

An Exploration of Open Innovation in Irish Food Firms



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January 2015

A thesis submitted to Dublin City University in fulfillment of the
requirements for the degree of

DOCTOR OF PHILOSOPHY

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Declaration

I hereby certify that this material, which I now submit for assessment on the programme of study leading to the award of Ph.D. is entirely my own work, that I have exercised reasonable care to ensure that the work is original, and does not to the best of my knowledge breach any law of copyright, and has not been taken from the work of others save and to the extent that such work has been cited and acknowledged within the text of my work.

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(Anushree Priyadarshini)

Acknowledgment

It's a great privilege to study for a PhD and for me it has been the defining intellectual experience of my life. There can be few more profoundly stimulating endeavours than undertaking a project of this scale.

In supporting me to do this, with immense gratitude I am indebted to my supervisor Dr. Yuhui Gao and my second reader Dr. Teresa Hogan for their skilled guidance and keen interest in the subject that helped me in completing the objectives of my PhD research. I express my heartfelt appreciation for their moral support, generosity, encouragement and benevolence that they have bestowed upon me, without which it would have been impossible to complete this research.

I would like to acknowledge the funding received from DCU Daniel O'Hare Scholarship for carrying out this study.

I recognize with gratitude the invaluable assistance provided by Ms. Racheal Keegan, Ms. Ursula Baxter, Ms. Nicola O'Sullivan, Ms. Clare Balfe and Ms. Muriel Keegan in undertaking all administrative work during the PhD process. I also extend my special appreciation to the DCU Information Systems and Services Department (ISS) who were always very cheerfully available to sort any technical problems I had during my work.

Friends are family away from home and I take this opportunity to express my heartfelt thanks to my dear friends Dr. Amit Kr. Jaiswal, Dr. Swarna Jaiswal and Dr. Prabhash Singh without whom it's difficult for me to imagine how studying and staying in Ireland would have been. I feel blessed to have them around and the wonderful times we have had together on this PhD journey. I am indebted to the support of my friends Ms. Priya Shinghal, Mr. Prashant Singh and Mr. Puneet Sharma who though were not physically present with me but they were never far from me either.

I extend my gratitude to my entire DCU family at the Business School, my time at DCU was so much fun because of all of you. It is a matter of great pleasure for me to acknowledge my PhD colleagues and friends Dr. Sahar Validi, Mr. Peeter Deeney, Ms. Artemisia Jaramillo, Mr. Fabian Gogolin, Ms. Bettina Wuerdinger, Ms. Yulia Plaksina, Ms. Xiaoning Liang, Dr. Steven Kilroy and all the PhD gang for all the fun times together, the light moments after each day of hard work and for their contribution, co-operation, encouragement and constructive criticism.

No words of thanks are enough for my loving family. I take this opportunity to express my heartfelt regards to my parents Mrs. Manju Goel and Mr. R. C. Kachhal, my sister Ms. Akanksha

Priyadarshini, my brother Mr. Aishwarya Mani and all my family members for their blessings, moral support and faith in me in my endeavors, which are the basis of my success. I feel extraordinarily blessed to have them as an intimate part of my life.

Finally, the two most important people without whom I could not have completed my PhD. First, a very special word of gratitude and appreciation to the one I owe everything, to the one I took the very first steps of my research journey with, my dear friend and husband Dr. Gaurav Rajauria for his endless encouragement, understanding, patience, support and love, all of which has helped me to be here and finish this piece of work. You have stood by me through thick and thin, I am so fortunate and blessed to have you and I look forward to sharing many more accomplishments with you in the future.

But I reserve my very special thanks for my supervisor Prof. Colm O’Gorman. With a profound sense of gratitude I am indebted to him for his remarkably consistent and active engagement with me and my work, for his ever increasing support and guidance throughout my PhD journey. In the years working together, we have met unfailingly every week and there has never been one meeting where his insight has not proven immensely valuable. I could not have possibly done it without you.

The power of cosmos controls us, makes us realize how insignificant we are and yet how significant an impact our actions can have. I thank you my Almighty for bestowing me with confidence and capacity, with strength and patience to cheerfully keep working hard each day and reach where I am. I can never thank you enough!

January 2015

(Anushree Priyadarshini)

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List of Abbreviations

%	Percent
€	Euro
b	Billion
CIS	Community innovation survey
DC	Domestic collaborations
EEI	Engagement in external interaction
EO	Extent of openness
EU	European Union
FC	Foreign collaborations
GDP	Gross Domestic Product
gm	Gram
IE	Ireland
IP	Intellectual property
IPO	Initial Public Offering
IVC	Innovation Value Chain
KPI	Key Performance Indicator
m	Million
n	Number of firms
NDA	Non Discloser Agreement
NPD	New Product Development
R	Correlation coefficient
R&D	Research and Development
R ²	Regression coefficient
ROI	Return on Investment
SME	Small and Medium-sized Enterprise
UK	United Kingdom
USA	United State of America

Abstract

This study explores the organization and management of the innovation process in Irish food firms, with a specific focus on the internal and external interactions across the different phases of the innovation value chain. Recent research highlights the benefits of open innovation. However, many firms don't practice open innovation or only leverage external resources and skills to a very limited extent; and prior research using Community Innovation Survey (CIS) data suggests that this is particularly the case for Irish firms. In this study the organization and management of innovation activities of Irish firms is analysed using CIS data and interview data from eight Irish food firms. In each firm multiple senior managers are interviewed about the origin of an innovative idea, the management of the innovation, and the role of external organisations in the innovation process. The analysis suggests that the organisation and management of the innovation process is contingent on both the stage of the innovation process and on managerial perceptions of the risks associated with open innovation. Contributions include extending existing research on open innovation by using the innovation value chain to show that the nature and extent of openness of the innovation process varies within a firm across the different stages of the value chain. Additionally, the context for the research, food firms, is under-represented in research on the emerging open innovation paradigm.

Keywords: Open innovation; Innovation value chain; Irish food firms

Chapter 1

Introduction

1 INTRODUCTION

1.1 Research Background

Innovation

This study explores openness in the innovation process in Irish food firms. Innovation may well be regarded as the single most important activity for organizations, owing to the potential benefits that can be accrued by practicing it (Ahmed and Shepherd 2010). It follows logically that the greater the variety of available ideas, skills and resources, the more there are possibilities of producing advanced and sophisticated innovations (Fagerberg et al. 2005). Consequently, as an emerging innovation management paradigm, open innovation is regarded as a way to enhance the innovation capabilities of firms.

Innovation is an important tool for the functioning of firms in different industries and in the last century almost all economic growth can be drawn back to innovation (Baumol 2002). There are a number of definitions of innovation but Peter Drucker, one of the most influential authors in this area, defines innovation as a ‘change that creates a new dimension of performance.’ Innovation may involve developing new products, new methods of production, new sources of supply, the exploitation of new markets, or new ways to organize business (Schumpeter 1934). It may be absolutely new, so called radical innovation, or it may be an incremental innovation that is an adaptation of an existing product or way of functioning. Innovation can be regarded as the core process within an organization associated with its rejuvenation; it renews what the company offers and how it creates and delivers that offering (Tidd et al. 2001).

However, it has also long been recognised that innovation is a complex, uncertain process that is often disorderly and is subject to changes (Kline and Rosenberg 1986). This complexity makes it challenging for managers to manage it and for scholars to understand it. Tidd (2001) noted that several decades of research into innovation management have not been able to outline clear and consistent findings and coherent advice for managers. The recent changes in the way innovation is being practiced, with its opening up and increasingly collaborative nature, the need for exploring the innovation process has become even more important.

Traditionally, R&D was conducted internally within organizations. Firms engaged in developing their innovation capabilities with utmost care so as not to display any

knowledge or company secrets to people outside of the firm (Ahlstrom 2010). There were only few exceptions to this, when collaborations in industries occurred for technology transactions (Lichtenthaler and Ernst 2012). In recent times however organizations have started to interact more with people outside of the organization for innovation purposes with the aim of leveraging shared resources and skills in the case of collaborative innovations (Athreye and Cantwell 2007). This further advances the need for understanding the innovation process and exploring the extent of openness in the innovation process.

Open Innovation

The need to collaborate with external partners in innovation is significantly underlined by increasing globalization. This development has resulted in increased competition, increased mobility of skilled workers and, consequently, shorter product life cycles, smaller profit margins and higher risks (Chesbrough 2003). He argues that in order to meet these challenges, firms must specialize in one domain, spread the risks and develop new products and services quickly and on an efficient scale by way of collaborations. As a consequence of this specialization, firms on the one hand need to rely on the input from other companies in order to discover new combinations. While on the other hand they have to become more attractive to external partners, for their specialized know-how, technology, efficient production scale and brand names. This 'mutual attraction' can lead to the development of new products, services or markets collaboratively, by firms making use of each other's know-how, technology, licenses, brands or market channels. This phenomenon of increasingly networked process of innovation in which companies profit from external knowledge is called 'open innovation', a paradigm that assumes that organizations can and should combine internal ideas, external ideas and paths to market, as organizations look to advance their technologies (Chesbrough 2003).

Advantages of this strategy are that firms can make use of pooled human resources, technology and customer information. These can result in speeding up the innovation process, spreading the risk of innovation failure, reducing the costs of technological development or market entry and improving the achievement of economies of scale in production (Parkhe 1991, Ring and Van de Ven 1994, Tidd et al. 2001, Rigby and Zook 2002). Additionally, other important organizational benefits can result from the exposure to external sources of technology, such as in-house researchers are challenged with new ideas and different perspectives, an element of 'peer review'

for the internal R&D function is introduced, which can result in development of new knowledge and creation of synergistic solutions (Tidd et al. 2001, Hardy et al. 2003).

The concept of open innovation is fast emerging as a key determinant of competitive advantage of firms (Chesbrough 2003, Chesbrough and Crowther 2006). In the decade since the term was coined by Henry Chesbrough in his book, 'Open Innovation: The New Imperative for Creating and Profiling from Technology', open innovation has become one of the key research topics in innovation management (Huizingh 2011). However, despite this scholarly interest, the understanding of how firms practice open innovation is under-developed. While studies widely acknowledge the positive outcomes of practicing open innovation, research on the way firms practice it and the extent to which they are open in their innovation activities is still developing (Enkel et al. 2009, Van de Vrande et al. 2009), however its scope to date has been limited. A more comprehensive understanding of the process of innovation, as firms open up is required to benefit from the concept, including a better understanding of the 'why' and the 'how' of practicing open innovation. Moreover, owing to the complexity of the innovation process, the extent of openness in innovating needs to be analysed individually at each stage of the innovation process.

This study explores the innovation process in firms and examines the extent to which the innovation processes are open. This includes a focus on the understanding firms have about opening up their innovation process; the way innovation is structured and managed; the interactions firms have with external parties for their innovations and variations in these interactions as the innovation progresses. Hansen and Birkenshaw's (2007) innovation value chain (IVC) framework is used in this study to analyse each stage of the innovation process.

By exploring the innovation process and by examining the extent of openness of the different stages of an innovation from conceptualization to commercialization this study seeks to develop insights on how organizations can benefit from the emerging open innovation management paradigm. In doing this the study aligns with Ireland's national ambition of developing as a smart economy on the basis of creativity, collaboration and innovation.

1.2 The Research Objective

The objective of this study is to explore the innovation process in firms, with a specific focus on the extent to which these processes are open.

The objective is studied by first exploring in a number of firms how the innovation process is organized and managed? The approach taken is to study a significant innovation identified by the respondents without a probe, seeking to identify an open innovation. The organization and management of the innovation process in firms is studied in terms of, setting up of innovation objectives, formation of innovation teams, resource allocation, involvement of senior managers, and the internal and external interactions firms engage in for their innovations.

Second, the extent to which the innovation process is open is explored in terms of the IVC. Innovation being a complex, uncertain and somewhat disorderly concept, must be viewed as a series of changes in a complete system (Kline and Rosenberg 1986). Doran and O'Leary (2011) suggest that the IVC captures this systemic nature of the innovation process and highlights its structure and complexity. Hansen and Birkinshaw's (2007) IVC framework is therefore utilized in this study to explore the extent to which the innovation process is open in firms. Focusing individually on each stage of the innovation process from conceptualization to commercialization as the innovation advances this study explores if internal and external interactions take place during the innovation process; the extent of these interactions and the variations if any during the different phases of the IVC as the innovation progresses?

This research objective and questions are explored in the context of Irish food firms.

1.3 The Research Context

The context of this study is the Food and Beverage industry in Ireland. With the aim to focus open innovation research in a non-high tech sector, Ireland's largest indigenous industry, the food and beverage sector is selected for this study

1.3.1 Importance of Innovation in the Irish Context

Recent reports from the Irish government repeatedly assert that research and innovation are of major importance given their potential role in contributing to economic recovery, competitiveness and growth. According to these reports, research and innovation are the key determinants for Ireland's success as they help deliver jobs, prosperity, quality of life and global public goods. They generate the scientific and technological breakthroughs needed to tackle the urgent challenges facing society, and investment in this area also leads to business opportunities by creating innovative

products and services. Recognizing research and innovation as the key to economic recovery the government has placed it at the centre of its 2020 strategy to promote smart, sustainable and inclusive growth.

Government reports like EU Framework Programme for Research and Innovation: Ireland's Strategy and Target for Participation (2014-2020) (Horizon 2020); Sharing our Future: Ireland 2025 (2009) and Strategy for Science, Technology and Innovation 2006-2013 (2006) outline Ireland's ambition to become a leader in innovation. With the goal of developing an innovation-driven economy that maintains competitive advantage and increases productivity, the Government recognises the value that investment in research, development and innovation represents. This is clearly reflected in the Social Partnership Agreement, towards 2016, and in the current Programme for Government. The National Development Plan 2007–2013 (NDP 2007) and the Strategy for Science, Technology and Innovation 2006–2013 (2006) detailed the Government's orientations in relation to science, technology and innovation and the mechanisms for achieving them.

Building Ireland's Smart Economy: A Framework for Sustainable Economic Renewal (2008) emphasises the Irish governments' focus on building Ireland as a 'Smart Economy', it outlines that –

“A key feature of this approach is building the innovation or ‘ideas’ component of the economy through the utilisation of human capital - the knowledge, skills and creativity of people - and its ability and effectiveness in translating ideas into valuable processes, products and services.” (2008, p.7)

To facilitate the development of Ireland as a smart economy, the government in 2009 appointed an 'Innovation Taskforce'. The Innovation Taskforce suggested the requirements for transitioning into a smart economy –

“What we need to do now is to place innovation at the heart of enterprise policy. Our future economic success depends on increasing levels of innovation across all aspects of Irish enterprise – from large Irish-owned multinationals to foreign multinationals located here to established Small and Medium Enterprises (SMEs) in services and manufacturing, as well as start-ups and existing companies with high growth potential.” (Report of the Innovation Taskforce 2010, p.2)

The government also recognizes that collaboration and co-operation between firms is a fertile source of innovation. Focus and efficiencies that deliver a competitive

edge can be achieved by networks of firms, public institutions and educational institutions. The government therefore increasingly directs its policies towards stimulating and supporting networks of enterprises and other innovative forms of collaboration, both domestically and transnationally. Enterprise Ireland (EI), the government's development body responsible for the development and growth of Irish enterprises in world markets, through its Industry-Led Networks programmes, provides funding for industry-led networks undertaking collaborative projects that contribute in some way to national economic objectives. Another body, Inter Trade Ireland helps coordinate and develop all-island business networks in sectors that are considered to be especially important for future economic growth, such as the health/biotechnology, food, software, polymer and plastics sectors.

It can be concluded from the Irish innovation context that the government's agenda is focused on innovation and it is likely to remain a national priority. As innovation is a top priority for both businesses and state, research should seek to advance the understanding of innovation and offer practical insight that may enhance the innovation performance of firms. The objective of this thesis, to explore the innovation process and the extent to which these processes are open is thus relevant to both practitioners and policy makers.

1.3.2 The Food and Beverage Industry in Ireland

The food and beverage industry is Ireland's largest indigenous industry in terms of its impact on the economy. The sector's gross annual turnover approaches €22b. While it directly employs over 45,000 on a fulltime basis, when account is taken of agriculture and ancillary employment, approximately 230,000 are dependent on the sector. There are about 1,000 food companies in Ireland, of which over 90% are small and medium sized enterprises (SME). The industry exports to over 170 markets worldwide, with 85% of the agriculture output in processed form, and worth over €8b. With a greater regional spread than other manufacturing industries, the sector accounts for approximately 10% of Ireland's GDP (Food Research Ireland: Meeting the needs of Ireland's food sector to 2020 through research and innovation- Department of Agriculture, Food and the Marine).

In its report, entitled *Sharing our Future: Ireland 2025*, (2009) Forfás (Ireland's policy advisory board for enterprise, trade, science, technology and innovation) identifies the Irish food and drink industry as the key sector offering growth potential,

strengthened by scientific and technological developments. Furthermore, the report points out that, the Irish agri-food industry will continue to be of significant strategic relevance to the national economy.

The importance of the food and drinks sector in establishing Ireland as a Smart economy is also emphasised in Building Ireland's Smart Economy – A Framework for Sustainable Economic Renewal (2008). The report outlines that as an indigenous, export orientated sector the development of food industry at all levels as a more competitive, innovative, and sustainable sector focused on the market place and modern consumer needs, will fit well with the vision of an innovative, environmentally friendly smart economy.

Owing to its impact on the economy, the sector enjoys increasing government policy attention. A total of €5,922b was spent on Science, Technology and Innovation over the course of the National Development Plan (2007–2013), while within this figure, €641m (11%) was allocated to the Agri-Food Research Programme (www.fdi.ie). The main funding bodies for this food research investment are Enterprise Ireland, the Department of Agriculture, Fisheries and Food (DAFF), Science Foundation Ireland (SFI), the Marine Institute (MI) and the Health Research Board (HRB). Food R&D investment has increased steadily over the last 5 years and this includes funding for Teagasc research activities (including capital expenditure on an animal science centre, functional food laboratories, clinical trials facility and nutraceutical research facility) and competitive research programmes like FIRM (Food Institutional Research Measure). These public research organisations investments have heightened the national research base and increased the facilities infrastructure for food research (Enterprise Ireland- Food Research Map 2009).

Enterprise Ireland, the largest investor in commercially focussed and industry linked food R&D, promotes industry collaborative programmes such as Innovation Partnerships, Industry-Led Research Programmes and Competence Centre initiatives. Industry cluster and market led research are supported by the latter two initiatives. Innovation Vouchers, European Framework and Global Partnering are other strategies used to support company innovation. Enterprise Ireland also provides direct funding to academia to develop commercially focussed technologies through the Applied Research Enhancement and Commercialisation Fund.

The potential of the sector depends on continued commitment by companies to research, development and innovation. To prosper and develop in the coming decade,

the Irish food and drink industry must itself become ‘smart’ emphasises the Food Harvest 2020 report. This involves developing new working relationships in the food chain, channelling new product streams, directing its resources at new markets and augmenting levels of productivity and competitiveness. The report further suggests that strong, dynamic linkages with public research organisations and sophisticated technology transfer would be fundamental to continuing an innovative environment and improving competitiveness of the sector. If the sector is working towards getting smart, it must invest in ideas, knowledge and skills, encourage innovation and creativity, and recognise new opportunities for collaboration across the food supply chain and with other competitors.

1.4 The Research Methodology

The study uses data from two sources to develop a detailed understanding of openness in innovation in Irish food firms – CIS data and interview data.

Firstly, Eurostat Community Innovation Survey (CIS) 2008 data for Ireland was used to study innovation in Ireland and the scope of open innovation activities practiced by Irish firms. Primarily focusing on the food sector and on the collaborations firms engage in when innovating, the CIS data was used to analyse the objectives Irish firms have when carrying out innovation; the innovation activities they engage in, such as engagement in internal R&D, engagement in external R&D, purchasing or licencing of external knowledge and product or process innovation; the external partners they cooperate with, namely, other enterprises within your enterprise group, suppliers of equipment, components or software; clients or customers, competitors or other enterprise in your sector, consultants, commercial labs or private R&D institutes, universities or other higher education institutions, government or public research institutes; and their innovation output and extent of openness.

Secondly, in order to further examine the innovation process in firms and to study the extent to which these processes are open, semi structured interviews about a significant innovation in eight firms from the food sector in Ireland were conducted. The firms were grouped as medium-sized (Revenue €50m to €500m) and large (Revenue above €500m), four falling in each category. Eighteen interviews with multiple senior managers in the eight firms were conducted face-to-face or, in one instance by telephone. The interviewees were senior as they held roles such as CEO, R&D Manager, Marketing Manager or Innovation Manager.

