, the focus of the conceptual model is upon response strategies that allow fishermen to continue fishing.

As noted in section 6.4.1, responding to challenges upon profitability by adapting fishing practices is a well-established strategy – particularly in seasonal mixed-fisheries such as the English Channel. Through in-depth interviewing of Channel fishermen, a range of intra-sectoral response strategies were identified which fall into four main types: effort-based responses; diversifying species and methods; adding value; and reducing costs. The type of response adopted will be determined by the nature of the challenges faced, the characteristics of the fishing business, and those of the individual fishermen. As such, fishermen may respond to the same challenge in a number of different ways. For example, some fishermen in the English Channel have responded to rising fuel costs by reducing the distance they fish from port, while others are travelling further in order to target more productive fishing grounds. While these two approaches appear to be contradictory, they reflect the efforts of fishermen to find a response that is most effective to their individual circumstances. Furthermore, given that many of the intra-sectoral...
responses adopted by fishermen are not mutually-exclusive, a range of different approaches may be applied simultaneously in order to maximise effectiveness.

The second type of strategy that fishermen may adopt in response to financial challenges is to diversify into related activities. Conducting an inventory of fisheries diversification revealed that this strategy is well established among fishermen, and practised throughout the Channel in a range of forms. Four main types of fisheries diversification were identified: market-based initiatives; leisure and tourism; environmental activities; and non-fishing contract work. The opportunity for fishermen to diversify into these activity types is found to be subject to a range of administrative, economic and social constraints; which explains both the location of specific activities, and the observation that diversification remains a minority strategy. Despite the range of different diversification activities practised in the Channel, it is possible to develop a typology of diversification based upon the involvement of fishermen and the nature of their actions (section 5.2.4). Four main types of strategy are proposed: collective-passive; collective-active; individual-passive; and individual-active. The shift from collective to individual activities may be seen to reflect fishermen’s attitudes to risk; whereas the shift from passive to active activities is indicative of entrepreneurial behaviour. As such, examples are found in the English Channel where fishermen have adopted an individual-active diversification strategy by developing distinct standalone enterprises such as processing and retail facilities. Consistent with intra-sectoral responses, the type of strategy (and respective activities) adopted by fishermen is determined by characteristics of the external context, business context and individual context within which they operate.

Finally, fishermen may respond to financial challenges by adopting a strategy of multiple-job holding, where fishing income is supplemented with earnings from non-fishing related employment. In comparison with both intra-sectoral responses and fisheries diversification, few examples are found of fishermen practising multiple-job holding. Consequently, it is difficult to examine the extent to which these practices adhere to existing theories of multiple-job holding. Through the analysis of research with Channel fishermen two theories emerge as being plausible: the hours-constraint motive, and the target-income motive. In the case of the former, fishermen seek alternative employment because they are unable to work the desired number of hours in their primary occupation of fishing. Alternatively, fishermen may seek secondary employment in order to maintain a target level of income which fishing alone cannot provide. The results suggest that in such cases fishermen are more likely to combine fishing with alternative employment rather than leave the fishing industry altogether; due to the non-pecuniary benefits that they derive from fishing and the capital they have invested in their businesses.
In light of the above observations, it is possible to propose a hierarchy of strategies adopted by fishermen in response to challenges upon profitability. The results suggest that the majority of fishermen will respond to challenges in the first instance by adapting their existing fishing practices. The application of intra-sectoral strategies is not unexpected, given that many fishermen diversify their methods and target species throughout the fishing year. In a scenario where the development of an intra-sectoral strategy is unviable or ineffective, fisheries diversification may provide an appropriate solution to the challenges faced by fishermen. However, the finding that diversification remains a minority strategy suggests that many fishermen are reluctant to consider this option. The third strategy of multiple-job holding clearly holds the least appeal among Channel fishermen – and there is little evidence to suggest that this opinion is not shared by fishermen in other parts of the UK. This observation suggests that even when faced with uncertain or falling incomes, few fishermen will seek to develop alternative sources of income outside of the fishing industry. The resultant implications of this hierarchy of response strategies are discussed in greater detail in section 8.5.

8.3.5 A visual representation of the framework

Having discussed the components of the conceptual framework in the previous section, it is beneficial to provide a visual representation to aid understanding of the processes taking place. This visual representation is provided in figure 8.2, and is based upon the following key principles;

- The framework consists of three contextual environments that are defined according to their influence: upon both the challenges faced by fishermen and the strategies they adopt in response.

- While these contexts are identified as being distinct from each other, they are not mutually exclusive. Relationships are found to exist between variables, both within and between the three contexts. In some cases, these variables are found to be interrelated – in that they both influence, and are influenced by other variables.

- Fisherman can adopt four main types of strategy in response to financial challenges: withdrawal; intra-sectoral responses; fisheries diversification; and multiple-job holding. The focus of this model is upon the latter three of these strategies, each of which may enable individuals to remain within the fishing industry.

- The response strategies that fishermen can adopt (excluding withdrawal) are not mutually exclusive. It is not uncommon for fishermen to combine a range of
different strategies in order to find the most effective solution to the challenges faced.

- The response strategies adopted by fishermen follow a hierarchical structure: fishermen are most likely to respond to challenges by developing intra-sectoral responses in the first instance, followed by fisheries diversification, and finally multiple-job holding.
Figure 8.2: A Conceptual Framework to understand how fishermen respond to challenges upon financial performance
8.4 Application of the framework

The conceptual framework in figure 8.2 may be viewed as the product of three distinct phases of research: an inventory of existing diversification activities; a survey of fishermen and fisheries stakeholders; and a series of in-depth interviews with fishermen. Of these three phases, the series of in-depth interviews has arguably made the greatest contribution to the development of the framework – by enabling the researcher to identify and understand the contextual environments within which individual fishermen operate and make decisions.

When considering the applicability of this framework to the present-day fishing industry, it is necessary to consider a number of conditions. Firstly, the framework focuses upon the individual fisherman as an owner-operator, rather than fishermen as a homogenous group. This condition is necessary for a number of reasons: despite the fact that fishermen share a common aim of production (i.e. catching or harvesting fish and shellfish) the objectives by which this aim is satisfied are highly variable. In the English Channel alone, a high degree of diversity is observed with respect to the types of vessel in operation, the species targeted and the methods used. Diversity is also observed in terms of the structure of fishing businesses; with examples of both single-vessel enterprises and multi-vessel firms found within the Channel fishery. Consequently, both the type of challenges faced by fishermen and the impact of these challenges will reflect the characteristics of the individual fishing business. Similarly, the high proportion of owner-operators (particularly within the inshore sector) in the Channel fishery means that the sociocultural characteristics of fishermen have significant influence on the type of response strategies adopted. These characteristics include the beliefs, attitudes and motives of individuals; as well as the role and influence of the wider fishing household. As such, it is not uncommon for fishermen to develop a response strategy that satisfies their individual pecuniary and non-pecuniary needs – rather than one that maximises profit.

If the above condition is respected – namely that the type and impact of challenges facing fishermen, and their resultant response strategies should be considered on a case-by-case basis – then the conceptual framework detailed in figure 8.2 may be applied to the wider UK fishing industry. The framework remains applicable because the contextual environments, and the variables from which they are composed, are not endemic to the Channel fishery. Using the example of the external environment, key decisions regarding the management of the fishing industry (including quota management) are made at a national rather than local level. Despite the recent concordat to devolve the management of quota and licensing to the respective fisheries administrations of England, Scotland,
Wales and Northern Ireland (Defra, 2012a); the management process will remain consistent in order to adhere to framework of the EC Common Fisheries Policy. Consequently, the challenges identified by Channel fishermen relating to issues of quota availability, and the respective allocation of quota to vessels in the under 10m and over 10m sectors remain applicable throughout the UK. Similarly, the widely-reported discrepancy between rising operating costs and fish prices is reflective of wider market forces. Thus, while the intricacies of such challenges are determined at the local or individual level, their origins exist within a wider national or international context. This observation is supported by previous research with fishermen in the UK which is found to maintain consistency with those operating in the Channel fishery (e.g. Creative Research, 2009; Curtis & Brodie, 2011). A similar principle applies to the labour market with respect to multiple-job holding; in that opportunities for fishermen to engage in alternative employment will be determined by local and regional market conditions which are themselves reflective of wider macroeconomic forces.

In considering the applicability of the framework to commercial fisheries in other advanced economies, it is necessary to re-examine the relevance of contextual environments and their respective components. The proposition that the challenges faced by fishermen and their resultant response strategies are shaped by contexts relating to the external environment, the fishing business and the individual fisherman, remains relevant to fisheries outside of the UK. Furthermore, the type of variables from which these contextual variables are comprised will also remain relevant. For example, profitability in fishing is determined by the type and volume of species caught, the costs incurred in doing so, and the resultant prices that are received. Any factors that restrict one or more of these processes will therefore challenge the ability of fishermen to make a living from their occupation, and influence how they respond to this challenge. As such, the variables that relate to the external context and business context in figure 8.2 are potentially applicable to all commercial fisheries – irrespective of location. However, it is the specific characteristics and magnitude of these individual variables that will vary between different countries.

In the case of the individual context, it is more difficult to explore the applicability of the framework to other countries because of the highly-subjective nature of these individual characteristics. While some similarities were observed among Channel fishermen and those in France with respect to individual characteristics (e.g. Alban & Boncoeur, 2004; Merrien et al., 2008); it cannot be assumed that variables such as age and experience remain applicable to other European countries. Similarly, it is equally possible that
fishermen in these countries are influenced by individual characteristics that have not been included in this framework.