The semi structured interviews were framed around the concepts identified in the literature. The interviews comprised of two elements. First, the participants were asked to identify a significant innovation that had occurred in their organization. The first section of the interview focused on gathering information about this innovation in terms of how it occurred, was developed and implemented, how it was managed and how exchange/flow of knowledge occurred with internal as well as parties external to the organization. The second section of the interview focused on getting information more generally about how firms managed and measured the effectiveness of their innovation. The interviews were recorded and transcribed and additional information about the firms was collected from the company websites and press releases. The analysis of the interview data was done using template analysis technique. Based on the research objective, interview guide and an initial reading of the transcripts, a template was developed representing themes identified in the data. The IVC framework defined the template structure, as it comprises an end to end view of the innovation activities involved in the process, namely: accessing and creating knowledge, building innovation and commercializing those innovations (Hansen and Birkinshaw 2007). Analysis of data was done using the coding technique. Comparable descriptions and common terminologies were identified and coded through the data. Detailed analysis of each of the broad themes was performed so as to identify successively narrower, more specific categories within each theme. This initial template was then applied to the whole data set, and altered in the light of consideration of each transcript. The template served as the basis for interpretation of the data set, and for the writing-up of the cases.

1.5 Findings

Management of Innovation

The study finds that innovation is practiced in a structured manner in the Irish food firms. Firms employ techniques like setting up of innovation objectives, allocation of budget for innovation purposes, formation of designated innovation teams, regular cross departmental meetings and brain storming sessions, and measuring the effectiveness of their innovations for efficient management of the activity.

The key objective Irish firms have for practicing innovation is improving the quality of their goods and services. More firms practice internal R&D than external R&D or purchasing or licencing external knowledge with food firms being the most active in this regard across sectors.

The study shows that while the range of innovation objectives of firms is broad, the manner in which firms measure innovation effectiveness is mainly in terms of sales achieved.

The study highlights that though innovation is approached as a common activity at the firms, the onus of carrying it out and managing it lies primarily on the marketing department.

Extent of Openness

In terms of external interactions that the firms engage in, the study reveals that firms generally collaborate with 1-3 external partners for innovation, suppliers being the most common collaboration partner followed by customers. Competitors are the least preferred co-operation partner choice and these patterns are consistent across sectors in Ireland.

Measured by level of interactions with external parties, the extent of openness is highest for food firms across sectors in Ireland and is primarily inbound. The study also finds that firms with greater extent of openness can be expected to have high product innovation output.

The study indicates that Irish food firms are selectively open, as interactions take place at all stages of the IVC as the innovation evolves from conceptualization to commercialization but the nature and extent of these interactions vary at the different stages of the IVC. The study illustrates that the first stage is the most interactive stage or open stage of the innovation process. The development or the conversion stage is marked by minimum interactions, as competitive threat limits the openness at this stage of the innovation process. At the diffusion stage interactions are primarily limited to engagements with customers.

The study also reveals that managers regard external interactions for market orientation as synonymous with being open in their innovation processes; and the relative low level of openness in the innovation process is reflective of managerial perceptions about the activity of open interactions for innovation activities.

As prior studies argue that the motivation with which firms practice innovation varies across firms (Brown and Eisenhardt 1995); this study finds that different firms have different notions about the concept of open innovation. While interacting across their supply chain is regarded as being open by some, others do not consider it as being open unless it is coupled with an open innovation strategy.

With regard to the process of adoption the study finds that the smaller firms that were part of the research, practice open innovations on an ad hoc basis while the larger

firms more consciously practice open innovation activities. Nonetheless, Irish food firms in general are more inclined towards practicing inbound open innovation than the outflow of knowledge from the organization.

Overall, the study indicates that firms are selectively open and follow a similar pattern of innovation process, progressing through idea generation, development and launch stages with varying nature and extent of interactions through these stages; manage the activity by setting objectives, by forming teams, allocating budgets, measuring innovation effectiveness and by frequent internal and limited external interactions. In terms of the extent of openness of the innovation process, the study shows that in the Irish food firms, the extent of openness is contingent on managerial perceptions of open innovation and the stage of the innovation process as the innovation develops.

1.6 Contributions

This study makes a number of contributions to the innovation literature. First, the study contributes to existing research that has sought to measure the extent of open innovation in Irish firms by showing that as measured by the level of interactions with external parties the extent of openness in Irish firms is low; that Irish firms practice inbound more than outbound open innovation; and Irish firms collaborate mostly with suppliers and customers. Even though the level of open innovation is low, the data suggests a positive relationship between openness and the product innovation output. Relative to other sectors the extent of openness is highest for the food sector, though the number of external partners is still very low.

Second, while extant literature tends to discuss innovation processes as either being open or closed, this study shows that interactions with external parties can vary within a firm at different stages of innovation. Using the IVC this study shows that the extent of openness of the innovation process varies within a firm across the different stages of the value chain. This has implications for how open innovation is researched and for how organisations implement open innovation. For example, managers may need to vary how they seek to open the innovation process by stage of the innovation value chain.

Third, this study contributes to research that seeks to explain the adoption, and particularly the slow adoption and barriers to adoption, of open innovation practices in firms. This study highlights how managerial perceptions of external competitive threats

limit the extent to which firms open up of their innovation activities. This finding may extend the existing explanation of why firms may not engage in some open innovation practices. This study shows that extent of openness of the innovation process in the Irish food firms does not just depend on the stage of the innovation process within the firm but that it is also contingent on the perceptions managers have about the risks associated with open innovation.

Fourth, this study contributes to the study of open innovation by exploring how the concept of open innovation relates to the concept of market orientation. Notwithstanding arguments that open innovation is ‘old wine in new bottles’, the literature on open innovation has emerged largely independent of extant research in the marketing field. Extant marketing literature details how firms interact with external organisations such as suppliers, customers, manufacturers, to get market information. While discussing the depth and breadth of open innovation, the open innovation literature also outlines suppliers and customers as collaboration partners in practicing open innovation. This study finds that some firms are market driven and that they engage in external interactions mainly to gather market insights to inform their innovations. In doing so as firms interact with parties outside of their organization, managers regard market orientated external interactions as synonymous with openness in their innovation process. Thus by exploring how the concept of open innovation overlaps with the existing concept of market orientation, the study contributes to the open innovation literature by showing that the market orientation concept can be regarded as an indicators of openness in the innovation process.

Fifth, the context for the study, a non-high-tech sector, contributes to work that seeks to extend research on open innovation into new contexts. The development of the open innovation paradigm has drawn heavily on research done in specific contexts, however as Huizingh (2011) argues all lessons cannot be learnt from early adopters and therefore this study by developing an emerging work on open innovation in a new sector contributes to the open innovation literature.

1.7 Structure of the Thesis

The thesis comprises of eight chapters. Following this chapter, Chapter 2 outlines the literature on innovation and open innovation, focusing on aspects relevant to the practice and management of innovation and open innovation activities. In Chapter 3, the methodology employed in the study is described, outlining the philosophy underpinning the research and detailing how the research was undertaken. Chapter 4 analyses innovation in

Ireland using the CIS data and the findings present an overview of innovation in Ireland. Chapter 5 details the interview data of each of the eight firms studied. Using the interview data Chapter 6 analyses innovation in Irish food firms for the management of the innovation process and the extent to which the process is open in firms and presents findings. Chapter 7 discusses the findings of the study in the context of existing literature. Finally, Chapter 8 sets out the contributions and limitations of the study, the suggestions for future research and policy and managerial implications.

Chapter 2

Review of Literature

2 REVIEW OF LITERATURE

2.1 Introduction

Open innovation has emerged as the new innovation management paradigm that is increasingly impacting the way innovation is practiced. To build an understanding of the concept, a detailed review of the literature was conducted. This chapter outlines the existing body of knowledge on open innovation beginning with a discussion of the concept of innovation (Section 2.2), factors leading to opening up of the innovation process (Section 2.3), and a discussion of the concept of open innovation (Section 2.4). The themes and empirical focus of open innovation research outlining the research gap are then detailed in Section 2.5, leading into a discussion of the management of innovation (Section 2.6) and extent of openness of the innovation process (Section 2.7). Lastly, section 2.8 outlines the conclusion.

2.2 What is Innovation?

The term innovation hasn't lost lustre ever since it was coined by the Austrian economist, Joseph Schumpeter, in his book *The Theory of Economic Development* in 1912. He defined innovation as the creation of new combinations (Schumpeter 1934). It may involve new products, new methods of production, new processes, new sources of supply, exploitation of new market opportunities, or new ways of organizing and conducting business.

As a multidimensional, complex process, innovation has been studied by scholars from several academic disciplines and from various perspectives. At the operational level innovation essentially can be differentiated as product/service, process, marketing or organizational. These categories are defined as follows: Product/service innovation is the introduction of a good or service that is new or significantly improved with respect to its characteristics or intended uses (Oslo Manual, 2005). These may involve significant improvements in technical specifications, components and materials, incorporated software, user friendliness or other functional characteristics. Significant changes in how they are provided (like, improved efficiency or speed), addition of new functions or characteristics to existing services, or the introduction of entirely new services can be included as product innovations in services.

Process innovation is the implementation of a new or significantly improved production or delivery method. These may involve significant changes in techniques, equipment and/or software. Process innovations can be intended to decrease unit costs of production or delivery, to increase quality, or to produce or deliver new or significantly improved products. A marketing innovation is the implementation of a new marketing method involving significant changes in product design or packaging, product placement, product promotion or pricing. It is basically aimed at better addressing customer needs, opening up new markets, or newly positioning a firm's product on the market, with the objective of increasing the firm's sales. And finally, an organisational innovation is the implementation of a new organisational method in the firm's business practices, workplace organisation or external relations. Organisational innovations can be intended to increase a firm's performance by reducing administrative costs or transaction costs, improving workplace satisfaction (and thus labour productivity), gaining access to non-tradable assets (such as non-codified external knowledge) or reducing costs of supplies.

These different kinds of innovations may take two basic forms, either formation of an absolutely new innovation based on some form of breakthrough knowledge creation, called radical innovation or alternatively upgrading or improvements of an existing product, process or situation, referred to as incremental innovation.

Radical innovation are ground breaking, discontinuous, disruptive changes (Dewar and Dutton 1986, Nord and Tucker 1987). Discussing their importance Tushman and Anderson (1986), Christensen (1997) argue that for long-term organizational success radical innovation is critical. While, Foster (1986) and Utterback (1994) indicate that to keep companies competitive incremental innovation is important. Herbig (1994) differentiates incremental innovations into three types: continuous, modified, and process. Continuous innovations comprise of augmented changes to products, such as the extension of a product line; modified innovations constitute a little more disruptive innovations like introducing an advanced version of a new technology such as updated computer software; and process innovations involve improvements in the way an existing product is produced.

Tushman and O'Reilly (1996) suggest that overall, for improving the performance of established products sustaining technologies are needed, while to bring to the market a very different value proposition disruptive technologies are required or in other words

revolutionary changes in the markets are brought about by disruptive innovation while sustaining innovation leads to incremental changes.

Engaging in new idea-generation and experimentation, or innovativeness is associated with performance and drives the long-term economic development, because it is the channel for applying improved knowledge to economic processes. It drives the growth and prosperity of commercial companies through performance improvements in products, processes, services and systems and is fast becoming the core for the wellbeing of societies. Whether radical novelty or incremental change, innovation has become one of the most significant competitive drivers in many industries and for the wider growth of the economy. However, innovation is not costless, it requires resource commitment and to underpin productivity and growth, investments in both tangible and intangible innovation assets – such as research, training, intellectual property, organisational and managerial abilities.

Traditionally, firms have focused on building these capabilities and developing new technologies for their own products internally (Ahlstrom 2010, March 1991). Thus, most companies pursued relatively ‘closed’ innovation strategies, i.e. having a very limited interaction with the outside environment (Lichtenthaler 2011). This scenario, however, has begun to change in the recent decades with the movement of new products and technical ideas from inventors, universities or research institutes to buyers. Extant literature shows that similar development is being observed in technology exploitation (Athreye and Cantwell 2007, Mendi 2007). Gambardella et al. (2007) argue that firms have actively started commercialization activities outside their own boundaries. In this context of increasing technology and knowledge transfer between firms, Henry Chesbrough coined the term ‘open innovation’ to distinguish this burgeoning trend from the traditional closed innovation strategies (Chesbrough 2003).

2.3 Why is Open Innovation Becoming Prevalent?

Porter and Stern (2001) argue that because of the rapid expansion of knowledge and formation of clusters of highly specialized knowledge that are dispersed globally, the relevance of external sourcing of knowledge and innovation has increased. With evolving communication and information technologies distances between actors in the innovation processes have been blurred and customers and suppliers have become integrated into the design and development process.

This practice of innovation activities as a more open and collaborative approach is shaped by many forces. Some of the key external drivers can be identified as:

a. Globalization - Increased market homogeneity across different countries due to greater mobility of capital, lower logistics costs and efficient communication and information technologies is globalization. Globalization not only lowers entry barriers by reducing cost pressures for international entrants but also provides innovative organizations with competitive advantages. It thus encourages firms to favour and practice open innovation for achieving economies of scale swiftly (Gassmann 2006).

b. Technology intensity - Technology intensity in most industries is rapidly increasing, rendering even the large and highly innovative companies incapable of developing advanced technologies on their own or of exploiting them alone due to the lack of financing. Miotti and Sachwald (2003) suggest that this is resulting in organizations showing greater propensity to co-operate, and utilize external sourcing to support product development.

c. Technology fusion - Industry borders are shifting or even disappearing and research is increasingly becoming inter-disciplinary (for example, IBM holds 8th rank in being the world's largest holder of biotechnology patents). The capabilities of a single organization may be insufficient to meet the technology requirements for innovations. Open innovation practices are thus being favoured by organizations to provide successful innovations.

d. New business models - New business opportunities arise because of rapidly shifting industry and technology borders. More and more alliances are formed for sharing risks, lowering costs and pooling complementary competencies (for example, Vodafone – Swisscom, Sony – Ericsson or Sony – BMG). Companies also tend to source technologies that fit their business models thus are practicing open innovation for realization of synergies (Gassmann 2006).

e. Knowledge leveraging – One of the most important asset or resource of firms is its knowledge. However, over the last decades mobility of knowledge or the diffusion of knowledge for mutual benefits of organizations has increased, facilitated by ever advancing communication and information technologies. Companies are opening up

and acting as knowledge brokers and utilizing the best of the talents in the world rather than looking for hiring them (Gassmann 2006).

2.4 The Concept of Open Innovation

The inception of the concept of openness emerged from the observation that a single organization does not innovate in isolation. Organizations have to engage with different partners in its ecosystem to exchange ideas, resources and technical expertise so as to stay abreast of competition (Dahlander and Gann 2010). The term was coined by Henry Chesbrough (2003) in his book, 'Open Innovation: The New Imperative for Creating and Profiting from Technology' and since then academic work on this concept has emerged.

In defining openness, Chesbrough (2003) argues that open innovation is about harnessing the inbound and outbound flows of ideas, technology and skills across a firm's boundaries (which are channelled through its multiple inter-organizational links), with the intent of accelerating internal innovation processes and establishing additional, external paths for the commercialisation of their outcomes. It is argued that permeability of the boundaries between a firm and its environment are increasing; innovations can easily move inward and outward, thus open innovation is a paradigm that assumes that firms can and should use external ideas as well as internal ideas, and internal and external paths to market, as firms look to advance their technology (Chesbrough 2003a).

There are a number of different definitions of open innovation. These are summarised in Table 2.1 A review of the definitions highlight that the central idea behind open innovation is that in a world of widely distributed knowledge, companies cannot afford to rely entirely on their own research, but should instead buy or license processes or inventions (e.g. patents) from other companies. In addition, internal inventions not being used in a firm's business should be taken outside the company (e.g. through licensing, joint ventures or spin-offs).

The premise of the traditional closed innovation was that successful innovation requires control. In his approach, Chesbrough (2003b) argues that closed / traditional internal innovation is no longer a strategic asset. Due to increased complexity of products and technologies, companies cannot carry out innovation on their own and remain competitive (Chesbrough 2003b). Chesbrough and Appleyard (2007) argue that ownership, entry barriers, switching costs, and intra-industry rivalry are important

Table 2.1: Definitions of open innovation found in the existing literature

Definition	Author	Year
Open Innovation is a paradigm that assumes that firms can and should use external ideas as well as internal ideas, and internal and external paths to market, as the firms look to advance their technology. Open Innovation combines internal and external ideas into architectures and systems whose requirements are defined by a business model.	Chesbrough	2003
Open innovation is the use of purposive inflows and outflows of knowledge to accelerate internal innovation, and expand the markets for external use of innovation, respectively. [This paradigm] assumes that firms can and should use external ideas as well as internal ideas, and internal and external paths to market, as they look to advance their technology.	Chesbrough et al.	2006
Open innovation is described as both a set of practices for profiting from innovation and a cognitive model for creating, interpreting and researching those practices.	West et al.	2006
Open innovation is defined as systematically encouraging and exploring a wide range of internal and external sources for innovation opportunities, consciously integrating that exploration with firms capabilities and resources and broadly exploiting those opportunities through multiple channels	West and Gallagher	2006
Openness is defined as the number of different sources of external knowledge that each firm draws upon in its innovative activities. (2004:1204).	Laursen and Salter	2006
Open innovation is defined as systematically performing knowledge exploration, retention, and exploitation inside and outside an organization's boundaries throughout the innovation process.	Lichtenthaler	2011

aspects in closed innovation where R&D is done inside the steady boundaries of the firm. In contrast, boundaries of firms are permeable, in the open innovation model firms can use external ideas to produce goods and even harness benefits from unused ideas by selling them to other firms. Furthermore, insights emerging from analysis of the globalization of innovation, outsourcing of R&D, user innovation, supplier integration and external commercialization of technology have been included in open innovation, which makes open innovation more available and attractive (Gassmann 2006). How Chesbrough contrasts the principles of the two innovation models is presented in Table 2.2.

Table 2.2: Contrasting principles of closed and open innovation

Closed Innovation Principles	Open Innovation Principles
The smart people in our field work for us.	Not all of the smart people work for us so we must find and tap into the knowledge and expertise of bright individuals outside our company.
To profit from R&D, we must discover, develop and ship it ourselves	External R&D can create significant value; internal R&D is needed to claim some portion of that value.
If we discover it ourselves, we will get it to market first.	We don't have to originate the research in order to profit from it.
If we are the first to commercialize an innovation, we will win	Building a better business model is better than getting to market first.
If we create the most and best ideas in the industry, we will win	If we make the best use of internal and external ideas, we will win.
We should control our intellectual property (IP) so that our competitors don't profit from our ideas	We should profit from others' use of our IP, and we should buy others' IP whenever it advances our own business model.

Source: Chesbrough 2003, p26

Underlining the importance of Chesbrough's studies other authors talk about the concept of open innovation. For example Enkel and Gassmann (2007) suggest that permeability of the organization is the main characteristic of open innovation, meaning that the process of innovation may not necessarily take place within the

boundaries of the firm rather it is distributed among a larger number of actors. As company structures focus more towards utilization of internal sources of ideas and competence, than external sources, Gassmann et al. (2006) propose extreme programming to open up the innovation process.

Christensen et al. (2005) discuss the concept of open innovation in the context of industrial dynamics and suggest that based on the position in the innovation system; stage of maturity; and the value proposition firms manage their open innovation activities with regard to an emerging technology.

Vanhaverbeke and Cloudt (2006) focuses on implementation of open innovation strategies in larger networks. He suggests that value is never created alone; it needs a network of suppliers, buyers and partners. He argues that increasing R&D costs, increasing complexities and risks, shorter technology life cycles, burgeoning knowledge in universities and more knowledgeable users and suppliers are all potential reasons for seeking partners in innovation. He thus suggests that 'analysis of inter-organizational networks in general and value constellations (inter-organizational networks that create value together based on new business models) in particular reveals that research about open innovation should be multi-layered.

The importance of intellectual property and its protection in context of open innovation is discussed by West (2006). He argues that a higher appropriability or a higher quality of being reproducible is achieved by an organization by protecting its intellectual properties, meaning that it becomes more difficult for competitors to copy the technologies and products thus making them more valuable for its owners. He thus focuses on exploring how companies that transform their intellectual properties into public goods or those that have open source strategies create value.

Intellectual property aspects as well as costs incurred in utilizing knowledge from external sources are referred to as negative impacts on the feasibility of open innovation by Keupp and Gassmann (2009). Investigating reasons as to why excessive open innovation can impact a firm's performance negatively Koput (1997) suggested that too many ideas may become difficult for a firm to manage, or ideas may come in the wrong place at the wrong time to be completely exploited or it may be that due to the excess of ideas, not all ideas are given the required attention to

bring them into implementation. Similar pattern of diminishing returns were also suggested by Sarkar and Costa (2008) in the food industry.

Hippel's work focuses on finding the balance between completely closed and open innovation strategies. He emphasizes the importance of sharing knowledge and still being able to create and extract value from it, by creating a private-collective model of innovation (von Hippel and Von Krogh 2006).