While the above discussion is based upon the applicability of the framework to advanced economies (i.e. developed-world fisheries), it is beneficial to briefly consider its relevance to fisheries in the developing world. One of the principal difficulties in conducting this task arises from the considerable variation that exists in the structure and operation of the fishing industry between different countries; although it is possible to discern a number of broad generalisations. Despite the ongoing industrialisation of commercial fishing – to the extent that developing countries now account for nearly three-quarters of the world’s capture fisheries by weight (DeSombre & Barkin, 2011, p.31); these nations are typified by sizeable small-scale or artisanal fishing sectors. Andrew et al. (2007, p.227) observe that the majority of the world’s fishers live in developing countries and work in small-scale fisheries which provide an important contribution to food security and poverty alleviation. Although the terms ‘small-scale’ and ‘artisanal’ are often used interchangeably, a high level of diversity is found within and between these types of fishing. For example, small-scale vessels may utilise modern technology and fishing methods; whereas artisanal fishing vessels are typically associated with low levels of technology but may be larger in size. The objectives of individual fishermen in these sectors may be similarly diverse and include those fishing for subsistence or commercially; with the latter providing products for local consumption or export markets (FAO, n.d).

The second discernible characteristic of many developing world economies concerns fisheries governance and its influence upon the effectiveness of policy-making and fisheries management practices. While inevitably diverse, the fishing industries of developing world nations have suffered from a lack of transparency and dialogue, under-investment, and limited expertise. This has led to a failure in managing the interaction between fisheries and the wider political, institutional and economic environment (Andrew et al., 2008, p.228). Ineffectual management and regulation has resulted in a number of significant challenges for these nations, including the overfishing of key fish stocks; and the problem of illegal, unreported and unregulated (IUU) fishing, which affects their attempts to promote food security and achieve sustainable livelihoods (FAO, 2012, p.17). Given these general observations, it may be surmised that the three contextual environments identified in the conceptual framework remain relevant to commercial fisheries in developing nations. However, the difference will lie in the variables from which they are composed; which are anticipated to be highly diverse and reflective of the political, economic and administrative systems of the nation being studied.
8.5 Implications for the future of the Channel fishery and wider fishing industry

The framework outlined in this chapter provides a means of conceptualising the challenges facing fishermen in the English Channel; to enable a greater understanding of the impact of these challenges upon fishing businesses, and the strategies that fishermen may adopt in response. As discussed in the previous section, the contextual environments upon which the framework is founded are not limited to the Channel fishery, but may be applied to the wider UK industry. In light of this observation, the aim of this section is to examine the implications of this study for the future of the domestic fishing industry.

Existing records demonstrate that the UK fishing industry has undergone a significant period of transition over the last forty years, which has resulted in the number of fishermen declining by over 40% (Marine Management Organisation, 2012a). Analysis of interview data with Channel fishermen suggests that this transition is the result of a combination of administrative, economic and sociocultural developments during this period. The relatively high average age of fishermen interviewed means that the majority of these individuals have witnessed these developments during their working careers, and are able to provide a valuable ethnographic account of commercial fishing in the Channel. Fishermen currently face a number of challenges that impact upon the day-to-day financial performance of their fishing businesses, and ultimately the long-term viability of their occupation. However, the nature of these challenges and their resultant impacts are found to be highly variable. The typology of challenges provided by Cunningham et al. (1985) remains valid today – in that fishermen encounter three main types of challenge: those that are inherent to their occupation (e.g. seasonality of fish stocks); those that are symptomatic of problems in an individual fisheries system (e.g. quota allocation); and those that originate from events outside of the fishing industry (e.g. fuel costs). All fishermen encounter these three types of challenge, although the specific nature of these challenges and their impact will vary between individuals.

A key distinction emerges through this research with respect to the nature and impact of challenges faced by UK fishermen in the under 10m and over 10m sectors. One of the principal challenges concerns the availability and relative allocation of species quota between these two sectors. While Channel fishermen in both of these sectors reported that the allocation of quota that the UK receives annually from the EU Council of Fisheries Ministers creates a restriction upon profitability, the results suggest that it the domestic management of this quota that represents the greatest challenge. More specifically,
fishermen in the under 10m sector who target quota species reported that the relative allocation that this sector receives is particularly problematic. This discrepancy is highlighted by the New Under Ten Fishermen’s Association (NUTFA), who report that the inshore sector receives around 4% of available annual quota despite representing 75% of the UK fishing fleet by number (NUTFA, n.d). While fishermen have the option to lease additional quota, this strategy is perceived to be relatively high risk given the small size of many businesses in this sector. In contrast, fishermen in the over 10m sector may be more likely to lease or purchase additional quota because they have the required financial capital (or the means of raising it) and the catching capacity to maximise their returns on this investment. It should be noted, however, that such issues only affect fishermen who target quota species. In the English Channel this includes fishermen targeting species such as cod, sole, plaice and monkfish, but not those targeting other commercially valuable species such as bass, lobster, cuttlefish and whelks. The relatively high average age of fishermen interviewed meant that many had witnessed the introduction of quota for the inshore sector within their working careers, and were therefore able to ‘benchmark’ its impact upon the operation of their businesses.

Irrespective of the types of species targeted, the profitability of all fishing businesses in the UK is determined by the prices fishermen receive for their products, and the operating costs incurred in catching them. There was universal agreement among respondents that operating costs had risen at a rate which now presented a significant challenge to the profitability of many fishing businesses. Although the extent of this challenge depends upon the type of fishing conducted, the rise in global oil prices has affected all fishermen through its impact on the costs of fuel and synthetic fishing gear. The price that fishermen receive for their products is determined by a range of factors including the type of species caught, the quality of the product, and the methods by which they are sold. As such, some respondents reported that prices had increased over time – allowing them to offset rising operating costs, while others reported an increasing discrepancy between operating costs and prices. The results suggest that fishermen targeting crab and lobster are particularly susceptible to low prices, although the impact this has upon profitability clearly depends upon the quantities landed and methods of sale.

The finding that the challenges faced by fishermen are highly variable makes it problematic to accurately predict the implications for the Channel fishery and wider UK industry should these challenges continue in their present form. It is incorrect to conclude that all fishermen are finding it difficult to operate profitability, as this is clearly not the case. Indeed, numerous examples may be found of fishermen (including those in the Channel) operating successful businesses that continue to expand. Conversely, there are
many others who are currently struggling to maintain a profitable business and are uncertain of their long-term future in the fishing industry. The findings of this study indicate that fishermen in the under 10m sector are over-represented in this latter group due to the characteristics of their fishing businesses and the regulations that govern their operation. More specifically, the size and operating range of vessels in this sector (particularly among vessels less than 8m in length) represents a constraint upon their catching capacity. While this is not necessarily problematic in itself, the effect of quota restrictions, rising operating costs and low prices can create a situation where fishermen are forced to find an effective response in order to sustain their businesses.

Examining how fishermen respond to the challenges discussed above is crucial to understanding the implications for the future of the Channel fishery and wider fishing industry. The uncertainty associated with harvesting a mobile natural resource means that flexibility and adaptability are inherent aspects of fishing. In seasonal mixed fisheries such as the English Channel it is not uncommon for fishermen to adapt their methods to target different species throughout the year. Consequently, the most logical and likely reaction of fishermen to challenges upon financial performance will be to develop intra-sectoral response strategies. These strategies typically constitute types of response that are historically well-established; for example, targeting alternative species and/or fishing grounds. However, it is not uncommon to observe fishermen displaying innovative behaviour – especially when they find their ability to implement established response strategies restricted. Examples of such behaviour include adding value by improving product quality, and reducing costs by developing more efficient ways to fish.

Despite many fishermen displaying innovative behaviour when fishing, the proportion of those who extend this behaviour to developing fisheries diversification activities is minimal. This finding may be explained by a range of administrative, economic and social factors that act as constraints upon diversification. However, the key finding to emerge from this research is that many fishermen are resistant to the idea of fisheries diversification because they would prefer to concentrate their activity on fishing instead. It is clear that fishermen derive a number of non-pecuniary benefits from their profession – a finding which undoubtedly influences their decision to remain within the industry. Although fisheries diversification, by definition, enables fishermen to combine fishing-related activities with their existing fishing practices; only a minority of individuals have the opportunity and inclination to engage in this strategy. The findings also suggest that fishermen are more likely to adopt risk-averse behaviour by diversifying into activities where the investment of financial capital and time is relatively minor, and is shared among other fishermen or provided by a third-party. This observation may explain the relative
popularity of collective initiatives such as product labelling schemes, and the fact that only a minority of Channel fishermen have displayed entrepreneurial behaviour by developing standalone diversification enterprises. In light of these findings, it is possible to categorise fishermen into four groups according to their attitudes and practices of diversification. The first group consists of those fishermen who are opposed to diversification in principle, and would not consider its adoption even when faced with declining profitability – choosing instead to develop intra-sectoral responses. In contrast, the second group consists of fishermen who have not diversified at present but would consider this strategy if their fishing businesses become increasingly difficult to operate profitably. The third group consists of fishermen who have diversified, but seek to minimise risk by engaging in collective initiatives or short-term contract work; whereas the fourth group consists of entrepreneurs who have developed standalone diversification enterprises such as processing and retail facilities.

Given that many fishermen are disinclined to engage in fisheries diversification because they would prefer to concentrate their efforts upon fishing, it stands to reason that multiple-job holding will have particularly limited appeal among these individuals. This proposition is supported by the findings of this research – which identified only one respondent who adopted this strategy, and a widely-held opinion among others that they would not consider undertaking a secondary job whilst continuing to fish. In addition to the aforementioned non-pecuniary benefits of fishing, many fishermen reported that multiple-job holding was not possible because they had to fish on a full-time basis in order to make a profit. Furthermore, even where this strategy is financially viable, fishermen may encounter difficulties in finding secondary employment due to a lack of viable opportunities.

As noted previously, the diversity of vessels and practices that characterise commercial fishing in the UK makes it difficult to draw generalisations about the profitability of fishing businesses, and the implications for the future of the industry. However, by understanding the challenges currently faced by Channel fishermen and the strategies they adopt in response, it is possible to propose a number of potential outcomes. If we assume that the challenges, impacts and responses identified through this research study persist in a similar form, then the ongoing decline in fishing vessels witnessed over the last forty years will continue. This decline will result from fishing businesses being unable to operate profitably due to a combination of rising costs, low prices and restrictions upon fishing effort and output. A decline in the number of employees in the UK catching sector will occur via a combination of fishermen of working age leaving the industry to find alternative
employment; fishermen retiring from the industry; and a lack of new entrants to replace those leaving.

Significantly, the findings of this research indicate that a decline in the catching sector will not affect all fishermen equally. As demonstrated in the conceptual model (figure 8.2), the type and impact of challenges faced result from an interaction of factors related to the external environment, the individual fishing business, and the individual fisherman. Consequently, the decline in the number of fishermen is anticipated to be greater within the inshore sector because of the relative impact of challenges such as rising operating costs and quota restrictions, and the restrictions upon these smaller vessels to respond effectively. Furthermore, given that many of these fishermen are owner-operators, their withdrawal from the industry will inevitably lead to a reduction in vessel numbers. While fishing businesses in the over 10m sector are also subject to multiple challenges, the implications for their longer-term survival appear to be less critical. This may be explained by a range of factors including the relative allocation of quota to this sector, the greater catching-capacity of vessels, the structure of fishing businesses, and their financial status. Nonetheless, there will inevitably be owner-operators within this sector that find it increasingly difficult to operate profitably and decide to withdraw from the industry.

It is clear from this research that when faced with challenges upon profitability, fishermen will seek to find an appropriate solution within the fishing sector by adapting elements of their existing activity. Where these same challenges make such responses unviable, some fishermen will seek to complement their fishing income with earnings from related activities, or in some cases secondary employment. However, these individuals constitute only a small proportion of those actively fishing. If the challenges currently facing UK fishermen continue unabated, we may expect to observe more fishermen diversifying into related activities – including individuals demonstrating entrepreneurial behaviour by developing standalone enterprises. The number of fishermen engaging in multiple-job holding may also increase in such circumstances, although the results suggest that this practice will not be widely adopted. Despite an anticipated increase in complementary activities, the constraints identified through this research indicate that only a minority of fishermen in the UK are both willing and able to adopt these types of response strategy. Thus, while these strategies will enable some fishermen to continue operating, the overall trend is likely to be one of ongoing contraction and concentration of the fishing fleet consistent with previous observations (e.g. Brookfield et al., 2005).

The socioeconomic implications of continued contraction and concentration of the UK fishing fleet are potentially positive and negative: the withdrawal of unprofitable vessels
may assist in resolving the problem of overcapacity that currently exists, and thus improve the economic efficiency of those remaining vessels. However, the resultant loss of employment will be problematic where fishermen of working age are forced to withdraw from the industry. The impact of this will be particularly notable in peripheral regions where inshore fishing continues to make an important contribution to employment and wealth creation (Symes, 2001, p.7). In addition to an absence of employment opportunities in these regions, the ability of some fishermen to find alternative work will be further constrained by their lack of formal qualifications and transferable skills. The decline of fishing will also have wider sociocultural implications for fishing-dependent communities, where the industry provides a ‘forum’ through which relationships, values, knowledge, and traditions are established and passed on (Brookfield et al., 2005, p.56).

8.6 Summary

The conceptual framework presented in this chapter is the product of three distinct phases of research with commercial fishermen in the English Channel, conducted over the period 2009-2012. As such, it is important to acknowledge that the development of this framework has been influenced by the geographical area of study, the subjects (and participants) of the research, and the time period during which the study was conducted. Nonetheless, the key concepts upon which the framework is founded are arguably applicable to commercial fishermen outside the Channel fishery and wider UK industry. Fundamentally, the challenges that fishermen face in their occupation, and the type of strategies they adopt in response will be shaped by variables relating to their individual attributes; the characteristics of their fishing enterprises; and the wider environment within which they operate.

Despite the geographical focus of this research being upon the English Channel, the outputs are found to have particular relevance to the wider UK fishing industry. Two main reasons for this are identified: despite fish stocks and inshore fishing practices being managed at a regional level, key decision-making regarding management practices (including quota allocation) remains largely centralised. For this reason, the key issues identified by Channel fishermen with respect to fisheries management are, on the whole, not endemic to this fishery but instead are shared by fishermen throughout the UK. Similarly, the financial challenges that result from rising operating costs and low fish prices are also symptomatic of wider economic forces over which fishermen have limited or no control.
If the challenges currently facing fishermen remain unresolved, then the contraction and concentration witnessed in the UK fishing industry over the last 40 years is anticipated to continue. The number of vessels in both the under 10m and over 10m sectors will continue to decline – although the rate of decline is likely to be greatest among the former. The bulk of fish production will continue to be conducted by vessels in the over 10m sector, but the withdrawal of less-efficient vessels from the fleet will result in increased capacity and profitability for those that remain. In contrast, fishermen in the inshore sector will be forced to adopt greater flexibility and adaptability in order to remain profitable. This will include the development of innovative and entrepreneurial behaviour in the catching, marketing and selling of fish; in addition to developing complementary income sources through fisheries diversification. This scenario invites comparison with the agricultural sector in the UK, specifically the proposition of a dual system consisting of intensive high-input high-output agriculture that emphasises quantity and low costs, complemented by extensive low-input low-output agriculture that emphasises quality and sustainably (Ilbery et al., 1997a, p.2).
9. Conclusions and Recommendations

9.1 Introduction

The aim of this chapter is to draw together the key outcomes of the thesis and provide a
series of recommendations for future consideration. The chapter consists of three
sections: the first section provides a summary of key research findings and explores the
contribution of this study to existing knowledge. Given that this research could have been
conducted in a number of different ways, it is beneficial to undertake a brief critique of the
research approach with respect to its strengths and limitations; which is provided in the
second section. In the final section of this chapter a number of recommendations are
proposed with respect to future research and fisheries policy.

9.2 Summary of key findings

Prior to summarising the key findings of this research, it is beneficial to briefly re-examine
the aims which this work has sought to address. Three principal aims were identified in
the opening chapter of the thesis, as follows:

1) To investigate the challenges facing fishermen in the English Channel, and
understand the impact of these challenges upon the financial performance of their
fishing businesses;

2) To examine how Channel fishermen respond to challenges upon financial
performance, with particular emphasis on fisheries diversification and multiple-job
holding;

3) To develop a conceptual framework to explain and understand the challenges
faced by fishermen and the strategies they adopt in response.

The findings of this research demonstrate that commercial fishermen in the English
Channel currently face a range of challenges that impact upon the financial performance
and ultimate viability of their businesses. These challenges can be categorised on the
basis of their nature and origins into four groups: administrative; economic; biological; and
environmental. The high level of diversity that characterises the UK fishing fleet with
respect to vessel size and type means that the impact of these challenges is highly
variable. Nonetheless, a number of key observations have emerged from research with
Channel fishermen which may be applied to the wider UK industry.
The challenges faced by fishermen fall into two broad categories: those that restrict the ability of fishermen to catch and land their target species; and those influencing the profitability of their catch and hence fishing business. In the case of the former, respondents identified the availability and allocation of quota as having a significant impact upon profitability – especially among inshore fishermen due to the relative allocation of quota within this sector. It is important to note that the impact of quota is highly variable, and does not directly affect fishermen targeting non-quota species. However, these fishermen may find their activity restricted by alternative forms of regulation such as vessel licensing and gear restrictions.

In contrast, challenges relating to operating costs and fish prices impact upon all commercial fishermen, although the magnitude of this impact depends upon the characteristics of the individual fishing business. Fuel costs were widely identified by fishermen as having a significant impact upon profitability, although this was more problematic for fishermen with larger vessels and those using active gear (e.g. trawling). Similarly, the prices that fishermen receive for their catch will depend upon the species caught and the methods by which it is sold. Fishermen selling directly to restaurants/caterers or to the public typically receive higher prices than those selling to wholesalers/processors or through fish auctions. However, these methods can create additional demands with respect to transportation, staffing and continuity of supply. As such, some fishermen effectively ‘trade off’ the lower prices received from selling to wholesalers or auctions against the convenience it offers them. Irrespective of the selling method, there was a strongly-held belief among fishermen that fishing has become less profitable because prices have not risen in-line with operating costs, and individual fishermen have limited ability to influence price due to competition. It should be acknowledged that this ‘cost-price squeeze’ is not endemic to the fishing industry, and examples may be observed where businesses in alternative sectors find their ability to offset cost increases through pricing constrained. Nonetheless, the rate at which fishermen’s operating costs have increased in relation to prices in recent years makes this issue particularly problematic.

When faced with challenges upon their financial performance, fishermen have a number of response strategies available to them. While withdrawal from the industry is one option, the findings suggest that fishermen are highly unlikely to consider this strategy. The majority of fishermen interviewed expressed a strong desire to remain within the industry, due to the non-pecuniary benefits they derive from their occupation and the capital they have invested in their businesses. Thus, fishermen will seek to develop a response strategy that enables them to continue fishing – of which three main types are
identified: intra-sectoral responses; fisheries diversification; and multiple-job holding. Intra-sectoral response strategies are widely-practised by fishermen, and for many, flexibility and adaptability is a key aspect of their fishing activity. Four main types of strategy were identified among Channel fishermen: increasing/relocating effort; diversifying species and/or methods; adding value; and cost reduction. Through a combination of these strategies, the majority of fishermen reported that they were able to achieve a level of profitability that was sufficient to sustain their fishing businesses. However, consistent with the observations of Cunningham et al. (1985) over 25 years ago, there was a widely-held belief among respondents that intra-sectoral responses were becoming increasingly difficult to implement. This was attributed to two main factors: management-imposed restrictions on fishing effort and output; and rising operating costs.