Open Innovation is 'not' new

There is also an argument that open innovation is not a revolutionary concept. When zooming in on a revolution, it often turns out to be more of an evolution, the same is true with open innovation argues Huizingh (2011). There is a growing body of work that highlights that although open innovation has become a much researched topic, gathering considerable attention both within the academic literature and beyond, neither using external inputs for improving internal innovation processes nor seeking commercialization opportunities outside of the firm for internal ideas is new. Many companies have practiced these activities for decades. The idea and discussion dates way back in history, concepts such as absorptive capacity (Cohen and Levinthal 1990), complementary assets (Teece 1986), the exploration versus exploitation discussion (March 1991), customers integration in the innovation process (von Hippel 1986), and the culture studies focused on the not invented here (NIH) syndrome (Katz and Allen 1982), suggest that in a history characterized mostly by open innovation practices it might be that closed innovation is the exception.

Many authors in the innovation management space argue that the open innovation paradigm is nothing new but the repackaging of the concepts and findings that have been in the literature for over forty years (Trott and Hartmann 2009). Like the pioneering work of Alan Pearson and Derek Ball (Pearson et al. 1979) in the field of R&D management as far as 30 years ago has talked about developing an 'open' thinking for innovation. Similarly about 30 years ago Rothwell and Zegveld (1985) proposed the network model of innovation which emphasised the requirement of external linkages in the innovation process. Carter and Williams (1959) showed that the quality of the incoming information was the defining characteristics of technically-progressive firms. Gatekeepers play an important role in managing

external linkages needed for acquiring information and knowledge from outside the organisation (Allen 1970). Additionally previous research has also shown that industrial companies have recognised the importance of information and knowledge beyond their own R&D departments (Allen 1970, Mowery 1983, Cohen and Levinthal 1989). Hence many argue that open innovation has existed and Chesbrough's presentation of the open innovation paradigm is nothing but 'old wine in new bottles' (Trott and Hartmann 2009).

Completely closed innovation was never practiced

For many years the innovation management literature has emphasised interactions (Nonaka 1991) refuting the idea that a completely closed innovation model ever existed. Thomas Allen in the 1960s identified and popularized the concept of gatekeepers who could facilitate interactions and knowledge exchange between scientists within the firm and those outside the firm for improving R&D performance (Allen 1970). Similarly boundary spanners help in collecting and exchanging knowledge and information on behalf of the firm (Tushman 1977).

Since the 1970s strategic alliances or technology partnerships have considerably risen, recognizing that businesses are expanding their view from competing against each other to residing power in sets of firms acting together, displaying the rise of the octopus strategy and the fall of the 'go it alone' strategy (Vyas et al. 1995). These strategic alliances can involve a customer, supplier or even a competitor (Chan and Heide 1993). Even in terms of technology management the most prominent issue in multi-technology corporations has been the external acquisition of technology (Granstrand et al. 1992) and various classification of technology-acquisition strategies can be found in the technology transfer literature (Chesnais 1988, Hagedoorn 1990,). Firms have even been trading intellectual property for decades, a striking example being buying and selling of licences between fierce rivals P&G and Unilever in the 1970s.

2.4.1 The Role of Marketing in the Concept of Open Innovation

For exploiting dispersed knowledge, a collaborative approach to innovation by firms is needed. Consequently, co-operation along both the demand and supply chain for understanding the customers' precise requirements and attempting to provide the

desired satisfaction is needed for firms to benefit from the creativity of customers and other firms (Dyer and Singh 1998, Klein et al. 2007).

Firm innovativeness is about successful implementation of creative ideas, and innovation performance relates to entry and penetration into markets with innovative products and gaining market share. While innovation philosophy holds that products that provide best quality, performance and features are preferred by consumers; to identify the requirements of the target market, and to provide products and services that satisfy these, the marketing philosophy asserts that firms must be oriented towards the market. Harmsen et al. (2000) argue that the interaction between market orientation and research and development drives innovation and a firms' innovativeness i.e its willingness and capacity to innovate, which in turn drives customer acceptance.

The basic premise of market orientation, lies in the 'the marketing concept', which states that accessing the needs and wants of the target markets and offering the desired satisfactions more effectively and efficiently than competitors is required to achieve organizational goals and because the needs and expectations of customers continually evolve over time, delivering high quality products and services requires constant tracking and responsiveness to changing market place needs, i.e. requires being market oriented. More formally, market orientation may be defined as

The organization-wide generation of market intelligence, dissemination of the intelligence across departments and organization-wide responsiveness to it (Kohli and Jaworski 1990)

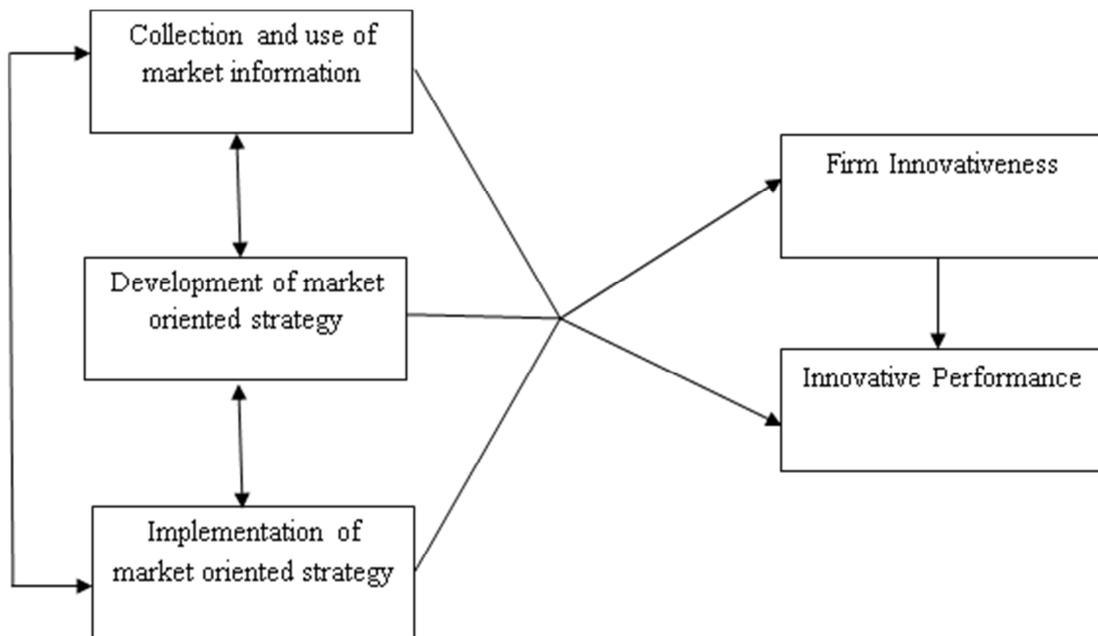
A number of theoretical and empirical studies have used the term market orientation to describe how well organizations co-ordinate for generation, diffusion and reciprocation to market intelligence (Velu et al. 2010). In developing the concept, marketing scholars have referred to the concept as behaviour that helps firms to recognize and respond to changes in the environment and provide customers with superior value (Jaworski and Kohli 1993). While another perspective holds that it is a part of the organization's culture (Narver and Slater 1990).

As per the behavioural definition, market orientation relates to market intelligence generation, which is assessment and collection of customers' requirements and factors influencing them, then diffusion of this intelligence

horizontally and vertically throughout the firm and finally responsiveness to the opportunities (Jaworski and Kohli 1993). The proponents of the cultural definition on the other hand argue that the behaviour is only the manifestation of the organizations' culture and belief system. The operational framework of this definition includes customer orientation, understanding the customers' requirements; competitor orientation, understanding the competitors' strategies; and finally inter-functional co-ordination, which is sharing of the information and resources and responding to the opportunities (Velu et al. 2010). Slater and Narver (1995) suggest that both approaches complement each other in stating that market orientation is valuable as it focuses a firm towards collection of information regarding the customers' demands and competitors' capabilities and processing of this information for generating value for the customers.

The idea of putting the customer first or the phenomenon of market orientation can be traced back to Peter Ducker's statement (1954, p37) that "the purpose of a firm was to create and keep customers – for it is the customer who determines what a business is". Liu et al. (2002) and Webster (1992) hold that along with firm performance and firm innovativeness, market orientation is one of the core aspects of strategic marketing and it enjoys increasing attention from both researchers and practitioners because it is assumed and even reported that market orientation improves organizational performance and does not rely solely on the concept of competitive orientation.

Erdil et al. (2004) have put forward the following model (Figure 2.1) for exploring the interrelationships between market orientation, firm innovativeness and innovation performance.



Source: Erdil et al. 2004, p6

Figure 2.1: Interrelationships between market orientation, firm innovativeness and innovation performance

Through empirical examination based on the above model Erdil et al. (2004) argue that collection and use of market information positively impacts firm innovativeness as well as innovation performance. The development of market-oriented strategy has a positive impact on both firm innovativeness and innovation performance. While implementation of market-oriented strategy only positively impacts firms' innovativeness and not its innovative performance. They also argue that firm innovativeness and innovation performance are positively correlated with each other and that the three dimensions of market orientation namely collection and use of market information, development of market –oriented strategy are mutually correlated. Thus, companies wanting to gain competitive advantage must enhance efforts for collection and use of market information and implementation of market oriented strategy.

As market orientation can lead to firm innovativeness and increase innovation performance and thereby can lead to successful new product development activity, Jaworski and Kohli (1993) suggest that market orientation be incorporated into conceptualizations of innovation process, since it is the platform of the degree to

which firms acquire, disseminate and respond to information obtained from customers, channels and competitors. Moreover, the market orientation focused forward and backward integration in the supply chain promotes firms to engage in external interactions, it can therefore be argued that market orientation not just facilitates innovativeness in firms but also plays a role in opening up of the innovation process in firms.

Conceptualizing the role of market orientation in opening up of the innovation process, Velu et al. (2010) put forward a theoretical model of collaborative market orientation which incorporates: collaborative intelligence generation, collaborative intelligence dissemination and collaborative responsiveness.

a. Collaborative intelligence generation – Generating meaningful market intelligence by way of collective capacity of the ecosystem can be defined as collaborative intelligence generation. Firms must view each other as learning partners because they have the opportunity to learn from each other when they are embedded in an ecosystem. Individually firms may not have all the required resources and skills to understand relevant information but by acting in a cohesive manner they can extend both the depth and the breadth of their market coverage and thus benefit the entire ecosystem.

b. Collaborative intelligence dissemination - Meaningful market intelligence may be generated in one part of the innovation ecosystem and is most likely to be applied most profitably in another. Similarly, market intelligence may be generated at one point in time but utilized at some point in the future. As Hargadon and Sutton (1997, p716) highlight, “ideas from one group might solve the problems of another, but only if connections between existing solutions and problems can be made across the boundaries between them”. Thus matching the demand and supply of market intelligence by bridging the distance between its generation and use, by the collective capacity of the ecosystem can be termed as collaborative intelligence dissemination.

c. Collaborative responsiveness - Collaborative responsiveness is the combined effort of the innovation ecosystem to implement market intelligence for creating superior value for the customers by utilizing the respective strengths of each member.

Outlining that there are two principal benefits of such collaborative networks, Velu et al. (2010) suggest that firms become flexible in transmitting information which in turn facilitates continuous learning and adaptation (Drucker 1993); and it focuses on the complementary nature of the assets in creating value. This could be pooling of common assets for creating scale or trading of different assets for complimenting one another.

Thus, while previous research connects market orientation with innovation, its management (Vasquez et al. 2001, Faleiro 2001) and with performance (Agarwal et al. 2003) further research in exploring its involvement in the opening up of the innovation process is needed, given the rise of collaborative functioning as an increasingly important locus of innovation and competition.

2.4.2 Types of Open Innovation

Broadly speaking open innovation has been classified into inbound and outbound processes, though authors have also identified other categorizations of the types of open innovation.

While the concept of open innovation explicitly suggests moving toward inter organizational innovation processes (Vanhaverbeke et al. 2008), at the same time it also encompasses various internal activities. Inbound open innovation is an outside-in process and includes opening up the innovation process to knowledge exploration, which refers to the acquisition of knowledge from external sources. In contrast, outbound open innovation is an inside-out process and involves opening up the innovation process to knowledge exploitation, which refers to the external commercialization of technological knowledge (Lichtenthaler 2011).

Different organisational modes have been documented in literature through which inbound and outbound open innovation can be put into practice (Grandstrand 2004). Some prevalent organisational modes for inbound open innovation are: in-licensing, minority equity investments, acquisitions, joint ventures, R&D contracts and research funding, purchase of technical and scientific services and non-equity alliances, while for outbound open innovation organizational modes are: licensing out, spinning out of new ventures, sale of innovation projects, joint venture for

technology commercialisation, supply of technical and scientific services, corporate venturing investments and non- equity alliances (Bianchi et al. 2011).

Different combinations of open innovation practices have been used in the literature to develop matrices differentiating various forms of open innovation. For example, Dahlander and Gann (2010) used the dimensions of inbound versus outbound open innovation against pecuniary versus non-pecuniary interactions, as depicted in Table 2.3 below. Elaborating on the matrix they argue that open innovation can be practiced in four ways, it is referred to as acquiring when it is inbound-pecuniary and suggest that following this reasoning openness of firms involving licencing and acquiring outside expertise can be understood. It is sourcing when it is inbound – non-pecuniary, explaining the use of external sources of innovation. Freeman (1974) suggests that corporate R&D laboratories’ accounts reveal that they are instrumental in absorbing external ideas and making them fit with internal processes. It is referred to as selling when it is outbound – pecuniary, explaining how firms commercialize their inventions by selling or licensing out. Finally it is referred to as revealing when it is outbound – non-pecuniary, suggesting, seeking of indirect benefits by the firm by revealing internal resources.

Table 2.3: Structure of different forms of openness

	Inbound Innovation	Outbound Innovation
Pecuniary	Acquiring	Selling
Non-pecuniary	Sourcing	Revealing

Source: Dahlander and Gann 2010, p702

Lichtenthaler and Lichtenthaler (2009) distinguished three knowledge processes, namely knowledge exploration, retention and exploitation that can be performed either internally or externally. They suggest that generation of new knowledge inside the firm is internal knowledge exploration, while external knowledge exploration is the sourcing of knowledge from external partners. Internal knowledge retention is needed to store knowledge over time and external knowledge retention relates to the knowledge maintained in the relationships a firm has. Furthermore, the internal application of knowledge to a firm’ own requirements is

internal knowledge exploitation and the outward transfer of knowledge is the external knowledge exploitation.

Huizingh (2011) argues that both the process and the outcome of innovation can also be categorised as closed or open, thus, open innovation practices can also be grouped by distinguishing between process and outcome, leading to another 2 x2 matrix (Table 2.4). Closed innovation indicates a scenario, where a proprietary innovation is developed in-house (Chesbrough 2003a), suggesting both the process and the outcome being closed. In the private open innovation category the outcome is closed (a proprietary innovation) but the process is opened up, either by externally utilizing internally developed innovations or involving use of input from external partners. In case of the second dimension, the outcome of the innovation process is either proprietary (closed) or available to others (open).

Table 2.4: Various ways of innovation based on the openness of both the process and the outcome of innovation

Innovation Process	Innovation Outcome	
	Closed	Open
Closed	Closed innovation	Public innovation
Open	Private open innovation	Open source innovation

Source: Huizingh 2011, p 3

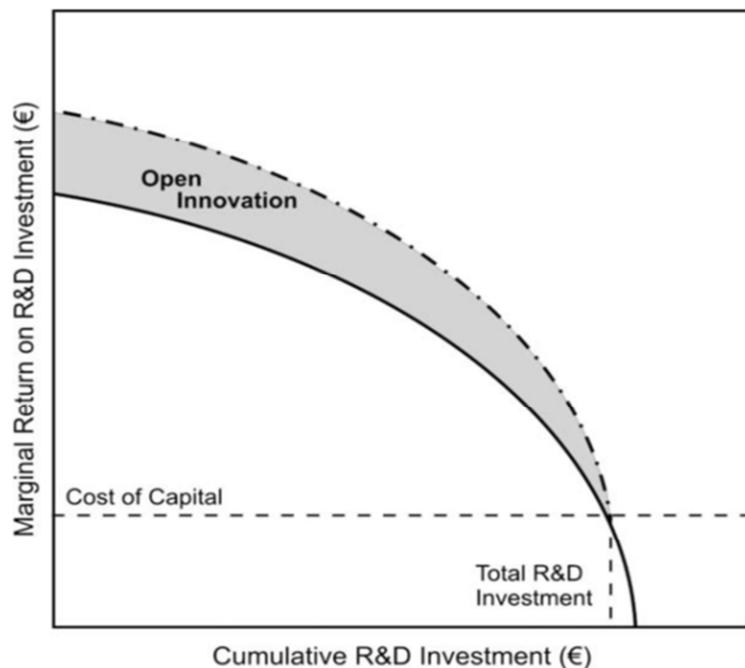
2.4.3 Effectiveness of Open Innovation

A variety of empirical studies have shown that the factors that shape innovative performance are strongly influenced by the level of novelty of the innovation, with the taxonomies of novelty ranging from radical to incremental (Garcia and Calantone 2002). Firms require a considerable investment in R&D for achieving radical innovation and as the rewards are great the chances of success are lower. Radical innovations offer ‘the carrot of spectacular reward’ (Schumpeter 1942). While in contrast, as Marsili and Salter (2005) suggest incremental innovation requires less effort, though bear smaller rewards.

Radical innovation may thus require greater degree of discontinuity in the sources of innovation. Rothwell et al. (1974) and Urban and von Hippel (1988) find

that innovations in early phase of the product life-cycle often come from a narrow range of sources. While in case of incremental innovations when fine tuning the products a variety of innovative sources may be important. Thus basing their argument on these studies and elaborating on the effectiveness of open innovation Laursen and Salter (2006) posit that radical innovators are likely to draw more deeply from external sources of innovation as against the incremental innovators, who are likely to draw more broadly.

A curvilinear relationship between open innovation and performance, indicating that too much open innovation can hurt a firm's performance was found by Laursen and Salter (2006). Intellectual property aspects as well as costs incurred in utilizing knowledge from external sources are referred to as negative impacts on the feasibility of open innovation by Keupp and Gassmann (2009). Similar patterns of diminishing returns were also observed by Sarkar and Costa (2008) in the food industry, who analysed innovation effectiveness by plotting the Return on Investment (ROI) of each R&D project against the cumulative R&D spending in a given period of time, as depicted in Figure 2.2 below.



Source: Sarkar and Costa 2008, p577

Figure 2.2: Open innovation subject to diminishing returns

However, while studies show a curvilinear relationship between open innovation and performance, Cheng and Huizingh (2010) argue that this may be due to a very narrow focus. They propose that effectiveness could be a multi-dimensional frame and argue that the effectiveness of open innovation should be gauged by focusing beyond the obvious consequences of lower costs, shorter time to market and more sales. Effectiveness may involve researching aspects like risk involved, innovativeness, number of innovations and financial and non- financial benefits. Intermediate benefits such as better ways of evaluating the core competences of a company or of measuring the true value of an innovation could also be included in effectiveness studies (Rigby and Zook 2002). Another approach for studying open innovation effectiveness as suggested by Vanhaverbeke et al. (2008) is to identify failure cases and research the disadvantages of open innovation. Yet another approach could be to understand how firms open up their innovation process, their motives for opening up like stimulating growth or for defensive motives like sharing risks or decreasing costs (Huizingh 2011).

2.4.4 Risks of Open Innovation

Cohen and Levinthal (1990), Vanhaverbeke et al. (2002) argue that when firms open up their innovation processes for inward flow of technology they may neglect developing their own critical technological competencies, resulting in dependence on external technology suppliers. Fosfuri (2006), Rivette and Kline (2000) suggest that outward technology transfer may lead to strengthening a firm's competitors because they get to commercialize competitively relevant knowledge. Also to explore external technology, firms need to develop sufficient prior knowledge internally, which may deteriorate a firm's product business because of transferring of critical technology. Thus, not only does open innovation offer major opportunities but also entails considerable risks, keeping many firms from actively opening up their innovation processes.

Lichtenthaler (2009), Rivette and Kline (2000) also suggests that the one of the major barriers to the adoption of open innovation practices in firms are the risks associated with it. They argue that despite the benefits that some pioneering firms have harnessed from practicing open innovation, many other companies are reluctant to open up their innovation processes primarily because of the potential risks of open

innovation, which underlines the potential negative outcomes resulting from opening up the innovation process.

One way of examining the risks associated with engaging in open innovation is to consider risks in terms of the processes of technology exploration, retention, and exploitation (Lichtenthaler and Ernst 2006). Technology exploration, retention, and exploitation were identified by Lichtenthaler and Ernst (2006) as the three critical processes for managing knowledge in the open innovation context. These processes can be organized internally or externally and can be described as: *Internal technology exploration* which is the generation of new knowledge inside the firm (Lin and Chen 2005). While *external technology exploration* referring to sourcing of technology from external partners (van de Vrande et al. 2006) *Internal technology retention* refers to the requirement for storing technological knowledge over time (Díaz-Díaz et al. 2006). While maintaining knowledge in the inter-organizational relationships in a firm is *external technology retention* (Grant and Baden-Fuller 2004). *Internal technology exploitation* is the application of technology internally in a firm's own products (Linton and Walsh 2004). While outward transfers of it like licensing, is the *external technology exploitation* (Lichtenthaler 2009).