Fisheries diversification can provide fishermen with a response strategy that is not subject to the same type of challenges faced in their day-to-day fishing practices. While this research has demonstrated that diversification is both well-established and practised throughout the Channel fishery – it remains a minority strategy. Significantly, when asked to identify the main constraints upon developing diversification activities, both fishermen and fisheries stakeholders identified administrative obstacles in the form of rules and regulations as a principal challenge. However, diversification is also influenced by the availability of opportunities; the economic viability of those opportunities; and the sociocultural characteristics of individual fishermen. The latter is found to be particularly influential; with the findings indicating that attitudes to risk, and perceptions of self-identity and role will ultimately determine the decision to diversify and the type of activity developed. This observation may explain why the majority of diversifiers have selected activities which are relatively low-risk and have minimal impact upon their fishing activity (e.g. labelling initiatives); while only a minority have invested their time and financial capital into developing entrepreneurial activities such as processing and retail.

As with fisheries diversification, multiple-job holding can provide fishermen with an income source that is not affected by the challenges faced in their day-to-day fishing practices. However, unlike diversification – which maintains a link with fishing, multiple-job holding inevitably entails fishermen engaging in unrelated onshore employment. Given the strong non-pecuniary benefits that fishermen derive from their occupation – most notably with respect to job satisfaction, sense of identity and social role; it may be assumed that fishermen will be averse to seeking alternative employment. The findings of this research certainly support this assumption: only one of the fishermen interviewed engaged in multiple-job holding, and the remainder reported that they were unlikely to adopt this strategy in the future. While the non-pecuniary benefits of fishing were commonly cited as
a key reason for this decision, fishermen also identified lack of opportunity, and more significantly, the need to fish full-time as constraints upon multiple-job holding.

Finally, through the development of a conceptual framework it has been possible to identify the different contextual environments that shape the challenges faced by fishermen, and the strategies they adopt in response. Three principal contexts are identified: an external context composed of variables over which individual fishermen have limited or no control; a business context defined by the characteristics of the individual fishing business; and an individual context defined by sociocultural factors relating to individual fishermen. The framework demonstrates the interrelationships that exist between these different contexts and the variables from which they are composed. For example, the allocation of quota to Channel fishermen is a challenge that emerges from the external context – being determined by European and national fisheries policy. However, the impact of quota allocation upon individual fishermen will be determined by the characteristics of their businesses – including their location and the size and type of vessel they operate. The strategies that fishermen adopt in response to this challenge will similarly be influenced by business characteristics and the external context within which they operate; but also by individual characteristics such as their age, experience and attitude to risk. The three main types of response strategy are presented within a hierarchical structure which reflects their respective acceptability to fishermen and the resultant likelihood of them being adopted. The hierarchy is based upon the finding that the majority of fishermen will seek to respond to challenges by developing intra-sectoral responses, but only a minority will consider a strategy of fisheries diversification. In comparison, the strategy of multiple-job holding holds the least appeal among fishermen and is not expected to become more widely-practised.

Contribution to knowledge

It is possible to identify a number of key areas where this research has made a contribution to existing knowledge. In the case of the challenges faced by fishermen and their resultant impact upon fishing businesses, the findings of this research are seen to broadly reflect those of previous studies in the UK (e.g. Creative Research, 2009). However, the geographic focus and timing of this study means that its contribution to understanding the issues associated with the English Channel fishery is arguably more comprehensive than previous work. As noted in the introductory chapter of this thesis, the Channel fishery represents a significant component of the UK fishing industry which continues to make an important contribution to employment and wealth creation in local areas. In light of this contribution, the creation of a contemporary account that is
grounded in the experiences of fishermen throughout the Channel fishery is undoubtedly of practical value to those responsible for its management.

The main theoretical contribution of this work, however, emerges instead from understanding how fishermen respond to the challenges faced in their occupation. While the ability of fishermen in the UK to display flexibility and adaptability in their fishing practices is well-documented (e.g. Symes, 2001; Symes & Frangoudes, 2001); the response strategy of fisheries diversification has received limited attention. Studies conducted to date in Europe have focused upon fisheries outside of the UK – most notably within France (Alban & Boncoeur, 2004; Merrien et al., 2008). As such, this research has contributed to these existing studies by adding support to their key findings. This includes the observation that the decision of fishermen to diversify will be subject to a range of administrative, economic and social constraints; and that individual characteristics are particularly influential. Similarly, this research has demonstrated that the study of agricultural diversification is of relevance in understanding how multiple constraints influence the decision of fishermen to diversify. The proposition that diversification is the outcome of factors operating externally and internally to the farm household is found to have particular relevance to fisheries diversification. Consequently, the conceptual framework introduced by Evans and Ilbery (1989) and developed by Ilbery et al. (1997b) is reflected in the conceptual framework proposed within this thesis.

The findings of this research have revealed that fishermen regularly display innovative behaviour in response to the challenges faced in their day-to-day fishing practices; indeed, respondents considered innovation to be an inherent and necessary attribute of being a fisherman. In contrast, the practice of fishermen displaying entrepreneurial behaviour by diversifying into related activities is notably less prevalent; and thus remains a subject area that has received little academic attention. Although only a small number of entrepreneurial fishermen were interviewed in this study, the findings do provide a valuable contribution to understanding this practice. While many of the opportunities for entrepreneurship in diversification are Kirznerian in nature – arising from existing information and replicating existing forms (e.g. processing and retail); some evidence is found of fishermen exploring Schumpeterian opportunities. These opportunities arise from the introduction of new information resulting from changes in social trends; for example where fishermen have responded to consumer demand for sustainable seafood with clear provenance and traceability. Consistent with Shane’s (2003) individual-opportunity nexus, the exploitation of such opportunities is influenced by a range of psychological and non-psychological factors. The propensity of fishermen to take risks is a key determinant of diversification, although notions of sociability and ambitiousness are
also evident among those who have developed entrepreneurial activities. The findings also indicate the importance of formal education in a related subject area, and experience in the form of both tacit and vicarious knowledge in shaping entrepreneurial behaviour. Finally, the presence of a spouse/partner also appears to influence entrepreneurship; not only by reducing uncertainty through the provision of additional household income (Shane, 2003), but importantly in the supply of family labour.

As with fisheries diversification, the study of multiple-job holding among fishermen has received limited attention to date. Despite only one respondent reporting that they currently engaged in multiple-job holding, this study does provide insight into the experiences and attitudes of fishermen towards this strategy. Little support is found for the heterogeneous-jobs motive – where an individual seeks secondary employment in order to gain non-pecuniary benefits that are absent in their primary occupation. Indeed, the non-pecuniary benefits of fishing were frequently identified by respondents as a key reason for remaining within the fishing industry. Instead, the findings suggest that fishermen are more likely to seek secondary employment due to time-constraints on their fishing activity; or in order to achieve a target level of income during periods of financial difficulty. However, as noted previously, multiple-job holding is not generally considered by fishermen to represent a viable (or desirable) response strategy to the challenges they face in the industry.

9.3 A critique of the research approach

In reflecting upon the aims and objectives of this study and the research approach that was developed to satisfy them, it is possible to identify a number of limitations. The high level of variation found within the UK fishing industry with respect to geographical location, fishing vessels and methods, and individual business structure creates an obvious difficulty when drawing generalisations. Therefore, the decision to focus upon the English Channel as a case-study area proved to be a logical decision – given that the fishery is clearly delimited and not too large as to make data collection infeasible. However, despite the Channel being manageable from a geographical perspective, consideration had to be given to the most appropriate way of collecting data from fishermen and fisheries stakeholders.

Following initial discussions with fisheries stakeholders, a decision was taken to adopt face-to-face interviewing rather than a postal or telephone survey – due to the anticipated poor response that would result from these latter methods. The limitation of this approach
was that it reduced the number of fishermen and stakeholders that could be interviewed. For an AHP study, the interviewing of 60 key informants is a respectable figure which exceeds that of previous studies within the fisheries sector (e.g. Mardle et al., 2004; Whitmarsh & Palmieri, 2009). However, for the remaining survey questions, the small sample size creates issues of representativeness and statistical reliability. Furthermore, when analysing the results by sub-groups, the small number of resultant cases invariably leads to the assumptions of statistical tests being violated – as noted in Chapter 5.

Despite face-to-face interviewing enabling the researcher to work through an example of the AHP exercise with each respondent, a high level of inconsistency was evident in the resultant data. Furthermore, inconsistent scores were significantly higher among fishers than non-fishers. As discussed in section 5.4.1, this inconsistency can result from a number of factors including lack of understanding; indifference between alternatives; or difficulty in ‘trading off’ the importance of alternatives. Due to the timescale of this study it was not possible to examine the applicability of these different explanations; although it was evident that none of the interviewed fishermen or stakeholders had encountered AHP previously. Consequently, it is necessary to treat these results with caution, and consider the suitability of using AHP with respondents who are unfamiliar with this technique.

With regards to the qualitative phase of research, two main limitations have been identified. While in-depth interviewing provided a particularly valuable source of data on the practices, experiences and attitudes of fishermen, this data is concentrated upon the inshore sector. Although the majority of vessels in the Channel fishery fall within this sector, it may have been beneficial to have included more fishermen from the over 10m sector in the sample. However, these individuals proved to be particularly difficult to recruit due to the amount of time they spent at sea. The second limitation concerns the collection of data relating to profitability. Fishermen were asked to discuss the impact of challenges upon profitability but were not asked to provide specific financial data. While this data would have provided further insight into the financial performance of fishing businesses, it was not requested due to being commercially sensitive. The confidential nature of this data was confirmed during interviewing; while many fishermen alluded to the financial status of their businesses, few of them cited specific figures during these discussions.
9.4 Recommendations

This research study has identified three key challenges facing fishermen: relating to existing management practices and quota allocation; rising operating costs; and low fish prices. Addressing the relative allocation of quota between vessels in the under 10m and over 10m sectors is inherently complex; and the proposition of reallocating quota from the latter to the former understandably contentious. Despite these difficulties, a number of options are worthy of further consideration. At the time of writing, the Defra Sustainable Access to Inshore Fisheries Project (SAIF) is exploring a more localised approach to quota management by piloting a series of community quota groups. Although vessels in the under 10m sector will continue to fish against a quota pool, under-utilised quota from Producer Organisations has been moved into this pool to support these vessels. An alternative approach, proposed by the New Under Ten Fishermen’s Association (NUTFA) is to establish an English Inshore Producer Organisation which would be responsible for managing the pool quota for the benefit of the whole inshore fleet, rather than through individual quota allocation. The rhetoric behind this proposal is that it would provide inshore fishermen with greater control over the management of their sector, and improve their collective ability to acquire additional quota. In both cases, the move towards decentralisation has the potential to address the negative opinions of fishermen regarding the current management regime, and to empower fishermen and fishing communities in the management process. Given the policy relevance of safeguarding coastal areas where fishing remains important for employment and wealth creation, these alternative approaches are worthy of further exploration.

The issue of rising operating costs is especially difficult to address because the main cost-related challenges faced by fishermen are determined by macroeconomic forces – most notably the effect of global oil prices upon the cost of fuel and fishing gear. While some EU member states have responded to rising operating costs by providing fishermen with subsidies, it is generally accepted that subsidies create perverse incentives that mask economic reality and facilitate overcapacity (Abernethy et al., 2010; DeSombre & Barkin, 2011). In the UK, fishermen (as with farmers) receive a reduced rate of tax on diesel fuel, although the Government have resisted the demands of fishermen for an additional fuel subsidy (BBC News, 2008b). Given these observations, a more viable tactic for increasing the profitability of fishing may be found by addressing prices rather than costs.

Two principal options exist for improving the prices fishermen receive for their products: encouraging prices to be more responsive to costs; and improving prices at the point of sale (Abernethy et al., 2010). The former option is inherently difficult due to the structure
of the seafood market, which effectively places fishermen who sell through auctions or to wholesalers/processors in the position of price-takers. As noted throughout this study, the majority of fishermen have little or no control over the prices they receive, and for some species (e.g. crab and lobster) these prices have largely remained stagnant. One way in which fishermen have attempted to address this issue is through the formation of local co-operatives. In theory, the formation of a fishermen’s co-operative has the potential to secure higher prices for its members through collective power; in addition to achieving cost savings for the provision of services such as fuel and ice. Although a number of fishermen’s co-operatives currently exist in the UK, the task of developing collective working within an industry characterised by individualism and independence can be difficult to achieve (Cunningham et al., 1985). Furthermore, the process of collaboration can result in negative outcomes if members are not equally committed. An example of this is found in the demise of the Guernsey fishermen’s co-operative, which was attributed to variations in the quality of catch affecting prices (section 6.2.2). Consequently, fishermen found that they could receive higher prices by selling independently and the ‘spirit’ of the co-operative was lost. Despite these issues, there is clearly potential to explore the development of co-operatives further – particularly in peripheral areas. An example of this potential was highlighted recently in ‘The Fishermen’s Apprentice’, a BBC television documentary in which fishermen in the Cornish fishing village of Cadgwith sought to establish a co-operative to improve the prices they receive for their catch (Smith, 2012).

The second option of improving prices at the point of sale can be achieved by a number of methods, including adding value to products through processing; marketing desirable attributes such as traceability and sustainability; and removing the ‘middleman’ by selling direct. This research study has demonstrated that a number of fishermen in the Channel have successfully implemented these methods, and significantly that these are anticipated to become more popular in the future. While diversification into marketing, processing and retail activities is affected less by geographical opportunity than other forms of diversification, it is clear that a number of constraints deter fishermen from developing this approach – including time availability, staffing and ensuring continuity of supply. The provision of financial support may help fishermen to address some of these issues; the introduction of Axis-4 of the European Fisheries Fund (EFF) represents an important source of funding for diversification, and support will continue to be provided though its successor – the European Maritime and Fisheries Fund that will operate from 2014-2020 (European Commission, 2012). There is scope to evaluate the effectiveness of such programmes in facilitating diversification, and identify areas where support for fishermen (both financial and administrative) can be improved.
Finally, in addition to downstream diversification activities it is possible that new opportunities for horizontal diversification may become available to fishermen in the future – particularly those relating to the marine environment. One way in which fishermen can be encouraged and supported to exploit such opportunities is by improving links between the fishing industry and alternative sectors such as regeneration, tourism and marine conservation. The potential exists to develop this process in conjunction with a more decentralised approach to fisheries management that emphasises the role and importance of fishing communities (Jentoft, 2000). Despite the decline witnessed in the UK industry over the last forty years, the economic and sociocultural contribution of fishing remains important to local economies and policymakers should endeavour to secure its long-term sustainability.

The recommendations outlined above identify a number of priorities for future research, or conversely, alternative research questions that this thesis could have addressed. While the reallocation of quota from the over 10m sector to the under 10m sector requires a change of approach in national fisheries policy, the potential to develop a more localised approach of quota management could provide inshore fishermen with more control over this aspect of their profession. Through the application of qualitative research it will be possible to explore the attitudes of fishermen towards community quota management (including the trial currently being conducted by Defra) and understand the conditions required for the successful implementation of this approach. In contrast to the in-depth interviewing used to explore attitudes and opinions of fisheries diversification, it may be more effective to conduct this future research using focus groups. Focus groups provide the opportunity for facilitated discussion between members of interest groups, and have been used successfully with fishermen in the UK (CCRI, 2011; Creative Research, 2009). In this context, focus groups could be used to bring together fishermen from a specific locality or region in order to understand the conditions required for successful community quota management. Importantly, this shift towards a community-oriented approach to fisheries management should encompass the development of structures to promote and facilitate fisheries diversification (particularly through European structural funding) and the incorporation of fishing into economic development strategies.

The application of focus groups could also be used to explore the mechanisms through which fishermen can improve the prices they receive for their products. For example, while the development of fishermen’s co-operatives may provide fishermen with the means to secure higher prices for their products through collective power, the findings of this research indicate that developing collaborative working between fishermen can be inherently problematic. Additionally, given that previous co-operatives (such as that in...
Guernsey) have disbanded in recent years, focus groups could be used to inform the development of new co-operatives that satisfy the objectives of local fishermen.
References


293


Appendix A: A conceptual framework of internal and external factors affecting business diversification (Ilbery et al., 1997b)

**Formal Policy Environment**
operating at a national and local level in the urban fringe, lowlands and marginal fringe

- Agencies: **provide** advice, finance information, skills: pro-active
- Agencies: **approached** for advice, finance information, skills: passive

**The Internal Farm Environment**

- **Farm Business** e.g. size, tenure
- **Farm Household** e.g. gender, life-cycle: age, succession, occupancy, and education and background

**Possible Solutions**
e.g. expand farming, diversify on-farm, work off-farm as an employee, marginalize farm, create off-farm business, no change

**Choice**
e.g. on and/or off-farm business diversification

**Impact on the local economy**
(urban fringe, lowlands and marginal fringe) e.g. job creation, service provision, land-use, infrastructure, noise and pollution, job training, linkages, suppliers, markets

**Outside Agricultural Influences**
e.g. CAP reforms, price support, set-aside, quotas etc (macro economic processes)

**Informal Information Environment**
e.g. NFU meetings, non-farming family, media, neighbouring farmers, auctions: at a national, regional and local level
Appendix B: Stakeholder’s Questionnaire

Introduction:
In recent years, some fishermen in the English Channel have diversified into other fishing-related activities. Examples include: developing new approaches to marketing/rebranding of seafood; contract work for telecommunications companies; and tourism/heritage activities. This type of diversification can be important because it allows fishermen to continue fishing, while using their existing skills and knowledge to profit from other activities.

As a stakeholder in the English Channel fishery, we are interested in your opinions and attitudes on this issue and would be grateful for your participation in this survey. For the purpose of this research, we have defined fisheries diversification activities as:

“Complementary activities to production, in link with the product, the profession or the business”

Section 1: Opportunities for fisheries diversification

In this section we are interested in your opinions regarding the opportunities for fishermen in the English Channel to diversify.

Q1: Are you aware of fishermen in the English Channel participating in any of the following diversification activities, in addition to fishing? (Tick all that apply)

<table>
<thead>
<tr>
<th>Activity</th>
<th>(✓)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Contract work for energy companies</td>
<td></td>
</tr>
<tr>
<td>Contract work for telecommunications companies</td>
<td></td>
</tr>
<tr>
<td>Contract work for environmental organisations</td>
<td></td>
</tr>
<tr>
<td>Any other contract work (please specify):</td>
<td></td>
</tr>
<tr>
<td>Collecting litter / waste at sea</td>
<td></td>
</tr>
<tr>
<td>Allowing tourists onto the fishing vessel</td>
<td></td>
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<tr>
<td>Allowing scientists onto the fishing vessel</td>
<td></td>
</tr>
<tr>
<td>Participating in maritime / fishing festivals</td>
<td></td>
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<tr>
<td>Participating in exhibitions / trade-shows</td>
<td></td>
</tr>
<tr>
<td>Providing training</td>
<td></td>
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<tr>
<td>Selling directly to the public</td>
<td></td>
</tr>
<tr>
<td>Marketing initiatives</td>
<td></td>
</tr>
<tr>
<td>Other fishing-related activities (please specify):</td>
<td></td>
</tr>
<tr>
<td>None</td>
<td></td>
</tr>
</tbody>
</table>
**Q2:** In your opinion, how many opportunities exist for fishermen in the English Channel to diversify into the following activities – while continuing to fish?