Lichtenthaler (2010) found that technology exploration tends to be more open than technology exploitation. Concerning the potential risks with regard to the external technology exploration, he suggests that upon acquiring technology from external sources, firms tend to limit internal development of critical technological knowledge, which may result in lowering their core competencies and thus many a times their competitive edge. Furthermore, excessive external technology exploration may even negatively affect future open exploration due to low absorptive capacity i.e. if firms do not simultaneously use both internal as well as external exploration of technology they may result in lacking sufficient prior technological knowledge to identify and absorb knowledge from external partners. Finally, motivation levels of the internal R&D employees of a firm may also be negatively affected by over emphasis on external technology exploration.

With regard to the risks associated with external technology retention Lichtenthaler (2010) argues that excessively maintaining knowledge outside firms' boundaries i.e. excessive external technology retention may be detrimental for a firm's internal knowledge base because it may increasingly result in growing

dependence on external partners in a firm's network and on relationships which may change over time. Also the possibility of excising control on external partners is to a much lower extent than with the internal technology retention. Finally, over emphasis on external technology retention may also lower a firm's possibilities to rapidly adapt to the environmental changes in its markets.

Concerning the potential risks regarding the external technology exploitation, Lichtenthaler (2010) suggests that firms are generally reluctant to engage in excessive practicing of external technology exploitation because of fears of transferring valuable and competitively relevant technological knowledge to external parties and thereby deteriorating their competitive position. Lichtenthaler (2010) thus argues that firms are very carefully in practicing external technology exploitation and opening up the innovation process for technology exploitation is relatively limited.

2.4.5 Factors Influencing Practice of Open Innovation

Huizingh 2011 argues that the effectiveness of open innovation is context dependent and the context of open innovation can be characterized by both external and internal environment.

a. *External determinants* – The most commonly stated external characteristics that impact whether firms adopt or practice open innovation is the type of industry. Many open innovation studies show that there are differences in adoption rate between industries (Chesbrough and Crowther 2006, Lichtenthaler 2008, Keupp and Gassmann 2009, Lichtenthaler and Ernst 2009, Van de Vrande et al. 2009).

Huizingh (2011) suggest intellectual property protection, market turbulence, technological turbulence, and competitive intensity as other possible external determinants of open innovation. He further elaborates that these can be studied in multiple ways. For example, Gassman (2006) argues that in high technology intensity, inbound open innovation may be more important than outbound open innovation or when evaluating open innovation and performance relationship, in contexts where intellectual property protection is relatively straightforward practicing outbound open innovation may be more profitable than in situations where protecting inventions is difficult.

Similarly as technology markets are relatively imperfect as compared to most product markets, with limited number of technology transactions (Arora et al. 2001), it has been argued that environment variables such as market turbulence impact a firms' decision of opening up and practicing open innovation (Atuahene-Gima 1995).

In the imperfect technology markets there may also be considerable competition as firms need to convince the customers of the superiority of their technologies relative to the competitors' and this may limit the positive consequences of open innovation however, competition may even result in increased demand in the technology market argues Fosfuri (2006). The positive effects of competitive intensity may over shadow the negative ones and firms may achieve higher performance by open innovation due to increased competitive intensity (Lichtenthaler 2009).

Gambardella et al. (2007) argue that if a firm exclusively applies technologies in its own products, it may have limited return of its R&D expenditure if the technologies change quickly. Thus, technology turbulence decreases the possibilities of a firm capturing value from its technologies but an open strategy may help a firm to exploit returns from its technology as long as it lasts. At the same time Cesaroni (2004) also suggest that as firms are unable to cover all technological developments by way of their internal R&D, high technology turbulence thus requires active procurement of external technology.

In line with this, Fosfuri (2006) argues that in technology markets, patents may reduce transaction costs. Grindley and Teece (1997) suggest that strong patent protection may make outbound open innovation attractive as it enables firms to exploit the benefits of their technology. Therefore, patents may be considered as facilitators of open innovation practices (Harabi 1995).

b. *Internal determinants* - Open innovation adoption depends more on the business factors than on the industry trends suggest Keupp and Gassmann (2009). The internal characteristics that impact the adoption or practicing of open innovation are related to the demographics and strategies of the firm. Number of employees, sales, profits, age, location, market share, and ownership type being the demographic characteristics while strategy characteristics include those related to open innovation

performance like organization culture, strategic orientation or goals of innovation strategy.

Open innovation is first and foremost a mind-set hence firms seeking to engage in it need to examine their culture and beliefs (Chesbrough 2003b). Muethel and Hoegl (2010) suggest that since many open innovation processes involve foreign partners, the international dimension of open innovation needs to be analysed and hence the cultural issues taken into account. Harison and Koski (2010) found that having highly educated employees was related to the adoption of open source software supply strategies by software companies.

Size is the most commonly studied internal context characteristic in open innovation research. Lee et al. (2010) argue that because the resources and market reach of small companies is limited, they can gain a lot by engaging in open innovation. Though at the same time, they also have less resources needed to maintain collaborative networks and for creating and enforcing intellectual property rights. Several empirical studies also show that open innovation adopters are generally larger firms (Keupp and Gassmann 2009, Lichtenthaler and Ernst 2009, Van de Vrande et al. 2009, Bianchi et al. 2011). The size effect is observed for both inbound and outbound activities suggest Lichtenthaler and Ernst (2009) and Bianchi et al. (2011). Nevertheless, Van de Vrande et al. (2009) argues that smaller companies are increasingly practicing open innovation.

Market orientation or resource orientation i.e. the strategic orientation of the firm guides its focus. Open innovation is likely to be less effective in a strongly inward looking organization. Technology aggressiveness negatively impacts inbound open innovation, but may have a positive effect on outbound open innovation (Lichtenthaler and Ernst 2009).

Other aspects of innovation strategies like, the stage in the innovation process, and the stage in the product life cycle also impact on whether firms engage in open innovation. Lee et al. (2010) argue that in the later stages of innovation especially the commercialization stage, companies are more likely to practice open innovation, suggesting that when the company has something concrete to offer outbound activities are more common and effective.

Thus, factors such as intellectual property protection, market turbulence high technology intensity suggest that firms will benefit from engaging in open innovation. However, factors such as competitive intensity and technology aggressiveness may limit the benefits of open innovation or may limit the capacity of firms to engage in open innovation.

2.5 Streams of Research in Open Innovation

The concept of open innovation has rapidly gained the interest of both researchers and practitioners, illustrated by a growing body of literature (Elmquist et al. 2009). In almost every industry it has become a key element of firms' innovation processes (Chesbrough and Crowther 2006, OECD 2008, De Backer et al. 2008, Chesbrough 2011). Research has focused on the concept theoretically (Chesbrough 2003, Gassmann and Enkel 2004, Chesbrough 2007), with qualitative case studies (Kirschbaum 2005, Fetterhoff and Voelkel 2006, Dittrich and Duysters 2007, Bröring and Herzog 2008, Rohrbeck et al. 2009) and through large-scale quantitative empirical work (Laursen and Salter 2006, van der Meer 2007, Lichtenthaler 2008).

Three alternative classifications have been put forward to categorize the open innovation research focus, that of Elmquist et al. (2009), Gassmann et al. (2010) and Lichtenthaler (2011). While each adopts a different perspective in integrating the characteristics of open innovation research, the basic premise of categorizations in all the three is around the factors leading to open innovation, the benefits of open innovation, and the users of open innovation.

Elmquist et al. (2009) grouped open innovation literature into six themes, in which the research on the topic has so far progressed. These themes are as follows:

a. The concept or notion of open innovation – the initial works on the topic have primarily looked at opening up of the innovation process where firms commercialize internal as well as external ideas by utilizing internal or external pathways to the market (Chesbrough 2003a). West and Gallagher (2006) identified strategies like pooled R&D and spinouts for opening up the innovation process. Motivation factors for firms to practice open innovation were studied by Motzek (2007) but these were rather similar to the general motivation factors for entrepreneurs. Dahlander and Gann (2010), Huizingh (2011) categorised the various

forms of openness while Keupp and Gassmann (2009) identified the determinants of the process.

b. Business models – Chesbrough (2003c) argues that to generate value from IPs, also in order to overcome the rising costs of technology development and the shortening product life cycles and for leveraging on external R&D resources to save time and money firms need to adapt their business models to open innovation. Additionally, Chesbrough and Schwartz (2007) suggest that business models with reduced R&D expenditure, increased innovation output and with scope of new markets can be created with the use of partners. Different patterns of open innovation with different partners under different stages of R&D cycle in the bio pharmaceutical industry were explored by Bianchi et al. (2011)

c. IP, patenting and appropriation - Henkel (2006) suggests that all firms practicing open innovation must consider their intellectual capital. For increasing profits from innovations, firms must freely reveal information instead of holding it secret or licensing it, referred to as ‘free revealing’ by von Hippel and von Krogh (2006). They suggest a private-collective model of innovation incentives.

d. Industrial dynamics and manufacturing - Berkhout et al. (2006) argue that currently society has four factors of production, namely: capital, labour, knowledge and creativity, which enable the ‘innovation economy’. Christensen et al. (2005) discussing the concept of open innovation in the context of industrial dynamics suggest that based on the position in the innovation system; stage of maturity; and the value proposition, firms manage their open innovation activities with regard to an emerging technology.

e. Organizational design and boundaries of the firm – Chesbrough (2003b) suggests that companies do not apply openness completely; rather it can be expressed as a range from high to low degree of openness. He also categorises them as funders, generators or as organizations that bring innovation to the market. Jacobides and Billinger (2006) describe vertical integration as a way for firms to be open to final and intermediate markets. They argue that for improving their operations, productive capabilities, innovation potential and resource allocation firms can manage their boundaries. Fetterhoff and Voelkel (2006) focus on external innovation management issues like exploring and evaluating opportunities, potential

partners and capturing value through commercialization. Distinction between deep ties by way of which firms can capitalize on existing knowledge and resources from that of wide ties that enable firms to find new technologies and markets is explored by Simard and West (2006). Both deep and wide ties can be present in open innovation networks and these can be either formal (contractual) or informal. The authors further suggest that incremental innovations often stem from deep networks. Dahlander and Wallin (2006) shows how firms without any ownership or hierarchical control can utilize communities as complementary assets. Furthermore, discussing management of firms' boundaries Lichtenthaler and Ernst (2006) suggest that in open innovation, knowledge transactions are organized through three major decisions namely: knowledge acquisition (make or buy); knowledge integration (integrate or relate); and knowledge exploitation (keep or sell).

f. Leadership and culture – Many articles on open innovation conclude stating the need of leadership support and organizational cultural amendment for practicing open innovation. Fleming and Waguespack (2007) discuss about leadership in the open innovation communities. Witzeman et al. (2006) argue that more a firm sources external innovation the greater is the need for it to transform systems, processes, values and culture as powerful forces resisting open innovation are often found inside the organization, like employees being trained to think internally.

An alternative classification put forward by Gassmann et al. (2010), organizes research on open innovation into nine separate perspectives, namely:

a. The spatial perspective – refers to the globalization of innovation. One of the main drivers of R & D internationalization is the access to resources and with new information and communication technologies making research global, enabling virtual R&D teams and decentralized innovation processes, open innovation has become easier. Cohen and Levinthal (1990), refer it to as having access to the knowledge and competences of the best talents of the world without having to employ them.

b. The structural perspective- refers to the growing division of work in innovation. Hagedoorn and Duysters (2002) argue that driven by cost reduction and specialization due to complex technologies, open innovation approaches like R&D outsourcing, alliances and disaggregation of value chains are increasing. As

Chesbrough in Allio (2005) puts it: “innovation overall is a team sport” (p. 24) and competency sharing increases innovation efficiency.

c. The user perspective – refers to integration of users in the innovation process. Von Hippel (1986) suggests that user integration enables understanding customers’ latent requirements and applying users’ hidden application knowledge to the innovation process. Gassmann et al. (2010), argue that one of the best researched parts of open innovation is user innovation.

d. The supplier perspective – refers to the integration of suppliers in the innovation process. Hagedoorn (1993, 2002) argue that early involvement of the suppliers in the innovation process can significantly augment the innovation performance.

e. The leveraging perspective - refers to leveraging internal technology and IP by making use of external technology and IP and vice-versa. Gassmann et al. (2010) suggests that Technology and/or IP neglected by an organization can be beneficially utilized/ leveraged by another one.

f. The process perspective - refers to the three processes in open innovation. (1) Outside-in process describing the bringing in of outside technologies into the organization. (2) Inside-out process describing the selling out of own technologies. (3) Coupled process involving both inside out and outside in processes. (Gassmann and Enkel 2004).

g. The tool perspective refers to the tools needed to integrate users and external problem solvers to the innovation process (Gassmann et al. 2010).

h. The institutional perspective - refers to the freely revealing of information about inventions, findings, discoveries and freely sharing of knowledge for accelerating the innovation process, referred to as the private-collective model of innovation incentives by von Hippel and von Krogh (2006).

i. Finally the cultural perspective - refers to mind set of an organization. In practicing open innovation, its crucial to create a culture that values outside competence and know-how for coping with increasing products and technologies complexity (Gassmann et al. 2010). Chesbrough (2003b) suggests that the not-invented-here mindset (Katz and Allen 1982) is something that must be overcome.

The third classification put forward by Lichtenthaler (2011) categorises research on open innovation into four streams. These include (a) the study of

technology transactions, (b) the study of user innovations, (c) the study of business models, and (d) the study of innovation markets.

a. The technology transaction stream includes work focusing on inward technology transfer and R&D alliances, and points out the need for developing an internal organizational capability (Lichtenthaler and Lichtenthaler 2009). Or studies that investigate outward technology transfer and external knowledge exploitation (Fosfuri 2006, Chesbrough 2007). Also a growing body of work highlighting the importance of retaining knowledge outside a firm's boundaries forms part of this stream. (Dittrich and Duysters 2007, Zaheer et al. 2010). This stream strongly builds upon earlier work on inter organizational innovation networks.

b. The second stream focuses on firms' collaboration with their users for external exploration of new knowledge and ideas. Bogers et al. (2010) West and Lakhani (2008)'s work examines how firms can harness profit from user innovation. Earlier work on role of communities in supporting innovation may provide important contribution to open innovation research (Franke and Shah 2003).

c. The business models stream includes research in context of open innovation that examines the exploitation of knowledge in the open innovation processes, if appropriability enhances or reduces the open innovation activities (West 2006).

d. Innovation markets, the fourth stream of research focuses on ways by which the process of open innovation can be facilitated, like the role of intermediaries in facilitating the exchanges (Howells 2006). Differing from the other lines of research that focus more on inbound open innovation, this stream is relatively balanced in concentrating on both inbound and out bound processes (Arora and Gambardella 2010).

Different themes in open innovation research are summarised in Table 2.5, below.

Table 2.5: Summary of themes found in the literature on open innovation

Themes	References	Proposition / Findings
Globalization of innovation	Levitt 1983, Cohen and Levinthal 1990, Raider 2006	Key drivers of global research / R & D internationalization are access to resources and new information and communication technologies enabling virtual R&D teams and decentralized innovation processes
The concept or notion of open innovation	Chesbrough 2003a, West and Gallagher 2006, Motzek 2007, Gassmann 2009, Dahlander and Gann 2010, Huizingh 2011	Opening up of the innovation process by strategies like pooled R&D Forms of openness Determinants of open innovation
Business Models	Chesbrough 2003c, West 2006, Chesbrough and Schwartz 2007, Bianchi et al. 2011	Business models with reduced R&D expenditure, increased innovation output and with scope of new markets can be created by adapting to open innovation
Technology Transactions	Fosfuri 2006, Chesbrough 2007, Dittrich and Duysters 2007, Lichtenthaler and Lichtenthaler 2009, Zaheer et al. 2010	Inward technology transfer and R&D alliances, require development of an internal organizational capability by the firms
User innovation	Franke and Shah 2002, West and Lakhani 2008, Bogers et al. 2010	Firms can harness profit by collaboration with their users for external exploration of new knowledge and ideas
Innovation Markets	Arora and Gambardella 2010, Howells 2006	Intermediaries facilitate the process of open innovation
IP, patenting and appropriation	Henkel 2006, von Hippel and von Krogh 2006	For increasing profits from innovations, firms must freely reveal information instead of holding it secret or licensing it

Organizational design and boundaries of the firm	Chesbrough 2003b, Billinger 2006, Dahlander and Wallin 2006, Fetterhoff and Voelkel 2006, Jacobides et al. 2006, Simard and West 2006	Vertical integration is a way for firms to be open to final and intermediate markets In open innovation, knowledge transactions are organized through three major decisions namely: knowledge acquisition (make or buy); knowledge integration (integrate or relate); and knowledge exploitation (keep or sell)
Leadership and culture	Witzeman et al. 2006, Fleming and Waguespack 2007	Leaders must make strong technical contributions and must then integrate their communities More a firm sources external innovation greater is the need for it to transform systems, processes, values and culture as powerful forces resisting open innovation are often found inside the organization, like employees being trained to think internally
Industrial dynamics and manufacturing	Christensen et al. 2005, Berkhout et al. 2006	Based on the position in the innovation system; stage of maturity; and the value proposition, firms manage their open innovation activities with regard to an emerging technology

Source: Adapted and modified from Elmquist et al. 2009, p334

Empirical open innovation research

With the aim of synthesising the empirical studies in open innovation research, and also outlining the key tendencies of research in the area, a review of empirical research studies on open innovation published in key innovation management journals, namely: *Journal of Product Innovation Management*, *R&D Management*, *Research Policy*, *Technovation*, and *Strategic Management Journal* from 2003 (when the term was coined) onwards was conducted (Table 2.7 included at the end of the chapter). Thirty nine studies were identified using the term open innovation in search of the title and abstract of articles in these journals. These Thirty nine studies are described in Table 2.7 in terms of (1) industry context of the study (2) method used (3) sample size and (4) propositions/ findings of the study.

Empirical research on open innovation highlights that open innovation can be increasingly seen as a global trend occurring in most industries and markets. Research has focused on understanding and exploring the impact of open innovation activities on the performance of firms. This has been explored from many perspectives. While Laursen and Salter (2006) find a curvilinear relationship of openness with innovation performance; Lichtenthaler (2009) study the factors that positively strengthen open innovation's impact on firm performance. Other studies focus on impact of openness on firm's R&D performance (Asakawa et al. 2010); product innovation performance (Faems et al. 2010); differing impact on incremental innovation and radical innovation performance. Impact of openness towards customers, suppliers, and towards cross sector companies on firms' innovation performance has also been explored (Chiang and Hung 2010).

Empirical open innovation research also explores the risks of opening up the innovation activity and the challenges faced by firms practicing open innovation. Lichtenthaler (2010) outlines the risks derived from excessively opening up of technology exploration, retention, or exploitation, and interdependencies between these activities while other studies argue that the most important challenge firms face when opening up relates to organizational and cultural issues due to increased external contacts (Van de Vrande et al. 2009).

In terms of collection of data, evidences indicate that the CIS data has been used by a majority of the large-scale empirical studies on open innovation. While most of this research has been undertaken in Europe which may be a result of the availability of the

community innovation survey data that has had a big influence on open innovation research, studies have largely focused on either a single country or a single industry.

Observations drawn from the listing suggest potentially important fields for future investigation. Empirical evidences of open innovation research highlight that there has been an increased emphasis on the positive outcomes of practicing open innovation and on the risks and challenges associated with it; however research on how firms practice open innovation is still emerging. Huizingh (2011) argues that open innovation is not a clear cut concept and can come in many forms also because it is a construct that cannot be measured directly, understanding its practice requires exploring innovation activities and their management. It is further complicated as open innovation is often diffusely organized within a firm and may be organized very differently in different firms suggest Schroll and Mild (2011). Thus an emerging stream in empirical open innovation research is the diffusion of open innovation, which comprises of themes such as the extent of open innovation adoption, the practice of different open innovation modes and the factors that influence or moderate firms' practice decisions. Recognizing the need for this research, this study focuses on exploring the management of the process of innovation and its extent of openness in Irish food firms.