<table>
<thead>
<tr>
<th>Activity</th>
<th>Many opportunities</th>
<th>Some opportunities</th>
<th>Limited opportunities</th>
<th>No opportunities</th>
<th>Don’t know</th>
</tr>
</thead>
<tbody>
<tr>
<td>Contract work for energy companies</td>
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<tr>
<td>Contract work for telecommunications companies</td>
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<tr>
<td>Contract work for environmental organisations</td>
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<tr>
<td>Other contract work</td>
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<tr>
<td>Collecting litter / waste at sea</td>
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<tr>
<td>Allowing tourists onto the fishing vessel</td>
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<tr>
<td>Allowing scientists onto the fishing vessel</td>
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<tr>
<td>Participating in maritime / fishing festivals</td>
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<tr>
<td>Participating in exhibitions / trade-shows</td>
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<tr>
<td>Providing training</td>
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<tr>
<td>Selling directly to the public</td>
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<tr>
<td>Marketing initiatives</td>
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</tbody>
</table>
Section 2: Future prospects for fisheries diversification

In this section we are interested in your opinions on the future prospects for fishermen in the English Channel to diversify.

Q3: In your opinion, how likely is it that fishermen in the English Channel will diversify into the following types of activities in the future?

<table>
<thead>
<tr>
<th>Activity</th>
<th>Very likely</th>
<th>Likely</th>
<th>Neither / Nor</th>
<th>Not very likely</th>
<th>Not at all likely</th>
</tr>
</thead>
<tbody>
<tr>
<td>Contract work for energy companies</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Contract work for telecommunications companies</td>
<td></td>
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<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Contract work for environmental organisations</td>
<td></td>
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<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Other contract work</td>
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<tr>
<td>Collecting litter / waste at sea</td>
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<tr>
<td>Allowing tourists onto the fishing vessel</td>
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<tr>
<td>Allowing scientists onto the fishing vessel</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Participating in maritime / fishing festivals</td>
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<td></td>
<td></td>
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<tr>
<td>Participating in exhibitions / trade-shows</td>
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<tr>
<td>Providing training</td>
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<tr>
<td>Selling directly to the public</td>
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<td></td>
</tr>
<tr>
<td>Marketing initiatives</td>
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</tbody>
</table>

Q4: What do you think the main incentives of diversifying into other fishing-related activities might be for fishermen? (Tick all that apply)

- Increase profit (✓)
- Spread / minimise risk
- Business survival
- Maintain traditions of fishing
- Maintain fishing communities
- Promote the fishing industry
- Improve working conditions
- Reduce pressure on the marine environment
- Other (please specify):
**Q5:** Which of the following roles could your organisation play in the future development of fisheries diversification activities? (Tick **all** that apply)

<table>
<thead>
<tr>
<th>Role</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Providing information and advice to fishermen about diversification activities</td>
<td>✓</td>
</tr>
<tr>
<td>Working with fishermen to develop diversification activities</td>
<td></td>
</tr>
<tr>
<td>Providing funding for diversification activities</td>
<td></td>
</tr>
<tr>
<td>Developing legislation to assist the development of diversification activities</td>
<td></td>
</tr>
<tr>
<td>Other (please specify):</td>
<td></td>
</tr>
</tbody>
</table>
Appendix C: Fishermen’s Questionnaire

Introduction:
In recent years, some fishermen in the English Channel have moved into other fishing-related activities while continuing to fish. Examples include tourism boat trips, surveying for Cefas, and selling their catch directly to the public. This work can be important because it allows fishermen to use their vessels, skills and knowledge to earn extra income.

The purpose of this questionnaire is to gain your opinions about the different types of work that fishermen can do, while still continuing to fish.

Section 1: Marketing and selling of catch

Q1: When you return to port, which of the following methods are used to sell your catch? (Indicate the % sold by each method)

<table>
<thead>
<tr>
<th>Method</th>
<th>(%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Selling at fish auction</td>
<td></td>
</tr>
<tr>
<td>Selling to wholesaler</td>
<td></td>
</tr>
<tr>
<td>Selling to processor</td>
<td></td>
</tr>
<tr>
<td>Selling directly to retailer</td>
<td></td>
</tr>
<tr>
<td>Selling directly to public</td>
<td></td>
</tr>
</tbody>
</table>

Q2: Do you currently participate in any of the following initiatives? (Tick all that apply)

- Marine Stewardship Council ecolabelling scheme  
- Product tagging scheme
- Other sustainability / traceability scheme (please specify): [ ]

None of the above

Go to Q4

Go to Q3

Q3: Why have you not participated in these initiatives?  
SHOWCARD 1 (Tick all that apply)
### Q4: Which fishing organisations do you belong to?  
(Tick all that apply)

<table>
<thead>
<tr>
<th>Organisation</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Channel &amp; West Sustainable Trawling Group</td>
<td>✓</td>
</tr>
<tr>
<td>Cornish FPO</td>
<td></td>
</tr>
<tr>
<td>Cornish Sardine Management Association</td>
<td></td>
</tr>
<tr>
<td>Duchy Fish Quota Company</td>
<td></td>
</tr>
<tr>
<td>Fishing for Litter South West</td>
<td></td>
</tr>
<tr>
<td>Hastings Fisherman’s Protection Society</td>
<td></td>
</tr>
<tr>
<td>South West Handline Fishermen’s Association</td>
<td></td>
</tr>
<tr>
<td>South West Inshore Fishermen’s Association</td>
<td></td>
</tr>
<tr>
<td>South Western FPO</td>
<td></td>
</tr>
<tr>
<td>Other (please specify):</td>
<td></td>
</tr>
</tbody>
</table>

### Section 2: Opportunities for fisheries diversification

### Q5: Do you currently do any of the following activities, in addition to fishing?  
**SHOWCARD 2** (Tick all that apply)

<table>
<thead>
<tr>
<th>Activity</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Contract work (please specify):</td>
<td>✓</td>
</tr>
<tr>
<td>Collecting litter / waste at sea</td>
<td></td>
</tr>
<tr>
<td>Allowing tourists onto your fishing vessel</td>
<td></td>
</tr>
<tr>
<td>Allowing scientists onto your fishing vessel</td>
<td></td>
</tr>
<tr>
<td>Festivals related to the sea</td>
<td></td>
</tr>
<tr>
<td>Fishing exhibitions / Trade-shows</td>
<td></td>
</tr>
<tr>
<td>Providing training within the industry</td>
<td></td>
</tr>
<tr>
<td>Selling directly to the public</td>
<td></td>
</tr>
<tr>
<td>Marketing initiatives e.g. ecolabelling</td>
<td></td>
</tr>
<tr>
<td>Other fishing-related activities (please specify):</td>
<td></td>
</tr>
<tr>
<td>None</td>
<td>Go to Q8</td>
</tr>
</tbody>
</table>

Go to Q6
Q6: How often do you do these activities e.g. daily, weekly, monthly?

<table>
<thead>
<tr>
<th></th>
<th>Frequency</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>Contract work (please specify):</td>
</tr>
<tr>
<td>B</td>
<td>Collecting litter / waste at sea</td>
</tr>
<tr>
<td>C</td>
<td>Allowing tourists onto your fishing vessel</td>
</tr>
<tr>
<td>D</td>
<td>Allowing scientists onto your fishing vessel</td>
</tr>
<tr>
<td>E</td>
<td>Festivals related to the sea</td>
</tr>
<tr>
<td>F</td>
<td>Fishing exhibitions / Trade-shows</td>
</tr>
<tr>
<td>G</td>
<td>Providing training within the industry</td>
</tr>
<tr>
<td>H</td>
<td>Selling directly to the public</td>
</tr>
<tr>
<td>I</td>
<td>Marketing initiatives e.g. ecolabelling</td>
</tr>
<tr>
<td>J</td>
<td>Other fishing-related activities (please specify):</td>
</tr>
</tbody>
</table>

Q7: Why did you choose to move into these activities?

SHOWCARD 3 (Tick all that apply)

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>Increase profit</td>
</tr>
<tr>
<td>B</td>
<td>Spread / minimise risk</td>
</tr>
<tr>
<td>C</td>
<td>Business survival</td>
</tr>
<tr>
<td>D</td>
<td>Maintain traditions of fishing</td>
</tr>
<tr>
<td>E</td>
<td>Maintain fishing communities</td>
</tr>
<tr>
<td>F</td>
<td>Promote the fishing industry</td>
</tr>
<tr>
<td>G</td>
<td>Improve working conditions</td>
</tr>
<tr>
<td>H</td>
<td>Reduce pressure on the marine environment</td>
</tr>
<tr>
<td>I</td>
<td>Other (please specify):</td>
</tr>
</tbody>
</table>
**Q8:** In your opinion, how many opportunities exist for fishermen in the English Channel to move into the following activities – while still continuing to fish? **SHOWCARD 4**

<table>
<thead>
<tr>
<th></th>
<th>Many opportunities</th>
<th>Some opportunities</th>
<th>Limited opportunities</th>
<th>No opportunities</th>
<th>Don’t know</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>Contract work for energy companies</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>B</td>
<td>Contract work for telecommunications</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>C</td>
<td>Contract work for environmental organisations</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>D</td>
<td>Other types of contract work</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>E</td>
<td>Collecting litter / waste at sea</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>F</td>
<td>Allowing tourists onto the fishing vessel</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>G</td>
<td>Allowing scientists onto the fishing vessel</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>H</td>
<td>Festivals related to the sea</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>I</td>
<td>Fishing exhibitions / Trade-shows</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>J</td>
<td>Providing training within the industry</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>K</td>
<td>Selling directly to the public</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>L</td>
<td>Marketing initiatives e.g. ecolabelling</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
**Section 3: Future prospects for fisheries diversification**