2.6 The Management of Innovation

Firms consider the management of innovation as one of their basic business functions (Wheelwright and Clark 1992, Janszen, 2000,) and for managing innovation in context of its opening up, Chiaroni et al. (2011) suggest that firms need to act upon four key managerial levers, namely: networks; organizational structures; evaluation process and knowledge management systems.

a. Networks – the open innovation business model requires establishing relationships with a variety of partners, like universities and research centres (Perkmann and Walsh 2007), suppliers (Emden Grand et al. 2006), or users (von Hippel 2005, Simard and West 2006, West and Lakhani 2008). These inter-organisational relationships may be formed with an explorative or exploitative intent suggests March (1991) i.e. for exploring external knowledge or for seeking opportunities for external exploitation of internal knowledge. Thus practicing open innovation requires firms to manage different networks for different purposes.

b. Organizational structures – Hansen and Nohria (2004) suggest that for successfully managing knowledge acquired from external parties, firms need to develop

and manage internal networks or organisational structures focusing on integrating the acquired knowledge into the firm's innovation process and a similar internal re-organisation is required when marketing internally developed ideas through external paths. These organisational structures are different from independent open innovation business units or cross-functional teams argue Sakkab (2002) and Kirschbaum (2005).

Chesbrough and Crowther (2006) suggest that this open innovation organizational structures concept must also include supporting roles within the organizations that bring about the practicing of open innovation, like champions who lead the open innovation adoption or gate-keepers who manage the interface between the external environment and the firm (Allen 1970, Tushman 1977). Similarly Santoro and Chakrabarti (2002) suggest that for streamlining inflow of knowledge from external parties, it is necessary for firms to create an independent business unit for managing collaborative relationships and research contracts and likewise business units with adequate resources and skills are also needed for effective external exploitation of internal ideas (Lichtenthaler and Ernst 2007).

c. Evaluation process – Because the openness of the innovation system involves significant technological and market uncertainty, evaluation of innovation projects becomes increasingly difficult. Chesbrough (2003a) thus suggests that firms need to develop and manage new evaluation metrics focusing on external sources and/ or exploitation paths. Similarly van de Vrande et al. (2006) argue about the importance of continuously scanning and monitoring the external environment for range of available technologies. In context of the inside out open innovation Lichtenthaler (2004) suggests that external exploitation options must be considered at the very beginning of the evaluation process as these may potentially impact the profits resulting from innovation.

d. Knowledge management systems – Lastly, the managerial lever on which firms need to act when implementing open innovation are the knowledge management systems; as open innovation is all about leveraging and utilizing knowledge generated within or outside of the firm it thus requires knowledge management systems to adapt to sharing and transfer of knowledge within as well as between firms (Chiaroni et al. 2011).

Initial studies on open innovation outlined that firms engaged in open innovation activities more on a trial-and-error basis while many practitioners and scholars today argue that open innovation requires a more formal approach for managing various inflows and outflows (Chesbrough and Brunswicker 2013). A formal approach to

managing innovation requires firms to have a distinct written strategy for open innovation, make use of documented and standardized processes for implementing open innovation, detailing their routines, and focusing on different kinds of tools for measuring and reviewing the impact of open innovation. While a more informal dimension of managing open innovation includes a firm's culture and its norms, values and personal relationships of individuals. However, managing open innovation doesn't imply making a decision on employing either formal or informal practices; it rather requires both dimensions (Chesbrough and Brunswicker 2013). Firms need to initiate several managerial measures to undertake it as well as countermeasures, to limit the potential risks or possible negative consequences of practicing it.

In this context, Lichtenthaler (2010) argues that continuing with sufficient investments in internal R&D, is one such measure for ensuring complementary nature of internal R&D and external technology sourcing, so that firms can not only avoid complete dependencies on external partners but also be prepared with sufficient prior technological knowledge for identifying and absorbing knowledge from external partners at a future date. Accordingly, it needs to be pointed out by the firm's top management that open innovation practices are additional to and not a substitute for internal R&D.

Moreover, as it is often required to adapt external technologies to match the internal needs of firm, external technologies must be evaluated so as not to waste resources. Firms need to build strong internal knowledge base for maintaining flexibility in highly dynamic environments, like to proceed on their own if collaborations with external partners are not successful. Lichtenthaler (2010) also suggest that in order to manage the opening up of the innovation process, top management of a firm must limit external technology exploitation for certain core technology fields of the firm to only exceptional situations. Firms must also formulate long-term strategies for establishing guidelines for individual decisions on externally exploiting technology so that technology exploitation activities are designed to achieve a firm-level optimum rather than a local optimum for individual business unit.

Thus, in order to achieve the desired outcome managing the innovation activity is pivotal. While the literature above outlines the need for managing the opening of the innovation process and the techniques firms could apply for achieving it; an exploration of how these practices are realised in firms as they practice innovation and engage in interactions with external parties is missing in the extant literature. Building this

understanding may help detail the openness in firms and identify factors that may impact the same.

2.7 Extent of Openness of Innovation Processes

The process of opening of the innovation system is demanding. It often starts with outsourcing to contract service organizations suggests Gassman et al. (2010) and more strategic modes of execution then follow. Barrett et al. (2011) argue that it involves three major challenges for a firm, namely, ensuring that it is ready to open up, building trust among partners and putting together a business model for mutually rewarding relationships. They further suggest that to enable opening up firms must pursue preparations to collaborate with partners like developing internal capacities, technology infrastructure to support innovation, mechanism to access upcoming opportunities and partners' ideas and ability to convert these into valuable products.

Based on the early work of Lewin (1947) on organizational change Chiaroni et al. (2011) posit that the process of opening up the innovation process follows three stages of unfreezing, moving and institutionalizing. Kofter (2007) suggests the first phase refers to creating a sense of urgency, a guiding coalition for championing change. The second phase is about the actual implementation of change by establishing new procedures and patterns of behaviour according to the new vision. An experimental "trial and error" approach guiding the choice of solution that fits with the firm's internal and external context is the typical characteristic of this stage. Finally, the third phase refers to institutionalizing the new order, by consolidating the improvements achieved so far.

On a further level, in practicing open innovation firms engage with suppliers, customers, competitors, research institutions and even other organizations that may be from same or different industries that have solutions that can improve the firm's innovations or that can exploit solutions the company has developed. These collaborations may take many shapes and forms such as when jointly developing a new technology they may last for a significant period or they may be repeated collaborations that involve different groups of organizations; they may be initiated by different players (e.g., the suppliers or customers); they may require different roles to be played by the organization like project leader or project participant at times, and going beyond R&D and marketing, these may involve different departments within the firms such as production, logistics, and finance.

While Chesbrough et al. (2006) indicated two conceptually separate dimensions of the open innovation process, namely in bound and out bound open innovation, others suggest models with stages for the open innovation process, such as Fetterhoff and Voelkel (2006) proposed a five stage model for the open innovation process, the stages being: (a) seeking opportunities, (b) evaluating their market potential and inventiveness, (c) recruiting potential development partners, (d) capturing value through commercialization, and (e) extending the innovation offering. Another five stage process focusing on managing knowledge integration was put forward by Wallin and von Krogh (2010), its stage being, (a) define the innovation process, (b) identify innovation-relevant knowledge, (c) select an appropriate integration mechanism, (d) create effective governance mechanisms (e) balance incentives and controls. Issues in stage 4 were further elaborated by Wallin and von Krogh (2010), as involving selection of the partner, evaluating the contributions, ownership of intellectual property, division of profits and losses, taking group decision, and managing conflicts.

Understanding the process of open innovation needs to be combined with the innovation activities of a firm. Hansen and Birkinshaw (2007) argue that the process of transformation of the ideas into commercial output must be viewed as an integrated flow - IVC. They also indicate that a link by link analysis helps identifying the different strong and weak links in the process and thereby improving overall innovation efforts. Similarly open innovation practices may also differ by stage of a firm's IVC. Doran and O'Leary (2011) suggest that the IVC framework facilitates the analysis of inter-relationships between external interaction and innovation as it highlights the structure and complexity of the innovation process. Because knowledge, of different types and from varying sources, is the uniting aspect providing the main functional link between the different aspects of the IVC (Roper et al. 2008), the IVC framework can be a useful tool in exploring the extent to which innovation processes are open in firms.

2.7.1 The Innovation Value Chain

For conceptualizing and operationalizing the innovation process, management literature presents an expansive approach within which innovation activities of almost all firms' can be considered (Ganotakis and Love 2012). This approach or the IVC framework proposed by Hansen and Birkinshaw (2007) is a "sequential, three-phase process that involves idea generation, idea development, and the diffusion of developed concepts" (p. 122). The framework highlights the interrelationship of the different

stages of the innovation process and how the different phases are inter dependent. Hansen and Birkinshaw (2007) argue that firms may excel in certain activities which are their strongest links while may struggle with others, their weakest links, but the whole process may fail if any one link fails or is weak regardless of the strength of the other links. This suggests a strategic approach for managers to view innovation as an end-to-end process, with development priorities focused on those elements which are weakest.

Hansen and Birkinshaw (2007) proposed the IVC framework based on their findings of five large research projects on innovation which they undertook over the past decade. Interviewing more than 130 executives from over 30 multinationals in North America and Europe they surveyed 4,000 non-executive employees in 15 multinationals, and analysed innovation effectiveness in 120 new-product-development projects and 100 corporate venturing units. Presenting innovation as a sequential three phase process, including idea generation, idea development and the diffusion of the developed concept, Hansen and Birkinshaw (2007) suggest that in order to advance the innovation process, it must be viewed as an integrated flow of transforming ideas into innovation output. They argue that across all the phases, managers must perform six critical tasks—internal sourcing, cross-unit sourcing, external sourcing, selection, development, and companywide spread of the idea. Essentially outlining that the process is focused at how firms source knowledge, the transformation of the knowledge into innovation output and finally the exploitation of the innovation output for the benefit of the firm's performance. Figure 2.3 below illustrates the Innovation Value Chain.

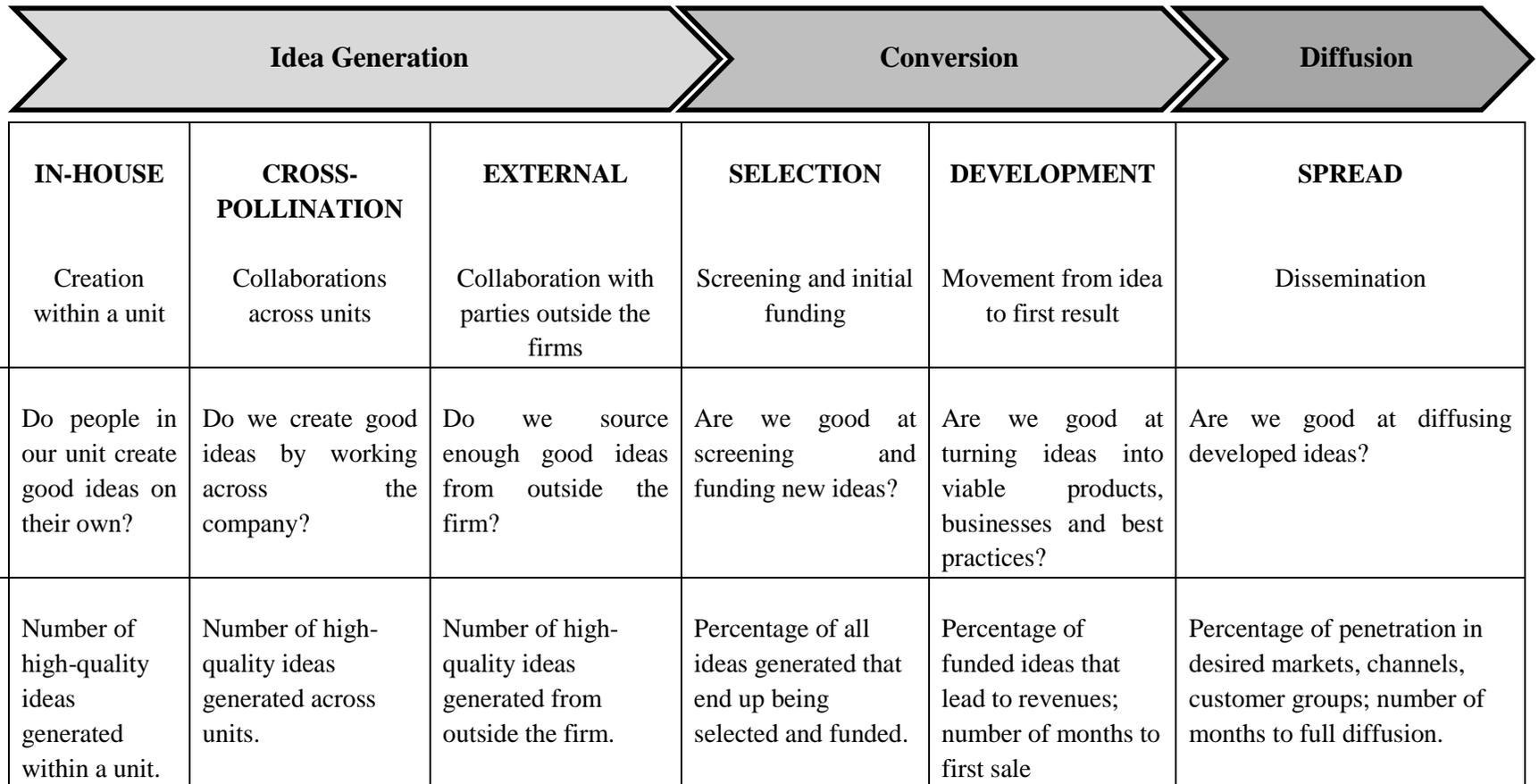
Three stages of the innovation value chain

The first stage involves firms' efforts to gather all necessary knowledge for innovation. These knowledge sources can be both internal and external to the firm, acting as complements or substitutes to one another (Audretsch et al. 1996). Cassiman and Veugelers (2002) indicate a complementary relationship between the internal and external knowledge sourcing by firms, while Schmidt (2005) suggests a substituting relationship between internal R&D and external knowledge sourcing.

Managers understand that innovations start with good ideas and look for these, instinctively first within their own functional groups or business units or by cross unit collaboration that involves combining insights and knowledge from different parts of the firm. This is followed by searching for innovation opportunities outside of the firm.

Hansen and Birkinshaw (2007) suggest that for improving their innovation activities, firms need to access if they are sourcing enough good ideas from within and outside of the company and even outside the industry by tapping into the insights and knowledge of customers, end users, competitors, universities, independent entrepreneurs, investors, inventors, scientists, and suppliers.

The second stage involves transforming knowledge into innovation output like new products, processes or organizational forms. Hansen and Birkinshaw (2007) suggest that for ideas or concepts to prosper, a strong screening and funding mechanism is required. They argue that in some firms tight budgets, conventional thinking, and strict funding criteria prevent most novel ideas from thriving. While in others managers don't screen ideas strictly enough leading to overflows with new projects of varying quality within the firm, having no clear sense of how the initiatives fit into the overarching corporate strategy. The IVC therefore individually focuses on the next stage of the innovation process after generation of ideas, which is screening or funding or development of the innovative ideas into revenue generating products, services, and processes. Firms may use multi-skilled internal teams or different forms of external partners when developing new innovations. The IVC framework in the development stage also captures organizational and marketing activities.



Source: Hansen and Birkinshaw 2007, p4

Figure 2.3: The innovation value chain

The final stage of the IVC involves the process of exploitation by which the innovation outputs are translated into productivity or sales gains. Hansen and Birkinshaw (2007) suggest that for diffusing the concepts that have been sourced, vetted, funded, and developed, firms must get the relevant constituencies within the organization to support and spread the new products, businesses, and practices across desirable geographic locations, channels, and customer groups.

Further, in order to strengthen the weakest links in their IVC, Hansen and Birkinshaw (2007) recommend practices firms can adopt. These include: building external networks, building cross-unit networks, providing cross-unit funding, creating focused units and designating idea champions. Table 2.6 below outlines these recommendations with examples provided in each case.

Table 2.6: Practices to strengthen weakest links

If your company has difficulty...	Consider these practices	Examples
Generating ideas	Build external networks	At Procter & Gamble, in-house product developers translate customer needs into technology briefs describing problems needing resolution. Briefs go to technology scouts, suppliers, research labs, and retailers worldwide to elicit solutions
	Build cross-unit networks	P&G has communities of practice, each comprising volunteers from different parts of the organization and built around an area of expertise. The teams solve specific problems and participate in monthly technology summits with representatives from P&G's business units.
Converting ideas	Provide cross unit funding	Shell Oil's Game Changer unit funds development of radical ideas, operating across major divisions with a \$40m annual seed-funding budget. Forty percent of projects in Shell's exploration and production sectors started as Game Changer projects
	Create safe havens	A technology firm established a separate, autonomous business unit to develop new ideas supporting the company's strategy. Successful venture managers earned hefty bonuses. Numerous ventures became viable businesses with combined annual revenues of £100 m.
Diffusing ideas	Designate "idea evangelists"	Sara Lee's Sanex shower products encountered resistance from several country managers. A division president won them over by repeatedly visiting them and hosting them at headquarters. Sanex eventually was introduced in 29 countries.

Source: Hansen and Birkinshaw 2007, p1

Empirical research on the IVC has primarily been carried out in the Irish context, with Love and Roper (2001), Jordan and O’Leary (2008) and Roper et al. (2008) researching the different stages of the IVC in part or in full. This research argues a complementary relationship between the two knowledge sources and analysing how firms generate innovative output using an innovation production function approach, finds that both R&D and external interaction have a positive effect on the possibility of product innovation. Roper (2001) in case of Irish manufacturing plants suggested that networking plays an important part in determining the likelihood of the plant being innovative.

Roper et al. (2008) find that a firm’s performance is positively impacted by innovation output. Extending Roper’s (2008) work, Doran and O’Leary (2011) explore potential feedback effects on firms’ performance and innovation output and outline that together with productivity being affected by innovation output, feedback from market and other sources may also influence the innovation output of a business.

Benefits of the innovation value chain

The chief advantage of the IVC is that it highlights the structure and complexity of the innovation process (Doran and O’Leary 2011). This perspective echoes with Kline and Rosenberg (1986) argument that –

Innovation is complex, uncertain, somewhat disorderly and subject to changes of many sorts. Innovation is also difficult to measure and demands close co-ordination of adequate technical knowledge and excellent market judgement in order to satisfy economic, technological and other types of constraints – all simultaneously. The process of innovation must be viewed as a series of changes in a complete system (p275).

This systematic approach not just guides firms to identify their strong and weak links in the process of innovation but also demonstrates the significant inter-relationships in the complete innovation process, the interactions that take place from knowledge sourcing to diffusion of the outcomes of different types of innovation. It highlights vital complementarities between the internal and external sources of knowledge.

Ganotakis and Love (2012) suggest that the use of the IVC helps demonstrate the direct and indirect impacts of the different components of innovation and highlights the essential indicators both for the strategy of the firm and for innovation support policies.

From a management perspective, the usage of IVC helps focus management's attention on the weak links in the innovation process, prioritize advancing of the innovation activities, and interrelationships within the process. Based upon their empirical analysis Ganotakis and Love (2012) outline that external R&D is complementary to both internal R&D and supply-chain knowledge sources, and therefore suggest that investment in external R&D can indirectly benefit innovation performance, even where the direct effect of external R&D is absent or minimal. Furthermore, from a policy perspective, Ganotakis and Love (2012) suggest that by modelling the IVC factors which contribute to or limit capability at each stage in the process can be identified, which may help defining potential strategic and policy priorities. Importantly, analysing the innovation process at distinct stages rather than merely one innovation process helps recognize the direct and indirect impacts of different inputs (e.g., different knowledge sources and skills) of the innovation process.

Overall the advantage of the IVC approach is that it allows firms to clearly examine the linkages in the innovation process from conceptualization to commercialization. For example, modelling the IVC framework, Roper et al. (2008) show that there are synergies between firms' internal and external knowledge gathering activities, indicating advantages of opening up the innovation process (Chesbrough, 2003, 2006, Laursen and Salter 2006). Additionally, they find evidence of strong positive linkages between knowledge sourcing activities of firms and their innovation outputs, and strong positive links between their innovation activity and business growth.

Doran and O'Leary (2011) suggest that the IVC framework facilitates the analysis of inter-relationships between external interaction and innovation as it highlights the structure and complexity of the innovation process. As knowledge of different types and from varying sources is the uniting aspect providing the main functional link between the different aspects of the IVC (Roper et al. 2008); the IVC framework can be a useful tool in exploring open innovation in firms.

2.8 Conclusion

The open innovation literature highlights the growing interest of both researchers and practitioners towards the approach. While it is seen as a global trend occurring in many industries and markets, the focus of research has often been restricted to adoption in SMEs; in certain regions or in single industries. The main discussions in the open innovation literature can be summarized under four broad themes, namely what is open

innovation? Why should firms be open in their innovation? What organizational cultures support open innovation? How can firms open their innovation process? These themes are discussed below outlining what we know from the literature and where the research gap lies.

(a) What is open innovation?

The concept or notion of open innovation is one of the major themes in the existing open innovation literature. The initial works on the topic have primarily looked at firms commercializing internal as well as external ideas by making use of internal and/or external pathways to the market. Seminal work by Chesbrough (2003a), West and Gallagher (2006) identified techniques like pooled R&D and spin outs for opening up of the innovation process. While Chiaroni et al. (2010) suggested a three phase process for open innovation, Gassmann and Enkel (2004) detailed the inside-out and outside-in processes of open innovation. Christensen (2005) has discussed the concept in the context of industrial dynamics. Using CIS data researchers have explored the impact of search depth and width on innovation performance (Laursen and Salter 2006); open innovation culture and importing mechanisms (Van der Meer 2007); and impact of information sources on the degree of novelty of the innovation (Mention 2011).

Thus, while we know that open innovation includes inside-out and outside-in dimensions and the activities that can be regarded as being open in innovation. The conceptual ambiguity of the concept remains, if open innovation is only about external interactions or strategic adoption and management of the model is required. Research on how open innovation is practiced and managed at firms is less developed. Also, a process view of the extent of openness of innovation is yet to be established.

(b) Why should firms be open in their innovation?

Another focus of open innovation research has been on the benefits of practicing open innovation. This theme includes a variety of studies that highlight the benefits of open innovation. Like Chesbrough (2003c) suggests that firms can adopt open innovation practices in order to overcome the rising costs of technology development, the shortening product life cycles and for leveraging on external R&D resources to save time and money. Von Hippel and von Krogh (2006) suggest a private-collective model of innovation incentives for increasing profits from innovations. Similarly, Laursen and Salter (2006); Chen et al., (2011) argue that searching widely and deeply is related to innovation performance and Chiang and Hung (2010) suggest that open search depth is

positively related to the innovating firm's incremental innovation performance, and open search breadth is positively related to radical innovation performance. Other studies also outline that open innovation increases R&D performance (Asakawa et al. 2010; Ili et al. 2010), innovation performance (Barge-Gil 2010; Inauen and Schenker-Wicki 2011) and financial performance (Faems et al. 2010; Cheng and Huizingh 2014) of firms.

Exploring factors that lead to the practice of open innovation, Keupp and Gassmann (2009) suggested that firms whose internal innovatory activities are confronted with impediments to innovation are likely to practice open innovation. Technological turbulence, transaction rate and competitive intensity in technology markets were other factors identified by Lichtenthaler (2009). Examining the practice in large firms, Mortara and Minshall (2011) outlined that adoption of open innovation varies according to their innovation requirements, the timing of the innovation implementation and their organizational culture.

As studies outline the benefits of practicing open innovation, factors that lead to the practice and its impact on a firm's performance. Research on risks of opening up the innovation process has been limited. Also, if there are limits to the benefits of opening up of innovation? How do firms that open up their innovation activities manage innovation leaks and competitive threats?

(c) What organizational cultures support open innovation?

Organizational culture has been identified as an important aspect within organizations that impacts how much external input for innovations will produce useful outcomes for a firm. Many studies in the extant open innovation literature can be grouped under this theme. In practicing open innovation, it is crucial to create a culture that values outside competence and know-how for coping with increasing products and technologies complexity (Gassmann et al. 2010). Other studies highlight the need for organizational cultural amendment for practicing open innovation (Fleming and Waguespack, 2007; Witzeman et al. 2006). Exploring the Dutch manufacturing and service SMEs, Van de Vrande et al. (2009) identified organizational and cultural issues as the most important challenge in adopting open innovation practices. Mortara et al. (2010) identified the different organisational culture archetypes that impact open innovation practices and Burcharth, et al. (2014) have shown how the level of negative attitudes to the acquisition and sharing of knowledge (the NIH and NSH syndromes) negatively influences the extent of use of open innovation practices.

Thus, studies have identified organizational culture as an important barrier to open innovation, and the different models of organisational culture that impact open innovation practices. Research has not explored much the organizational cultures that support open innovation activities.

(d) How can firms open their innovation?

Finally, ways of implementing open innovation has been another major focus of open innovation research. While Von Hippel (1986) suggests that user integration enables understanding customers' latent requirements; and this has been identified as an important way of practicing open innovation (Gassmann et al. (2010). Hagedoorn (2002) argue that early involvement of the suppliers in the innovation process can significantly augment the innovation performance. Bogers et al. (2010) West and Lakhani (2008)'s work also examines the profit from user innovation. Lee et al. (2010) identified networking as an effective mean to facilitate open innovation among SMEs, and Lichtenthaler (2010) suggested that firms may achieve additional benefits of open innovation by establishing a proficient management of the process. Different organisational modes for implementing open innovation have been suggested by Chiaroni et al. (2009) and Bianchi et al. (2011). Supplier integration (Schweitzer et al. 2011) and use of intermediaries (Dodourova and Bevis 2014) are other ways discussed in the open innovation literature. As studies outline user integration, supplier integration, networking and use of intermediaries as techniques for implementing open innovation, research on how the procedures are practiced and managed is limited.

In summary, the extant literature builds our understanding about the concept of open innovation, and the techniques that can be employed for adopting the practices. While extant research outlines the organizational cultural challenges and details the benefits of practicing open innovation, research is less developed in terms of (a) the way it is practiced and managed and (b) the extent to which innovation processes in firms are open (Enkel et al. 2009, Van de Vrande et al. 2009). Exploration of the concept for the extent of openness in innovation and the management of the practice of open innovation are fundamental to understanding the 'how' and 'why' of open innovation (Huzingh 2011). Previous research acknowledges that the practice of open innovation phenomenon is no longer confined to only innovation practitioners mostly active in high-tech industries, but it is increasingly wide spread. Yet a clearer understanding of its mechanisms inside and outside of the firms is missing (Gassmann et al. 2010). Therefore, the objective of this study is to explore (a) the management of

the process of innovation and (b) the extent to which the innovation process in firms is open across the IVC.

Addressing this issue, the specific research questions explored in the study are: (a) how is the innovation process is organized and managed? and (b) what is the extent of interactions and the variations, if any, in these interactions during the different phases of the IVC as an innovation progresses? The approach taken to study these research questions is to explore a significant innovation identified by the interviewees in a number of firms.

The organization and management of the innovation process in firms is studied in terms of: innovation objectives, innovation teams, resource allocation, involvement of senior managers, and the internal and external interactions firms engage in for their innovations.

The extent to which the innovation process is open is explored in terms of the IVC. Because of the complex and uncertain nature of the innovation process, the extent of its openness is analysed individually at each stage of the innovation process. The IVC framework is used to explore the extent to which the innovation processes are open as firms develop innovations. Doran and O'Leary (2011) suggest that the IVC captures this systemic nature of the innovation process and highlights its structure and complexity. Hansen and Birkinshaw's (2007) IVC framework is therefore utilized in this study to explore the extent to which the innovation process is open in firms. Each stage of the innovation process from conceptualization to commercialization as the innovation advances is explored for the internal and external interactions during the innovation process; the extent of these interactions and if these interactions vary during the different phases of the IVC as the innovation progresses. The methodology employed for conducting the study is detailed in the next chapter (Chapter 3).

Table 2.7: Empirical research on open innovation

Author, Year	Industry/Country	Method	Sample Size	Proposition / Findings
Christensen et al. 2005	Consumer electronics	Interviews Specialized trade literature Specialized websites on the studied technology	9 Websites of all registered companies with the studied technology	Based on the position in the innovation system; stage of maturity; and the value proposition, firms manage their open innovation activities with regard to an emerging technology
Laursen and Salter 2006	Manufacturing firms UK	UK Innovation Survey	2,707	Searching widely and deeply is curvilinearly related to innovation performance
Van der Meer 2007	Netherlands	(Dutch) National Innovation Survey Interviews	814 28	Dutch companies have successfully adopted the principles of open innovation regarding open innovation culture and importing mechanisms Challenges exists in the use of exporting mechanisms and in the flexibility and open way of handling their business models
Chiaroni et al. 2009	Bio-pharmaceutical Italy Bio-pharmaceutical Worldwide	Interviews Interviews	20 20	For Open Innovation, bio-pharmaceutical firms exchange technologies and knowledge with different types of partners along the phases of the drug discovery and development process through different organisational modes
Keupp and Gassmann 2009	Switzerland	Swiss Innovation Survey	2,312	Firms whose internal innovatory activities are confronted with impediments to innovation are likely to practice open innovation more intensively
Lichtenthaler 2009	Large and medium sized industrial firms	Questionnaire Financial databases	136	The degree of technological turbulence, transaction rate and competitive intensity in technology markets strengthen the positive effects of outbound open innovation on firm

	Germany, Austria and Switzerland	Annual reports			performance. By contrast, the degree of patent protection does not facilitate successful open innovation
Van de Vrande et al. 2009	Manufacturing and service SMEs Netherlands	Survey by EIM (Dutch institute for business and policy research)	605		SMEs engage in many open innovation practices primarily for market-related motives like meeting customer demands, or keeping up with competitors. Their most important challenges relate to organizational and cultural issues due to increased external contacts There are no major differences between manufacturing and services industries, but medium-sized firms are more involved in open innovation than their smaller counterparts
Asakawa et al. 2010	Chemical, Pharmaceutical, Steel, Automobile, Precision apparatus and Communication Laboratories Japan	Questionnaire	203		Open innovation policy contributes to the laboratory's R&D performance by facilitating external collaborations by the laboratory
Barge-Gil 2010	Manufacturing firms Spain	Spanish institute of statistics database	10,875		Open innovators are smaller and less R&D intensive than semi-open ones, although larger and more R&D intensive than closed innovators
Belussi et al. 2010	Life sciences Italy	Interviews	78		Innovation openness significantly influences the firms' innovative performance
Chiang and Hung 2010	Electronic product manufacturing firms Taiwan	Questionnaire	184		Open search depth is positively related to the innovating firm's incremental innovation performance, and open search breadth is positively related to radical innovation performance
Chiaroni et al. 2010	Cement, Concrete and Steel pipes, Chemicals, Automotive break systems Italy	Interviews	11 (in 4 firms)		Open Innovation is implemented along a three-phase process - unfreezing, moving and institutionalising The journey from Closed to Open Innovation involves four main dimensions of the firm's organization, i.e. inter-organizational networks, organizational structures, evaluation processes and

					knowledge management systems, along which change could be managed and stimulated
Faems et al. 2010	Manufacturing firms Belgium	Belgian Community Innovation Survey (CIS 4)	305		Technology alliance portfolio diversity has an indirect positive impact on financial performance via increased product innovation performance
		BELFIRST database			In short term, the direct cost-increasing effect of technology alliance portfolio diversity exceeds the indirect value-generating effect of tech alliances
Ili et al. 2010	Automotive Germany	Questionnaire Interviews	42		Open Innovation is a more adequate practice to achieve a better R&D productivity for companies in the automotive industry than a closed innovation model
Lee et al. 2010	SMEs Korea	2005 Technology Innovation Survey, Korea	2,414		Networking is the effective way to facilitate open innovation among SMEs
Lichtenthaler 2010	Medium sized and large industrial firms Europe	Interviews	48 (in 31 firms)		The risks of opening up the innovation processes constitute an important barrier to the adoption of the trend towards open innovation. These risks derive from excessively opening up technology exploration, retention, or exploitation, and interdependencies between these activities
					Firms may achieve additional benefits if they open up their innovation processes along with establishing a proficient management of the open innovation processes
Mortara et al. 2010	Multi-national companies	Interviews	37		Most companies start to implement Open Innovation in their R&D facilities but there are differences within the R&D functions based on organisational culture archetypes
					In blue sky research units supportive culture exist, while achievement culture in applied R&D
Sieg et al	Chemical industry	Interviews	7 cases who worked with the		Outlines managerial challenges faced by companies working with an innovation intermediary to solve R&D problems

2010	United States and Western Europe			same innovation intermediary during the last 5 years	
Bianchi et al. 2011	Bio-pharmaceutical Italy	Interviews	20		Bio- pharmaceutical firms use different organisational modes (i.e. licensing agreements, non-equity alliance, purchase and supply of technical and scientific services) to enter into relationship with different types of partners (i.e. large pharmaceutical companies, product biotech firms, platform biotech firms and universities) to acquire (Inbound Open Innovation) or commercially exploit (Outbound Open Innovation) technologies and knowledge
	Bio-pharmaceutical Worldwide	Annual reports	20		
Chen 2011	China	Questionnaire	209		Both the scope and depth of openness have a positive impact on innovative performance Increasing the diversity of partners improves a firm's innovative performance up to an optimal number of partners – after which openness becomes counterproductive
Chiaroni et al. 2011	Cement Italy	Interviews Website, Annual Report	4 (in 1 firm)		Open Innovation is implemented along a three-phase process of unfreezing, moving and institutionalising Changes through which Open Innovation is implemented involves four major dimensions, i.e. networks, organisational structures, evaluation processes and knowledge management systems
Filippetti 2011	27 Member States of the EU, Norway and Switzerland	European Commission's Innobarometer Survey 2009	5,238		Design and R&D are complementary sources of innovation; design is predominant in firms characterized by a complex innovation strategy and intense interactions with the external environment (practicing open innovation); and these types of firms also show better economic performance
Huang 2011	Biotechnology firms Taiwan	Questionnaire and Telephone survey	328		The relationship between internal learning and technological innovation capability is stronger when R&D teams adopt open innovation

Inauen and Schenker-Wicki 2011	Stock-listed companies in Germany, Switzerland and Austria	Questionnaire and Telephone survey	141	Openness towards customers, suppliers and universities has a significant positive impact on the different innovation performance Openness towards cross-sector companies, has a significantly negative effect on innovation performance
Lazzarotti et al. 2011	Manufacturing firms Italy	Questionnaire	99	With respect to the degree of openness i.e. partner variety and innovation phase variety, four different open innovation models: open and closed innovators, integrated and specialized collaborators exist
Mention 2011	Service sector Luxembourg	Community Innovation Survey (CIS4)	1,052	Firms provided with information from market sources and from internal sources as well as firms involved in science-based collaboration for their product innovations are more likely to introduce new to the market innovations, whereas information coming from competitors seems to have a negative influence on the degree of novelty of innovation
Mortara and Minshall 2011	Multi-national companies UK, Mainland Europe	Interviews Focus Group	41 65	Adoption of open innovation by large firms varies according to (1) their innovation requirements, (2) the timing of the innovation implementation and (3) their organizational culture
Schroll and Mild 2011	Different industries 24 European countries	Questionnaire	180	Inbound open innovation is more commonly used than outbound open innovation The R&D intensity of a company and the degree of its open innovation are related
Schweitzer et al. 2011	Plastics and wood industry Austria	Questionnaire	103	Open innovation activities are more important in turbulent than in non-turbulent markets Supplier integration is vital when technological turbulence is high, whilst customer integration is critical in environments characterized by high market turbulence

Spithoven et al. 2011	Belgium	Interview	12 Research centres	Openness of the innovation process forces firms lacking absorptive capacity to search for alternative ways to engage in inbound open innovation
Pullen et al. 2012	Dutch medical devices sector	Survey and interview	Survey n=60 Interview n=50	A relatively closed, focused, and consistent 'business-like' NPD networking approach, which is characterized by result orientation and professionalism, is related to high innovation performance
Garriga et al. 2013	Manufacturing, construction, and services firms Switzerland	Swiss Innovation Survey	2,141	Constraints lead to a broader but shallower search, external knowledge is associated with the breadth and the depth of the search in a U-shaped relationship
Hung and Chou 2013	High tech manufacturing firms Taiwan	Survey	176	External technology acquisition positively affects firm performance, whereas external technology exploitation does not
Lichtenthaler 2013	Manufacturing industry Europe	Interview	30 Innovation intermediaries and 30 European manufacturing firms	Manufacturing firms reduce their transaction costs in technology markets by collaborating with intermediaries
Burcharth,et al. 2014	Private manufacturing firms Denmark	Survey	331	The level of negative attitudes to the acquisition and sharing of knowledge (the NIH and NSH syndromes) influences negatively the extent of use of open innovation practices
Cheng and Huizingh 2014	Service firms Asia	Survey	223	Performing open innovation activities is significantly and positively related to four dimensions of innovation performance: new product/service innovativeness, new product/service success, customer performance, and financial performance
Dodourova and Bevis 2014	Automobile industry Germany, Hungary, Italy, Romania, Slovenia, Spain, UK	Interviews	30	Identifying key obstacles to the wider adoption of the OI model in the European car industry, signals the importance of intermediaries

Henkel et al 2014	Computer component industry	Survey and interview	Survey n=267 Interview n=16	Component makers go through a learning process, which led some to realize how selectively waiving IPRs may be beneficial for their business
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Chapter 3

Research Methodology

3 RESEARCH METHODOLOGY

3.1 Introduction

This chapter describes the research methodology employed in this study. In Section 3.2 the philosophy that underpins the approach taken is outlined, discussing the interpretivist stance of the research. Section 3.3 details the justification for the adopted methodology. The research process is described in Section 3.4. This includes an overview of the data collection methods used for this study, as well as how the data was analysed. The rationale for the research design covering the reasons for selecting the industry, firms, data sources, collection and analysis are detailed. In Section 3.5 issues associated with methodological and interpretive rigor are discussed.

3.2 Interpretivist Approach

Underpinning a research methodology is a philosophical stance in relation to the purpose and place of research in general, and the specific research study in particular. Social reality can be viewed as being constructed, as it is:

“Based on a constant process of interpretation and reinterpretation of the intentional, meaningful behaviour of people – including researchers” (Smith 1989, p85)

For interpretivists, the world is too complex to be condensed to a set of observable laws, and understanding the real conditions behind the reality is a more important issue than generalizability (Gray 2004). Interpretivism is established on a life-world ontology that argues that all observation is based on theory and value and that exploration of the social world is not, and cannot be, the quest of an isolated independent reality (Leitch et al. 2009). In contrast, the premise of positivism is a realist ontology that assumes that observation is not impacted by theory and the role of the research is to identify law like generalizations reasons for what was observed.

Adopting an interpretivist approach to building knowledge (Bernstein 1995) is established on the argument that no understanding of the social world is possible without interpretation (Johnson 1987). In other words, interpretivist research, in the social sciences, represents a shift away from explaining human behaviour by way of

causal relationships between variables. Rather, it is focused on the understanding of human behaviour which necessitates:

“Capturing the actual meanings and interpretations that actors subjectively ascribe to phenomena in order to describe and explain their behaviour” (Johnson et al. 2006, p132).

An interpretivist approach allows the researcher to view a social phenomenon holistically, by embracing the multifaceted and dynamic quality of the social world through close interactions with participants, entering their realities, and interpreting their perceptions as appropriate (Bogdan and Taylor 1975, Hoepfl 1997, Shaw 1999). This is accomplished by gathering rich descriptions of the actual events in real-life scenarios (Gephart 2004).

Interpretivism is well suited to the research objective of this study as its focus is to understand what is happening in a given context (Carson et al. 2001). The epistemological stance on interpretive approaches is that knowledge of reality is gained only through social constructions such as language, shared meanings, tools, documents etc. (Walsham 1993). The basic premise being that epistemology cannot be complete. Rather, interpretivism endeavours to recognize and comprehend constructed realities that are subject to variations as the participants become more informed.

It is for these reasons that an interpretivist approach is considered appropriate for a study such as this one which explores human interactions in a creative process (innovation). It follows the perspective which focuses on meanings, trying to understand what is happening. With inductive logic it seeks the opinions and subjective accounts and interpretations of participants to reduce individual experiences with a phenomenon to a description of the universal core, what Van Manen, describes as the “grasp of the very nature of the thing,” (1990, p177). The most important element in the interpretivist paradigm is humans because realities are believed to be created by humans in their interpretive practices. The view that human actions are filled with meaning, and that this meaning is carried through to their resultant spheres is endorsed. Patton (2002) argues that human factor is the fundamental strength and essential weakness of qualitative inquiry, as subjectivity means that knowledge is open to debate concerning validity. However, Lindlof and Taylor (2002) suggest that researching in a naturalistic setting is a pillar in the interpretivist paradigm, emphasising that familiarity is both appropriate and mandatory. As Bryman and Bell (2007) state, interpretivists take the view that:

“The subject matter of the social sciences—people and their institutions—is fundamentally different from that of the natural sciences. The study of the social world therefore requires a different logic of research procedure” (2007, p17)

This different logic within an interpretivist approach requires the researcher to inductively explore concepts, rather than the deductive process of using data to generate theory. Aspects of the social world are observed by researchers so as to discover patterns that could be used to explain wider principles. Robson (2002) also argues that there is no one reality, rather reality is based on an individual’s perceptions and experiences. Linked to this aspect is the argument that real world features that are markedly human tend to get lost when they are analysed and “reduced to the interaction of variables” (Hughes and Sharrock 1997, p102). Therefore, a researcher’s role should be to analyse the various interpretations that participants associated to a particular phenomenon give to their experiences (Easterby-Smith et al. 2002).

The philosophical position for this research on what is the nature of reality and how this reality can be known has been illustrated by the ontological and epistemological stance outlined above. This has clear implications for the types of methodology selected. As has been argued in the literature review, innovation demands close coordination of technical knowledge and market judgement in order to satisfy economic, technological and other types of constraints – all simultaneously (Kline and Rosenberg 1986). Moreover, it is the range of external interactions that form the premise of open innovation making it a complex and difficult concept to explore. Measurement is difficult owing to multiple realities, and real-world phenomena can only be understood by studying them in detail within the context in which they occur. An interpretivist position was thus adopted in this research.