**Q9:** In your opinion, how likely is it that fishermen in the English Channel will move into the following activities in the future? **SHOWCARD 5**

<table>
<thead>
<tr>
<th></th>
<th>Very likely</th>
<th>Likely</th>
<th>Neither / Nor</th>
<th>Not very likely</th>
<th>Not at all likely</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>Contract work for energy companies</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>B</td>
<td>Contract work for telecommunications</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>C</td>
<td>Contract work for environmental organisations</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>D</td>
<td>Other types of contract work</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>E</td>
<td>Collecting litter / waste at sea</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>F</td>
<td>Allowing tourists onto the fishing vessel</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>G</td>
<td>Allowing scientists onto the fishing vessel</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>H</td>
<td>Festivals related to the sea</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>I</td>
<td>Fishing exhibitions / Trade-shows</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>J</td>
<td>Providing training</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>K</td>
<td>Selling directly to the public</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>L</td>
<td>Marketing initiatives e.g. ecolabelling</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Q10:** What do you think the main reasons are for fishermen moving into these activities? **SHOWCARD 6** (Tick all that apply)

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>Increase profit</td>
</tr>
<tr>
<td>B</td>
<td>Spread / minimise risk</td>
</tr>
<tr>
<td>D</td>
<td>Business survival</td>
</tr>
<tr>
<td>E</td>
<td>Maintain traditions of fishing</td>
</tr>
<tr>
<td>F</td>
<td>Maintain fishing communities</td>
</tr>
<tr>
<td>G</td>
<td>Promote the fishing industry</td>
</tr>
<tr>
<td>H</td>
<td>Improve working conditions</td>
</tr>
<tr>
<td>I</td>
<td>Reduce pressure on the marine environment</td>
</tr>
<tr>
<td>J</td>
<td>Other (please specify):</td>
</tr>
</tbody>
</table>
Q11: If you find that it becomes no longer profitable for you to continue the type of fishing that you do at the moment, which one of the following options are you most likely to take?

<table>
<thead>
<tr>
<th>Option</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Continue fishing, but fish for something else</td>
<td>✓</td>
</tr>
<tr>
<td>Continue fishing, but try to find some other fishing-related work as well</td>
<td></td>
</tr>
<tr>
<td>Continue fishing, but try to find some other non-fishing job as well</td>
<td></td>
</tr>
<tr>
<td>Stop fishing altogether and find a different job</td>
<td></td>
</tr>
<tr>
<td>Other (please specify):</td>
<td></td>
</tr>
</tbody>
</table>

Section 4: Future prospects for fisheries diversification

Read out:

We know that some fishermen make money from doing work that is related to fishing, such as tourist boat trips, surveying for Cefas, and selling their catch directly to the public. We also know that fishermen may be put off from doing this sort of work for the following reasons:

1) There aren’t any opportunities;
2) There’s no money in it;
3) There’s too many rules and regulations;
4) They’d rather just stick to fishing;
5) There’s no information about how to get into this work.

Using your knowledge and experience, could you tell me how important each of these reasons are, but try to think generally about fishermen in your area rather than just yourself. To do this, I will give you a number of cards and some stickers:

- On each card there are two reasons: one on each end of a scale – imagine it’s like a central heating scale.
- If you think that one reason is much more important than the other, put a sticker on a number at that end of the scale – the higher the number the more important it is.
- But if you think the two reasons are as important as each other, then put your sticker in the middle of the scale on the number 1.
### Q12: Economic factors vs Social factors

<table>
<thead>
<tr>
<th>Economic factors</th>
<th>Social factors</th>
</tr>
</thead>
<tbody>
<tr>
<td>There’s no money in it</td>
<td>They’d rather stick to fishing</td>
</tr>
<tr>
<td>9</td>
<td>8</td>
</tr>
</tbody>
</table>

### Q13: Economic factors vs Lack of information

<table>
<thead>
<tr>
<th>Economic factors</th>
<th>Lack of information</th>
</tr>
</thead>
<tbody>
<tr>
<td>There’s no money in it</td>
<td>There’s no information</td>
</tr>
<tr>
<td>9</td>
<td>8</td>
</tr>
</tbody>
</table>

### Q14: Economic factors vs Lack of opportunities

<table>
<thead>
<tr>
<th>Economic factors</th>
<th>Lack of opportunities</th>
</tr>
</thead>
<tbody>
<tr>
<td>There’s no money in it</td>
<td>There aren’t any opportunities</td>
</tr>
<tr>
<td>9</td>
<td>8</td>
</tr>
</tbody>
</table>

### Q15: Economic factors vs Administrative constraints

<table>
<thead>
<tr>
<th>Economic factors</th>
<th>Administrative constraints</th>
</tr>
</thead>
<tbody>
<tr>
<td>There’s no money in it</td>
<td>Too many rules and regulations</td>
</tr>
<tr>
<td>9</td>
<td>8</td>
</tr>
</tbody>
</table>

### Q16: Social factors vs Lack of information

<table>
<thead>
<tr>
<th>Social factors</th>
<th>Lack of information</th>
</tr>
</thead>
<tbody>
<tr>
<td>They’d rather stick to fishing</td>
<td>There’s no information</td>
</tr>
<tr>
<td>9</td>
<td>8</td>
</tr>
</tbody>
</table>

### Q17: Social factors vs Lack of opportunities

<table>
<thead>
<tr>
<th>Social factors</th>
<th>Lack of opportunities</th>
</tr>
</thead>
<tbody>
<tr>
<td>They’d rather stick to fishing</td>
<td>There aren’t any opportunities</td>
</tr>
<tr>
<td>9</td>
<td>8</td>
</tr>
</tbody>
</table>
### Q18: Social factors vs Administrative constraints

<table>
<thead>
<tr>
<th>They'd rather stick to fishing</th>
<th>Too many rules and regulations</th>
</tr>
</thead>
<tbody>
<tr>
<td>9 8 7 6 5 4 3 2 1 2 3 4 5 6 7 8 9</td>
<td></td>
</tr>
</tbody>
</table>

### Q19: Lack of information vs Lack of opportunities

<table>
<thead>
<tr>
<th>There's no information</th>
<th>There aren't any opportunities</th>
</tr>
</thead>
<tbody>
<tr>
<td>9 8 7 6 5 4 3 2 1 2 3 4 5 6 7 8 9</td>
<td></td>
</tr>
</tbody>
</table>

### Q20: Lack of information vs Administrative constraints

<table>
<thead>
<tr>
<th>There's no information</th>
<th>Too many rules and regulations</th>
</tr>
</thead>
<tbody>
<tr>
<td>9 8 7 6 5 4 3 2 1 2 3 4 5 6 7 8 9</td>
<td></td>
</tr>
</tbody>
</table>

### Q21: Lack of opportunities vs Administrative constraints

<table>
<thead>
<tr>
<th>There aren't any opportunities</th>
<th>Too many rules and regulations</th>
</tr>
</thead>
<tbody>
<tr>
<td>9 8 7 6 5 4 3 2 1 2 3 4 5 6 7 8 9</td>
<td></td>
</tr>
</tbody>
</table>

**Section 5: Future prospects for fisheries diversification**

Finally, to help understand the choices you have made and to ensure our survey is representative, we would like to ask you some questions about yourself. Any information that you provide here will remain confidential.

**Q22: Gender:**

- [ ] Male
- [✓] Female
**Q23:** Age-group:

- [ ] 16 – 24
- [ ] 25 – 34
- [ ] 35 – 44
- [ ] 45 – 54
- [ ] 55 – 64
- [ ] 65 or over

**Q24:** For how many years have you been a commercial fisherman?  

[ ] years

**Q25:** What were the reasons you chose fishing? **SHOWCARD 7**

- [ ] Family tradition of fishing
- [ ] Opportunity to stay in the region
- [ ] Better income from fishing than other jobs
- [ ] Lifestyle that goes with fishing and the sea
- [ ] Other (please specify):

**Q26:** Do any members of your family work with you in your fishing business?  

- [ ] Yes  Go to Q27
- [ ] No  Go to Q29

**Q27:** What jobs do they do in the fishing business?

- [ ] Onboard the vessel (i.e. as crew)
- [ ] Office functions (e.g. accounts etc.)
- [ ] Transport and delivery
- [ ] Other (please specify):

**Q28:** And is their involvement essential to the survival of your fishing business or not?  

- [ ] Yes
- [ ] No
Q29: Do you have another job or activity that you do, as well as fishing?

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes</td>
<td></td>
</tr>
<tr>
<td>No</td>
<td></td>
</tr>
</tbody>
</table>

If yes, what is this job/s?:

Q30: Including yourself, how many adults (18+) and children currently live in your household?

<table>
<thead>
<tr>
<th></th>
<th>Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>Adults (18+)</td>
<td></td>
</tr>
<tr>
<td>Children</td>
<td></td>
</tr>
</tbody>
</table>

Q31: And starting with yourself, which of the following qualifications are held by each adult (18+) living in your household? SHOWCARD 8

<table>
<thead>
<tr>
<th></th>
<th>Yourself</th>
<th>Adult 2</th>
<th>Adult 3</th>
<th>Adult 4</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>Degree (please specify):</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>B</td>
<td>Professional qualification (please specify):</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>C</td>
<td>Secondary level</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>D</td>
<td>Primary level</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>E</td>
<td>No formal qualification</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>F</td>
<td>Other (please specify):</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Q32: Would you be interested in reading a summary of the results of this research; or being contacted again?

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>(✓)</td>
<td></td>
</tr>
<tr>
<td>Summary of the results</td>
<td></td>
</tr>
<tr>
<td>Being contacted again</td>
<td></td>
</tr>
<tr>
<td>None of the above</td>
<td></td>
</tr>
</tbody>
</table>

Q33: And finally, roughly what proportion of your family income comes from: i) fishing; and ii) your other job/s or activities (if answered yes at Q29) e.g. 25%; 50%; 75%?