3.3 Justification of the Research Methodology

Prior to the commencement of data collection, it is essential to clarify the foundations of the research so as to ensure a well-defined focus (Mintzberg 1979). The discussion that follows outlines the premise that informs the research design.

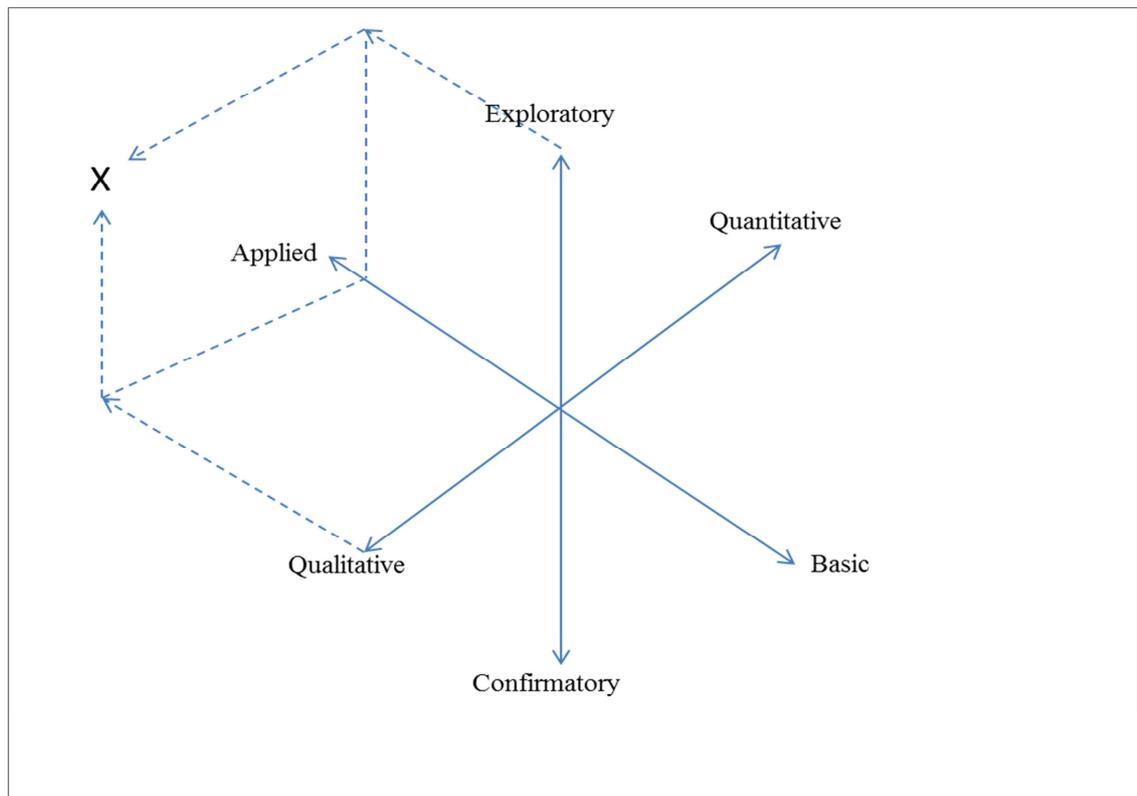
Using Perry’s (2005) three-dimensional axes of research classification, the central aspects of the study are exemplified in Figure 3.1: Classifying the research on three design continua. On the first dimension, confirmatory – exploratory, this study can be considered exploratory as it attempts to understand how firms adopt open innovation practices and the extent to which their innovation processes are open. On the second

dimension, quantitative – qualitative, while the study uses quantitative CIS data for describing innovation in Ireland, in extracting the details that an exploratory research requires, qualitative enquiry, with its ability to understand in depth the characteristics of the situation, was conducted. Finally, on the third dimension basic – applied this study, with its focus on exploring the extent of openness in firms' innovation processes, is an applied research as it improves the understanding of an organizational phenomenon and produces findings of significance and value to organizational stakeholders. Marked with a cross in Figure 3.1: Classifying the research on three design continua, the study is qualitative, exploratory, and applied.

As outlined in the literature review there is a need for qualitative research on open innovation adoption. Such an approach is called for when existing research is incomplete (Eisenhardt 1989) and a 'how' or 'why' question is required to illuminate the topic (Miles and Huberman 1994, Yin 2009). Patton (1990) argues that qualitative research attempts to understand the unique interactions in a particular situation with a purpose to understand in an in-depth manner the characteristics of the situation, focusing on the process, meaning and understanding based on thick and rich description about the situation, the people involved and the activities observed and not necessarily to predict what might occur. Interpretivism is characterised by qualitative methods. In many ways this interpretivist position is based on a belief that a qualitative approach to the objective of this research study is one that will best provide enhanced understanding, as qualitative data is considered to be the better methodology for providing insights into human activities (Guba and Lincoln 1994).

A review of the open innovation literature highlights that since the early work of Chesbrough a decade ago, a lot of insights have been developed about the phenomenon, nonetheless much more research is required. Like any new idea, initial studies on the concept were descriptive and focused on successful early adopters (Chesbrough and Crowther 2006, Huston and Sakkab 2006). However, Huizingh (2011) argues that all lessons cannot be learned from the early adopters; and that what is learnt may not be applicable to firms that are followers. He suggests that followers may have comprehensive reasons for postponing adoption; they might be finding the new concept less attractive or difficult to adopt, making it unsuitable for simply copying the lessons learned from early adopters or they may just be more reluctant to engage in organizational change. Therefore, while quantitative data can help initial exploration of the concept of open innovation (e.g. CIS data used in this study), qualitative

exploratory research can be very useful in advancing our knowledge as to how things work and enables us to identify vital concepts and phenomena, e.g. effective open innovation adoption and crucial characteristics.



Source: adapted from Perry 2005, p72

Figure 3.1: Classifying the research on three design continua

3.3.1 Semi-structured Interview Method

Mason (2002, p1) outlines that qualitative research is important and stimulating because the qualitative researcher engages with things that matter, in ways that matter. It is adept to produce ‘the general picture’ of how things actually work as it allows the researcher to explore the experiences and opinions of the research participants or respondents. In addition, it is further identified that qualitative research is a flexible method of data generation that is sensitive in a social context (Mason 2002, p3).

Lincoln and Guba (1985) suggest that when conducting a qualitative study, the researcher must develop the level of skill appropriate for a human instrument. Strauss and Corbin (1990, p42) detail it as an awareness of the nuances of the meaning of the data, referring to 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. Mason (2002, p63) highlight that interviews are one of the most commonly recognized forms of qualitative research method as using interviews can guide the researcher to approach the research questions in a manner appropriate to obtain sufficient information from the respondents (Mason 2002, p66).

Highlighting that unlike structured interviews which contain a defined sequence of questions to be asked in a similar manner of all interviewees, the distinctive characteristic of semi-structured interviews is that they have a flexible and fluid structure. Mason (2004) details that a semi-structured interview is usually prepared around a supporting interview guide that includes areas, topics or themes, required to be covered during the interview, instead of a sequenced list of standardized questions. The aim is typically to warrant flexibility in how and in what order questions are asked, and in if and how certain topics might be followed up and advanced with other interviewees. This is so as to shape the interview based on the interviewee's understandings as well as of the researcher's interests (Mason 2004)

In studying innovation in firms issues to be considered included answering the 'why' and 'how' questions within its real-life context with no possibility to control the behavioural events (Yin 1994). Also, understanding the process required assimilating information and a myriad of pieces of evidences that were more likely to be gathered at least partially by personal observation (Scholz and Tietje 2002). Thus interviews were considered an appropriate tool for building understanding of the complex phenomenon at hand (Eisenhardt and Graebner 2007). In the current context, interviews not only provide the opportunity to generate rich data but the language used by participants was considered vital in understanding their perceptions and values; and contextual and relational aspects were seen as significant in gaining insights into the respondents' perceptions.

3.4 The Research Process

A thorough literature review was first conducted to identify the broad research issues, the research process that followed can be outlined as a two stage process comprising of (1) description of innovation and open innovation in Ireland using Eurostat CIS data (2) exploration of innovation process and the extent to which the innovation process is open in Irish firms using interviews in the food sector.

The Eurostat CIS 2008 data was first used to describe innovation in Ireland, this included accessing and analysing the data of sixteen EU countries (with greater than 2000 firms each in the database). In order to explore open innovation in firms in Ireland, eighteen interviews in eight food firms were conducted. An interview guide was first designed for conducting the interviews, and this was tested through a pilot study before the main interview process. The main interview process consisted of four stages: (a) firm selection (b) interview procedures (c) transcription of interviews and (d) interview analysis.

3.4.1 Description of Innovation and Open Innovation in Ireland (Eurostat Community Innovation Survey Data)

Eurostat Community Innovation Survey (CIS) 2008 data for Ireland was used to describe innovation in Ireland and the extent to which Irish firms engage in open innovation. The CIS is a survey of innovation activities of enterprises in Ireland and other EU Member States. The survey collects information about product, process, organisational and marketing innovation and other key innovation variables (See Appendix 1 for the CIS survey questionnaire).

Scholars and statisticians focused on measuring innovation collaboration in firms were brought together by the Organisation for Economic Co-operation and Development (OECD), in the late 1980s, to produce the Oslo Manual (OECD 1992), which has since undergone two revisions (OECD 1996, 2005). A new type of innovation survey, based on the Oslo Manual was prepared and in all EU countries a shared core questionnaire was agreed upon which is known as the Community Innovation Survey. It is implemented every two years in all EU member states and has been conducted in 1992, 1996, 2001, 2002-04, 2004-06, 2006-08 and 2008-10. According to the CIS a firm is categorised as innovative if it introduces at least one product or process that is new to the firm.

The Sixth Community Innovation Survey, used in this study, was conducted in the participating countries in 2009. To obtain comparable, coherent and high quality data from the participating countries the survey was based on a common survey questionnaire and a common survey methodology grounded on the third Oslo Manual (2005). The number of firms undertaking the survey from each participating country were: Bulgaria (n=15,859), Cyprus (n=1,034), Czech Republic (n=6,804), Estonia (n=3,986), Germany (n=6,026), Hungary (n=5,390), Ireland (n= 2,178), Italy (n=

19,905), Lithuania (n=2,111), Latvia (n= 1,077), Norway (4,883), Portugal (n=6,512), Romania (n=9,631), Spain (n=37,400), Slovenia (n= 2,593) and Slovak Republic (n=2,296). The statistical results disseminated by Eurostat are at an aggregated level.

The CIS 2008 for Ireland was jointly conducted by the Central Statistics Office (CSO) and Forfás (Ireland's national industrial development policy advisory body) and comprised of 2,178 firms, categorised in sectors with sub-classifications under each heading. The sectoral classification included manufacturing, wholesale and retail, transportation and storage, information and communication, financial and insurance activities and scientific and technical activities.

In this study for exploring innovation and interactions firms engage in for innovation, the data used from CIS 2008 included the objectives Irish firms have for carrying out innovation; the innovation activities they engage in, such as engagement in internal R&D, engagement in external R&D, purchasing or licencing of external knowledge and product or process innovation; the external partners they co-operate with, namely, other enterprise within your enterprise group, suppliers of equipment, components or software; clients or customers, competitors or other enterprise in your sector, consultants, commercial labs or private R&D institutes, universities or other higher education institutions, government or public research institutes; and their innovation output and extent of openness.

The statistical software SPSS was used to analyse the data to describe innovation in Ireland and to explore how well collaboration and innovation expenditure variables predict product innovation output level.

3.4.2 Exploration of Innovation Process and the Extent of Open Innovation in Irish Firms (Interview Data)

In order to further explore the practice of open innovation and to study the extent to which firms engage in opening up their innovation process, semi structured interviews about a significant innovation in eight firms from the food sector in Ireland were conducted. The stages involved in the research process are described below:

3.4.2.1 Interview Guide

The research issues distilled from the literature review guided the formation of the semi structured interview questions for the study. In order to formulate a thorough list

of necessary questions for the semi structured interview, the research objective was analysed for its critical data points, and the questions that related directly to gathering information about the identified important points were created. These questions were then repeatedly evaluated and widened so as to capture detailed information about the research issues as well as participants' perspectives, ideas, opinions, and experiences.

The interviews protocol was designed to begin the interview with detailing the background of the study and the aim with which the research was being conducted. This was so as to provide a better understanding to the participants about the purpose of the study, and also to create rapport, giving the parties a chance to get acquainted. The interview guide (Appendix 2- Interview guide) was structured in two parts. The first section of the interview focused on gathering information about a significant innovation that has occurred in the organization, in terms of how it occurred, was developed and implemented, how it was managed and how exchange/flow of knowledge occurred with internal as well as parties external to the organization. The second section of the interview was designed to get more general information about how the firm managed and measured the effectiveness of its innovation.

3.4.2.2 Pilot Study

Pilot studies are so-called feasibility studies which are 'small scale versions or trial runs, done in preparation for the major study' (Polit et al. 2001, p467). These are also conducted for pre-testing or trying out of a specific research instrument. In the context of this research, the pilot study was conducted to determine the appropriateness of the semi structured interview protocol. Face to face interviews in two firms in Ireland were conducted in December 2012. One of the two interviewed firm was an Irish subsidiary of a European firm. Middle managers in the firms were interviewed and each interview lasted for about 65 minutes.

The pilot interviews confirmed the suitability of the interview guide for the research as detailed information about innovation in the firm, about perceptions and opinions of the participants could be gathered using the interview guide. The pilot also highlighted that some of the questions and probes were essentially asking the same thing and that there were few overlaps in the way questions were asked leading to some ambiguity in the answers. Modifications were subsequently made in the interview guide. The pilot study also informed the approach to sampling for the study as it

highlighted the kind of firms and the level of managers in the firms that were needed to be interviewed to get the data that was sought.

3.4.2.3 Firm Selection

Ireland's main indigenous industry, the manufacturing of food and drink products was chosen for this study. An initial list of the Irish food firms with a minimum annual revenue of €50m was then prepared.

Foreign owned firms were excluded from the list. This selection criterion was informed by the pilot study which indicated that the Irish subsidiaries of the multinationals, had limited information and decision making powers with regard to the innovations the firms did. A second set of firms excluded were co-operatives firms as this organization form has different motives. Two sub sectors were also excluded. First, firms that were only distributors or retailers of food products were not included as the nature of their innovation could be very different. Second meat firms were excluded as the possibility of access to them was perceived to be very low. The list comprised of 22 firms, all of which were contacted for the study. Table 3.1 below outlines the firm selection criteria.

Table 3.1: Firm selection

Firms	Number	Selection Criteria
Annual turnover €50m and above	82	Firms that could invest in innovation
Excluded –		
Foreign owned firms	22	Subsidiary firms had limited information and innovation decision making powers
Co-operatives	10	Ownership structure may impact decisions and investments
Meat Firms	12	Limited access available
Retailers and Distributors	16	Different innovation activity
Remaining number of firms	22	
Number of firms contacted	22	
Number of firms that agreed to participate	8	

3.4.2.4 *Interview Procedures*

Twenty-two firms were contacted and invited to participate in the study. An initial round of formal letters introducing the aim and scope of the study were sent out requesting the firms to participate in the research study (Appendix 3- participation request letter). This was followed by repeated rounds of emails and phone follow-ups to request participation and to arrange time for the interviews. Eight out of the twenty-two firms agreed to participate. These grouped as four medium-sized firms (Revenues €50m to €500m) and four large firms (Revenues above €500m). Interviews with multiple senior managers in these eight firms were conducted face-to-face or, in one instance by telephone. A total of 18 interviews were conducted and each lasted about 50 minutes (Table 3.2). The interviewees were senior in that they had roles such as CEO, R&D Manager, Marketing Manager or Innovation Manager. This selection criterion was again informed by our pilot study that indicated the level of managers to be interviewed to get the required information for the study.

The semi structure interview protocol was used for conducting the interviews. Firstly the participants were asked to sign a consent form, giving permission for the interview, to tape-record the interview and to use the data subsequently (Appendix 4- Informed consent form). Confidentiality was assured to encourage participants to provide truthful answers.

A brief introduction outlining the background and aim of the study was then given to the interviewees. While this provided a better understanding to the participants and got the parties to start talking, the interview protocol was used as a guide to structure the interviews. The interviewees were first asked to identify a significant innovation that had occurred in the firm and to talk about it, everything they wanted to mention about the innovation and in however much detail they liked. In this way interviewees were able to lead the conversation to issues that they viewed as important rather than being led towards talking about specific issues. When the interviewees mentioned a particular research issue, probe questions like how the innovation came about, what were its objectives, who were the people involved, how it evolved and got implemented were asked to explore in more detail the how and why of these issues of importance to the study.

Table 3.2: Interviews at the participating firms

Firms	Annual Turnover (2012)	Number of Interviews Conducted	Interview Duration (in minutes)	Role of Interviewed People
Firm A	€200m	3	50	Commercial Director
			45	Marketing Head
			50	Research Engineer
Firm B	€223.4m	3	30	Managing Director
			60	Marketing Manager
			60	Brand Manager
Firm C	€85.4m	3	50	Managing Director
			60	Innovation Manager
			75	Senior Engineer
Firm D	€300m	2	45	Marketing Director
			40	Marketing Manager
Firm E	€716.7m	3	65	Innovation Manager
			40	Commercial Manager
			40	Packaging Manager
Firm F	€1.2b	2	40	CEO
			40	Group Communications Manager
Firm G	€2.2b	1	50	Marketing Manager
Firm H	€5.8b	1	40	Former R&D Innovation Manager

In order to explore internal and external interactions firms engaged in when practicing innovation the participants were then asked to talk about the resources from outside the firm that were used for the significant innovation or for other innovation purposes. They were also asked about the way knowledge exchanges took place internally within the firm. Questions about the type of external collaboration partners and the extent of interactions were also included. The participants were questioned on what sort of information they shared with the partners, whether they shared all information and how they evaluated the effectiveness of their innovation.

To address management issues, more general questions were asked in relation to: if budgets were allocated for innovation; who undertook and managed the innovation

process, if there were innovation teams, if senior management was involved and how were decisions related to opening up the innovation process taken. Finally, interviewees were asked to reflect on whether interactions both internal and external have evolved in the firm and how open and interactive they regard their firms to be when practicing innovation.

3.4.2.5 Interview Transcription and Analysis

In the case of qualitative data it is the data collection phase itself when the analysis commences (Rocks et al. 2007). Observations and thoughts arising during or after each of the interviews were summarised separately to aid the analysis. All the eighteen interviews were personally transcribed by the researcher to ensure that all nuances of the interviews were captured.

The overall analytical approach adopted for analysing the interview transcripts was template analysis, where the researcher produces a template that represents themes identified in the documented data (King 2004). An initial template (Table 3.3) was created summarizing themes identified from a preliminary reading of the interview transcripts. The IVC framework defined the template structure, as it comprises an end to end view of the innovation activities involved in the process, namely: accessing and creating knowledge, building innovation and commercializing those innovations (Hansen and Birkinshaw 2007).

Comparable descriptions and common terminologies were identified. All data and observation summaries were categorised into themes (Glaser and Strauss 1967, Miles and Huberman 1994, Voss et al. 2002). Analysis of data was then done using a coding technique. Rocks et al. (2007) suggest that by coding, data can be connected with the theoretical constructs and it is the first step in categorising the data. The codes “*are retrieval and organising devices that allow the analyst to spot quickly, pull out, then cluster all the segments relating to a particular question, hypothesis, concept or theme*” (Miles and Huberman 1994, p56). However codes must be meaningful not only in terms of the data but also meaningful with regard to other categories Dey (1993).

Using template analysis, the transcripts were categorised into broad themes guided by the research objectives and interview questions. The data was read through to code themes, themes that were strongly expected to be relevant to the analysis. Broad themes in the template included successively narrower, more specific ones.

The analysis of the interviews was, based on the IVC constructs identified in the literature as a framework that facilitates the analysis of inter-relationships between external interaction and innovation by highlighting the structure and complexity of the innovation process. Guided by the IVC framework, the interview transcripts were coded accordingly and the significant elements were extracted. The primary codes included text extractions referring to the meaning of innovation at the firm, their most significant innovation, its process and the management of innovation. Using examples from the interview transcripts, the Table 3.3 below illustrates the coding process.