<table>
<thead>
<tr>
<th></th>
<th>% of family income</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fishing</td>
<td></td>
</tr>
<tr>
<td>Your other job/activity</td>
<td></td>
</tr>
</tbody>
</table>
Title of project: Fisheries diversification activities in the English Channel

We would like to invite you to take part in this research project. Before you decide, we would like to explain why the research is being done and what it would involve for you. We have provided this information below. Please ask us if anything is not clear.

What is the purpose of the study?

The purpose of the study is to survey stakeholders in the English Channel fishery to explore their opinions on fishermen diversifying into other related activities. We will use this information to see whether diversification activities may provide a possible solution to some of the problems of fishing. This research forms one component of a multidisciplinary project funded under the EU Interreg IV programme: CHARM (Channel integrated Approach for marine Resource Management).

Why have I been invited?

You have been invited to take part because we value your opinion on this topic and believe that your knowledge and experience of this subject area will assist us greatly in our research.

Do I have to take part?

No, your participation is entirely voluntary. If you do agree to take part, we will ask you to sign a consent form. You have the right to withdraw from the study at any time without giving a reason.
**What will happen to me if I take part?**

If you agree to take part, a researcher will contact you and arrange a convenient time and place to visit you. The researcher will interview you once using a questionnaire – this should take no longer than 20 minutes to complete. You will also be given the opportunity to add further comments if you wish. You may be asked to participate in some follow-up research at a later date, but you have the right to refuse without giving a reason.

**Are there any expenses and payments available?**

Unfortunately, we are unable to provide a financial incentive or payment for expenses. However, we will be happy to provide you with a summary of the results when the project is completed.

**What will I have to do?**

If you agree to participate, you will be asked to answer a series of questions asked by the researcher. The same questionnaire will be used for all participants.

**What are the possible benefits of taking part?**

We believe that the issue of fisheries diversification may have important policy implications for the fishing industry. By taking part in this study, you will assist us in researching this interesting, yet relatively unexplored topic.

**What happens when the research study finishes?**

Once the study has been completed, the results will be published in two formats: (i) an interactive web atlas that brings together all the research conducted by partners in the CHARM project; (ii) a PhD thesis written by the researcher.

**What if there is a problem?**

If you agree to take part in the study, but later find that you are unable or prefer not to participate then you have the right to opt-out. Any complaint that you have about the way you have been treated will be dealt with in accordance with the University of Portsmouth’s research guidelines.

**Will my taking part in the study be kept confidential?**

You will be given the option to keep your participation and that of your organisation anonymous, prior to completing the questionnaire. All information that is collected from you during the study will be kept strictly confidential and stored in a secure location – accessible only by authorised individuals. All questionnaires will be destroyed and raw data will be destroyed upon completion of the project.
Further information

If you would like further information on any of the issues mentioned above, or about the research study in general please contact:

Richard Morgan
Centre for the Economics and Management of Aquatic Resources (CEMARE)
4th Floor, St George’s Building
141 High Street
Portsmouth
PO1 2HY

tel: (023) 9284 8511

email: richard.morgan@port.ac.uk
Appendix E: Participant Consent Form

Centre for the Economics and Management of Aquatic Resources
Portsmouth Business School
University of Portsmouth
St George’s Building
141 High Street
Portsmouth
PO1 2HY

Participant Consent Form

Title of project: Fisheries diversification activities in the English Channel
Name of researcher: Richard Morgan

Please tick box:

I confirm that I have read and understand the enclosed Participant Information Sheet for the above study. I have had the opportunity to consider the information, ask questions and have had these answered satisfactorily.

I understand that my participation in this research is voluntary and that I am free to withdraw at any time without giving any reason, without my legal rights being affected.

Confidentiality:

I wish for my participation in this research to remain confidential.
I wish for the participation of my organisation in this research to remain confidential.

I agree to take part in the above study.
### Appendix F: In-depth Interview Guide

**Introduction & Warm-up**

- Thank respondent for participation, reiterate aims of interview, establish confidentiality

**Q1: To start off, could you tell me about the types of fishing that you do throughout the year?**

- Establish types of fishing; how long practised for; full-time/part-time: seasons/months
- Establish relative contribution of fishing to household income

**Q2: What are the main problems that you face in making a living from fishing?**

- If not mentioned, probe for the following:
  - Stock levels
  - Quotas
  - Area/gear restrictions
  - Operating costs
  - Sell-on value

**Q3: And what impact have these problems had upon the profitability of your fishing business?**

- Explore the relative impact of each challenge identified by respondent

**Q4: Have you changed the way you fish because of these problems?**

- Explore practice and viability of the following responses:
  - Relocating fishing effort
  - Increasing fishing effort
  - Increasing efficiency
Reducing fishing activity and developing alternative income sources

**Q5a: DIVERSIFIERS ONLY**
You mentioned earlier that you do some other fishing-related work as well as fishing. Could you tell me how that work came about?

- If not mentioned, probe for the following:
  - Types of activity practised
  - When / how set up
  - Time devoted to activity: seasons/days
  - Relative contribution to turnover & household income
  - Challenges faced in developing diversification activities

**Q5b: NON-DIVERSIFIERS ONLY**
Have you ever considered moving into fishing-related work such as tourism, contract work or selling directly to the public?

- If not mentioned, probe for the following:
  - Types of activity considered
  - Reasons why not diversified: probe for key constraints
  - Likelihood of diversifying in future: feasibility of activity types

**Q6a: MULTIPLE JOB HOLDERS ONLY**
You mentioned earlier that you have another job that is not related to fishing. Could you tell me how that work came about?

- If not mentioned, probe for the following:
  - Number/type of additional jobs held
  - When / how long employed
  - Reasons for finding additional job/s
  - Time devoted to additional job/s: seasons/days
- Relative contribution to household income
- Challenges faced in holding multiple jobs

**Q6b: NON-MULTIPLE JOB HOLDERS ONLY**

*Have you ever considered finding another job to do, as well as fishing?*

- If not mentioned probe for the following:
  - Types of job considered
  - Reasons why not considered/taken: probe for key constraints
  - Likelihood of multiple-job holding in future: feasibility of job types

**Q7: And finally, do you think that you’ll spend the rest of your working career as a fisherman?**

- Explore reasons why / why not

**Summary**

- Summarise main points; Thank & close
## Appendix G: Summary of non-psychological characteristics among entrepreneurs

<table>
<thead>
<tr>
<th>Activity Type</th>
<th>Age-group</th>
<th>Years fishing</th>
<th>Highest educational qualification</th>
<th>Number of adults in household</th>
<th>Number of children in household</th>
<th>Support from family member</th>
<th>Support essential</th>
</tr>
</thead>
<tbody>
<tr>
<td>F01 (Mobile retail premises)</td>
<td>35–44</td>
<td>23</td>
<td>Secondary level (Engineering)</td>
<td>2</td>
<td>No</td>
<td>No</td>
<td>Yes</td>
</tr>
<tr>
<td>F02 (Mobile retail premises)</td>
<td>45–54</td>
<td>23</td>
<td>Secondary level (Accountancy)</td>
<td>1</td>
<td>No</td>
<td>n/a</td>
<td>No</td>
</tr>
<tr>
<td>F03 (Mobile retail premises)</td>
<td>35–44</td>
<td>21</td>
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## Appendix H: Summary of Tree Nodes and Free Nodes

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<th>Tree Nodes</th>
<th>Free Nodes</th>
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<tr>
<td><strong>Administrative Challenges</strong></td>
<td>Days at sea&lt;br&gt;Gear restrictions&lt;br&gt;Illegal fishing&lt;br&gt;Licensing&lt;br&gt;Management&lt;br&gt;Part-time fishing&lt;br&gt;Quota&lt;br&gt;Rules &amp; Regulations</td>
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<td><strong>Biological Challenges</strong></td>
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<td><strong>Economic Challenges</strong></td>
<td>Ageing fleet&lt;br&gt;Ageing workforce&lt;br&gt;Bait coats&lt;br&gt;Continuity of supply&lt;br&gt;Crew&lt;br&gt;Facilities&lt;br&gt;Fishing method&lt;br&gt;Fluctuating prices&lt;br&gt;Fuel costs&lt;br&gt;Gear costs&lt;br&gt;Import &amp; Export costs&lt;br&gt;Investment&lt;br&gt;Moorings costs&lt;br&gt;Operating costs&lt;br&gt;Overcapacity &amp; Technological creep&lt;br&gt;Oversupply&lt;br&gt;Low fish prices&lt;br&gt;Selling at auction&lt;br&gt;Selling through co-operative&lt;br&gt;Selling to wholesaler&lt;br&gt;Working conditions</td>
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<td><strong>Environmental Challenges</strong></td>
<td>Access to port&lt;br&gt;Conservation&lt;br&gt;Loss of ground&lt;br&gt;MCZs&lt;br&gt;Tidal range&lt;br&gt;Weather</td>
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<td><strong>Fisheries Diversification</strong></td>
<td>Angling&lt;br&gt;Aquaculture&lt;br&gt;Artistic&lt;br&gt;Bait supply&lt;br&gt;Boat trips&lt;br&gt;Catering&lt;br&gt;Consultancy&lt;br&gt;Contract work&lt;br&gt;Direct selling&lt;br&gt;Diversification constraints&lt;br&gt;Diversification incentives&lt;br&gt;Festivals&lt;br&gt;Labelling&lt;br&gt;Marketing&lt;br&gt;Processing&lt;br&gt;Surveying&lt;br&gt;Training&lt;br&gt;Transhipment</td>
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<td>Voluntary activities</td>
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<td>Diversify vessels</td>
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