Once the transcripts were coded, each code was read again. Some of the codes appeared overlapping while a few needed to be split. Sub-categories emerged upon re-reading the transcripts, related themes were combined while the ones that required distinction were split up until everything was categorised; new themes if recognised were defined to include the appropriate material and arranged into the initial template. A more detailed analysis of each of the broad themes was then performed so as to identify further specific categories within each theme. This hierarchical categorization allowed for analysis at different levels of specificity. As is emphasised by scholars, to present empirical evidence, data must be compared with existing literature and analysed like a dialogue between data and theory (Eisenhardt 1989, Halinen and Tornroos 2005, Eisenhardt and Graebner 2007, Yin 2009). Broad primary categories were used to develop an overview from the interview data, while the detailed specific ones helped identify fine distinctions both within and between cases (King 2004). The template thus included the following –

Themes: Background of the Firm

The Meaning of Innovation in the Firm

Significant Innovations

Management of Innovation

Codes: Innovation Evolution

Innovation Objectives and Effectiveness

Innovation Team and Budget

Internal and External Interactions

Sub codes: Market Orientation

Open Innovation

Table 3.3: Interview coding process

Example 1	
Excerpt –Interview Transcript	<p>“We look for ideas all the time. We have not gone for brain storming sessions for the last two years; we do more cross functional meetings than brain storming sessions as they don’t really generate new news.</p> <p>In the cider market a barrier to innovation has been the last budget. The government increased duty on wines, cider with flavour added to it is defined as wine, so this has been detrimental to innovation. But we are innovation led, meaning we build on capabilities and product categories that we have rather than look at what’s new to world. Doing new to world requires lot of capabilities / resources that have to run parallel to the day to day stuff, which is difficult and most of the time very expensive. So certain innovations that are of appeal are beyond reach at times. However our innovation, the pear thing was technically led internally. We had our own cider people; we had a technical team for the recipe. For physiological testing etc. we did work with an agency on that, we also worked with an ad agency who worked on our communication and creative. Our pack design was external and sales by our own team.”</p>
Theme	<p>Meaning of innovation at the firm</p> <p>“In the cider market....beyond reach at times”</p>
Theme	<p>Management of innovation</p> <p>“We look for ideas...generate new news”</p> <p>“However our innovation....sales by our own team”</p>
Codes	<p>Internal interactions</p> <p>“We have not gone...generate new news”</p> <p>External interactions</p> <p>“For physiological testing ...design was external”</p>

Example 2**Excerpt –Interview Transcript**

“We do a piece of qualitative research every year to find out what are people drinking, seeing or trying. Then our procurement team tells us something, our packaging team tells us something and consumer research tells us something and somewhere in it all we have to try and figure out what do we want. We look at insights from business challenges and innovation falls out from them. Interactions with outsiders for ideas is quite obvious, we have good expertise in house but there is always collaboration, finding out what trends and flavours are popular. But there is always a balance between discussion of interest and protecting confidentiality. If we are planning something new we go talk to them if they will be interested in it and later we make formal presentations. For general discussion it is okay but further down the line discussion like sharing the brand name, sample etc. we would be very careful.”

Themes**Management of innovation**

“We do a piece of... would be very careful.”

Codes**External interactions**

“We do a piece of... would be very careful.”

Sub codes**Market Orientation**

“We do a piece of qualitative research.... innovation falls out from them”

Open Innovation

“Interactions with outsiders.... we would be very careful”

Analysing the data by way of themes allowed listing the findings in terms to the phenomena's real-life context and the particular research questions: exploring the innovation process of the firms; and the extent to which firms are open when innovating. This initial template was then applied to the whole data set, and altered in the light of consideration of each transcript. The template served as the basis for interpretation of the data set, and for the writing-up of the findings.

3.5 Quality in Qualitative Research

Despite the different approaches and traditions within qualitative and explorative research, there are underlining concerns about research quality with the methodology. There is also collective interest in issues such as 'rigour'; the need for ideologies of practice to be made manifest; the importance of sound or 'robust' qualitative research evidence; and in the applicability and utility of research (Spencer et al. 2003).

Amis and Silk (2008) argue that for quantitative researchers demonstrating methodological rigor involves presenting a relatively direct and transparent account within a standardized set of procedures. This is because the research seeks objective discovery of facts underlying the relationship among variables, and therefore is characterized by the traditional norms of objectivity, internal and external validity, reliability and generalizability. For the interpretivist researcher however, the scope, diversity, and richness of the methodological approaches make the task of demonstrating methodological rigor much more difficult and complex.

Some researchers argue that as qualitative and quantitative research is very different they cannot be judged using the same conventional criteria such as reliability, validity, and generalizability. While another school of thought in the literature is that quality in qualitative research can be gauged with the same broad concepts of validity and relevance used for quantitative research, but these need to be operationalized differently to take into account the distinguishing goals of qualitative research (Mays and Pope 2000). A useful way of abstracting this is to relate it in terms of trustworthiness, or "the ways we work to meet the criteria of validity, credibility and believability of our research" (Gubrium and Koro-Ljungberg 2005).

Seale (1999) argues that the quality of qualitative research can be assessed according to two broad criteria validity and relevance. Utilizing these criterions, the following techniques were used to address the issue of quality of this research (Mays

and Pope 2000). Table 3.4: Quality criteria of the research illustrate quality criteria for this research.

Table 3.4: Quality criteria of the research

Level	Criteria	Research Phase	Case/Interviews Techniques
Ontology	Ontological appropriateness	Research design	Selection of research problem (why or how)
	Contingent validity (internal validity)	Data analysis	Cross-cases, detailed questions, description of the context
Epistemology	Multiple perceptions of participants and peer researchers	Data collection	Multiple interviews, triangulation
Methodology	Methodological trustworthiness (reliability)	Data collection	Use in the report of relevant quotations and matrices that summarise data, and of descriptions of procedures like firm selection and interview procedures
	Analytic generalisation (external validity)	Research design	Identification of research issues before data collection for formulation of the interview protocol

Source: Adapted from Healy and Perry (2000), Eisenhardt (1989), Yin (1984)

3.5.1.1 Validity

Validity, in qualitative research, discusses if the findings of a study are true and certain. They are ‘true’ when the situation/ phenomenon are accurately reflected by them, and when evidence supports the research findings they can be regarded as ‘certain. Validity, in qualitative research, can be established in the following ways: by triangulation; by clear description of methods of data collection and analysis; by reflexivity and by giving attention to negative cases (Mays and Pope 2000).

a. *Triangulation* - It is a method utilized by qualitative researchers to gauge and establish validity of their research and involves investigating a research question from multiple perspectives. This includes comparing the results from either two or more different methods of data collection (for example, interviews and observation) or, two or more data sources (for example, interviews with members of different interest groups).

For this study triangulation is achieved firstly by conducting interviews with people from different departments and levels in the same organization, including CEOs,

marketing managers, technical engineers, innovation directors and packaging managers. Secondary information was also gathered from different sources, including firm websites and press releases, with an aim to validate the research findings.

b. *Clear description of methods of data collection and analysis* – Since the objects of investigation are unavoidably influenced by the methods used in research, an explicit description of the process of data collection and analysis is important.

In order to address the issue of quality of this research, a clear and elaborate account of the complete process of data collection for the study is provided. Providing adequate data and details of how the analysis was done, including transcription of the interviews, identification of themes, development of the coding templates from themes summarized from the transcripts and how broad themes evolved to include successively narrower more specific ones. This enables the reader to judge the interpretation in the light of sufficient data ensuring quality of the research.

c. *Reflexivity* – This is the consideration about the concern of biases that researcher may introduce during the collection and analysis of data. Bias may arise because of the researcher's impact on the events and behaviour of participants when collecting data or due to the researcher's own beliefs and prior assumptions which may limit suitable inquiry of the phenomenon under examination and even influence the analysis of the study. Walsham (1995) argues that biases arising from researcher's impact when collecting data are often unavoidable as merely by sharing the concepts and interpretations of it with the research participants they tend to influence what is influencing. Therefore the vital point for researchers to remember is that many times bias is unavoidable and so they must understand the inherent biases, recognizing that they will occur and minimizing the effects.

The interviewees were asked to detail facts so as to reduce cognitive bias and limit impression management. The identification of a significant innovation enabled this.

To enhance the validity of this research, assumptions made if any are outlined at the very outset of the research. A detailed account of the research process including sampling procedure, designing of the interview protocol and development of template for analysis is included in order to minimize bias.

d. *Attention to negative cases* – Although there were no negative or contradicting cases in the findings, extreme ones are duly emphasised for improving the quality of explanations and so as to refine the analysis further.

3.5.1.2 *Relevance*

Research can be regarded as relevant if it either adds to knowledge or if it increases the confidence with which existing knowledge is stated. Another important dimension for gauging the relevance of research is the generalizability of the research, the extent to which the findings can be generalised beyond the original setting where they are generated.

Adelman et al. (1980) argue that the knowledge qualitative research produces is important in its own right and qualitative studies are not generalizable in the standard sense of the word. Though there can be potential for partial generalizations to similar populations, it is not the primary concern of qualitative research. Morse (1999) states that the selection of participants in qualitative research is by way of theoretical sampling, i.e. for their ability to provide data and evidence about the subject being explored through the study. Therefore she argues that situational, instead of demographic, representativeness is what is sought and that generalizability in qualitative research denotes the magnitude to which theory developed within one study may be transferred to explain experiences of other entities in analogous situations. Similarly Popay et al. (1998) emphasize that in qualitative research, 'the aim is to make logical generalizations to a theoretical understanding of a similar class of phenomena rather than probabilistic generalizations to a population'.

In undertaking qualitative research the definitive aim is to offer a viewpoint of a situation and provide a detailed research report that reveals the ability of the researcher to demonstrate or describe the corresponding phenomenon. The relevance of this research lies in that fact that it adds to the knowledge about open innovation adoption by firms by providing a detailed account of what 'innovation' and being 'open' in their innovation means to firms in Ireland and how they are adopting the concept. Generalisation from empirical observations to theory rather than a population, referred to as analytical generalisation (Yin 1984, Gibbert et al. 2008) is achieved by identifying research issues before data collection through literature review and by formulating an interview protocol to provide data for developing an argument. The research is then documented with sufficient details so that the reader is able to judge whether or not the findings apply in other settings.

Chapter 4

Findings: Innovation in Ireland

(CIS Data)

4 FINDINGS: INNOVATION IN IRELAND (CIS DATA)

4.1 Introduction

Using the CIS data, this chapter presents an overview of innovation in Ireland with a particular focus on the food sector and on the interactions firms' engage in when innovating (Section 4.2). The chapter also reports the impact of external interactions on firms' product innovation output. In particular, the chapter examines how collaboration and innovation expenditure variables can predict the product innovation outputs of firms (Section 4.3). The overall findings of the CIS data analysis are listed in Section 4.4.

4.2 Innovation in Ireland

4.2.1 Innovation Objectives

Using the CIS data for Ireland, firstly the objectives firms have for carrying out innovation were explored. Table 4.1 lists all 9 innovation objectives listed in the CIS survey. Each firm was asked to indicate on a 0-3 scale the degree of importance of each objective when innovating. Table 4.1 presents the results for the entire range of objectives for all innovation active firms in Ireland as well as just for food firms. The mean value score represents the firms' evaluation of the degree of importance of each the innovation objective. Overall, the results indicate that of the sample of 1,057 firms in Ireland that are classified as innovative, most firms regard improving the quality of their goods and services as the key objective for pursuing innovation, followed by increasing their market share and then the range of their goods or services.

The 89 food, beverage and tobacco sector (referred to as food sector) firms that are engaged in innovation, regard increasing their market share as the key objective for practicing innovation. Improving the quality of their goods or services and reducing labour costs per unit output were the second and third most important innovation objectives respectively.

Table 4.1: Innovation objectives

Innovation Objectives	Mean Irish Firms (n=1057)	Mean Irish Food Firms (n=89)
Improve quality of goods or services	2.2	2.3
Increase market share	2.1	2.3
Increase range of goods or services	2.1	2.2
Enter new markets	1.9	2.1
Reduce labour costs per unit output	1.9	2.2
Improve flexibility for producing goods or services	1.9	2.0
Replace outdated products or processes	1.8	1.8
Increase capacity for producing goods or services	1.7	2.0
Improve health and safety	1.5	1.8

Mean- average of the rating of innovation objectives by each firm; Rating: 0-Not relevant; 1-Low; 2-Medium; 3-High

4.2.2 Innovation Activities

Table 4.2 presents the innovation activities of Irish firms. In the CIS survey innovation activities are categorized as engagement in internal R&D, engagement in external R&D, purchasing or licencing external knowledge and doing product or process innovation. The results indicate that of the 1,057 innovative firms in Ireland, 47.6% firms engage in internal R&D activities, while 20.8% in external R&D and 12.5% firms purchase or licence external knowledge. Also of these firms 64.2% firms reported they carried out a product innovation in the past three years, while 78.5% reported they conducted a process innovation.

With regard to these innovation activities across sectors in Ireland, more firms in the food sector practice internal R&D (69.9%) and external R&D (27.8%) than any other sector. Fewer food sector firms engage in purchasing or licencing external knowledge (8.9%) than 20.9% of scientific and technical activities firms, 17.2% of financial and insurance activities firms and 14.0% of information and communications firms.

Across sectors, 80.9% information and communication sector firms, 66.9% of manufacturing firms and 66.3% of food sector firms reported that they conduct product

Table 4.2: Innovation activities

Sector	Innovation Activities				
	Engagement in Internal R&D (% Firms)	Engagement in External R&D (% Firms)	Purchasing/Licencing External Knowledge (% Firms)	Product Innovation (% Firms)	Process Innovation (% Firms)
All Irish Firms (n=935-1057)	47.6	20.8	12.5	64.2	78.5
Food, Beverage & Tobacco (n=79-89)	69.9	27.8	8.90	66.3	87.6
Manufacturing (n=342-387)	59.5	25.6	11.4	66.9	80.2
Wholesale and Retail (n=185-208)	25.8	11.2	10.3	54.8	75.5
Transportation and Storage (n=71-81)	23.6	14.1	13.9	55.6	81.5
Information and Communication (n=100-115)	59.0	18.8	14.0	80.9	68.1
Financial and Insurance Activities (n=99-111)	33.3	20.8	17.2	63.1	80.9
Scientific and Technical Activities (n=41-46)	45.2	22.0	20.9	60.9	73.9

All percentages are valid percentages, accounting for the missing data

Sectors Electricity and Gas Supply, Mining and Quarrying, Water Supply and Waste Management were not included as data from only 1, 6 and 11 firms respectively in the sectors were available

innovation. The percentage of firms in the food sector reporting that they carry out process innovation (87.6%) is higher than any other sector.

In Summary, the results suggest that firms in Ireland are more active in practicing internal R&D than external R&D or purchasing or licencing external knowledge with food sector firms being the most active in this regard across sectors. Process innovation is the more common type of innovation for the firms. These patterns are consistent across sectors in Ireland with the only exception being the information and communications sector, wherein more firms engage in product innovation than process innovation.

4.2.3 Co-operation Partners

Seven external sources of information and co-operation for innovation activities are listed in the CIS survey; these are, other enterprise within your enterprise group; suppliers of equipment, components or software; clients or customers; competitors or other enterprise in your sector; consultants, commercial labs or private R&D institutes; universities or other higher education institutions; government or public research institutes. Table 4.3 reports the engagement of firms with each of these co-operation partners across sectors in Ireland.

The number of the different types of domestic and foreign co-operation partners firms used in the innovation process was then categorized as their co-operation breadth (Laursen and Salter 2006). The co-operation breadth could range from 0-7, 0 when no partners are used, while the firm gets a score of 7 when the firm is collaborating with all potential collaboration partners. Co-operation breadth was further grouped as low and high breadth with firms collaborating with 1-3 external partners as having low co-operation breadth while firms engaging with 4-7 partners as displaying high co-operation breadth.

The results show that of the 1,053 firms in Ireland that are engaged in innovation, 73.2% firms do not engage with any external partners. For those engaging with external partners, it was observed that most firms have a low co-operation breadth with 18.3% firms collaborating with 1-3 external partners and just 8.5% firms engaging with 4-7 partners. The most common collaboration partner is suppliers (16.1% firms) followed by customers (14.5% firms). Competitors are the least preferred innovation co-operation partners with only 5.8% firms interacting with them for their innovation activities.

With regard to the food sector, 61.8% firms (n=89) did not engage with any external partners, this is lower than all other sectors, 23.6% firms collaborate with 1-3 partners while 14.6% firms collaborate with 4-7 partners. This trend was consistent across sectors in Ireland with more firms having low co-operation breadth than having high co-operation breadth. Where firms have external collaborations, the key collaborators in the food sector (n=89) are suppliers and customers with 25.8% and 22.5% food firms engaging with them respectively and a similar pattern was observed across most sectors. Enterprises within own group in few sectors are the only other collaboration partners with whom equal or more number of firms than that collaborating with suppliers or customers engage with. 15.0% manufacturing firms (n=386) collaborate with both suppliers and enterprises within own group; 18.9% financial and insurance activities firms (n=111) collaborate with enterprises within own group higher than those collaborating with customers. 13.8% of transportation and storage firms (n=80) collaborate with enterprises within own group higher than those collaborating with their suppliers or customers.

Competitors are generally less preferred innovation co-operation partners across sectors as well, however, in some case like transportation and storage and scientific and technical activities equal numbers of firms engage with competitors and government or public research institutes for innovation activities. Similarly equal numbers of firms engage with competitors and consultants in the information and communications sector. While in case of wholesale and retail sector more firms collaborate with competitors than with government or public research institutes. Financial and insurance activities is the only sector wherein more firms collaborate with their competitors than with their customers, consultants, universities and government or public research institutes. Their least preferred partner being government or public research institutes.

Table 4.3: Co-operation partners

Sectors	% Firms co-operating with each partner							Co-operation Breadth ^a		
	Enterprise within group	Supplier	Customer	Competitor	Consultant	Universities	Government or public research institutes	% of Firms with no external co-operation	% of Firms with 1-3 Partners	% of Firms with 4-7 Partners
All Firms IE (n=1053)	14.1	16.1	14.5	5.8	11.2	10.3	6.4	73.2	18.3	8.50
Food, Beverage & Tobacco (n=89)	14.6	25.8	22.5	5.6	20.2	16.9	20.2	61.8	23.6	14.6
Manufacturing (n=386)	15	15	14.2	3.4	13.2	11.1	4.9	74.4	16.6	9.1
Wholesale and Retail (n=209)	9.6	12.4	11.5	4.8	5.7	6.2	3.3	81.3	12.9	5.7
Transportation and Storage (n=80)	13.8	11.5	11.3	6.3	8.8	5.0	6.3	76.3	18.8	5.0
Information and Communication (n=114)	14.9	15.8	19.3	8.8	8.8	15.8	7.0	64.9	26.3	8.8
Financial and Insurance Activities (n=111)	18.9	23.4	11.7	12.6	10.8	6.3	4.5	68.5	23.4	8.1
Scientific and Technical Activities (n=46)	10.9	15.2	17.4	6.5	8.7	10.9	6.5	73.9	17.4	8.7

^aCo-operation breadth - number of the different types of domestic and foreign co-operation partners firms' use in their innovation process

Sectors Electricity and Gas Supply, Mining and Quarrying, Water Supply and Waste Management are not included as data from only 1, 6 and 11 firms respectively in the sectors was available

4.2.4 Extent of Openness

Detailing the innovation activities and external collaborations of firms further, Table 4.4 presents the average product innovation output as well as the average extent of openness of firms in each sector in Ireland.

Table 4.4: Innovation output and openness

Sector	Number of Firms	Average Product Innovation Output ^a (%)	Number of Firms	Average Extent of Openness ^b
All Irish Firms	678	24.2	932	1.1
Food, Beverage & Tobacco	59	24.3	79	1.7
Manufacturing	259	22.6	341	1.1
Wholesale & Retail	114	22.0	185	0.8
Transportation & Storage	45	19.8	71	1.0
Information & Communication	93	33.2	99	1.2
Financial & Insurance Activities	70	24.4	99	1.2
Scientific & Technical Activities	28	27.8	43	1.2

^aAverage of the sum of turnover from new to market products and turnover of new to firm products of firms doing product innovation

^bAverage of external interactions firms engage in, calculated as detailed in Section 4.3

Sectors Electricity and Gas Supply, Mining and Quarrying, Water Supply and Waste Management were not included as data from only 1, 6 and 11 firms respectively in the sectors was available

The results shows that the average product innovation output of firms in Ireland is 24.2% (n=678) and when collaborating with external partners for innovation purposes, the average extent of openness of firms in Ireland is 1.1 (n=932).

Focusing on the sector breakdown, the food sector has an average product innovation output of 24.3% (n=59), lagging behind many other sectors including information and communications sector (33.2%; n=93), scientific and technical activities (27.8%; n=28) and financial and insurance activities firms (24.4%; n=70). The food sectors' extent of openness averages at 1.7 (n=79), the highest across sectors.

4.3 Open Innovation and Product Innovation Output

In order to evaluate how well collaboration and innovation expenditure variables predict product innovation output level a multiple regression analysis was conducted. As argued in the literature (Drechsler and Natter 2012) variables indicating openness in innovation were selected as independent variables, namely, extent of openness, in-house R&D expenditure, purchase of external R&D, acquisition of external knowledge. Firm size and industry were the control variables, while the dependent variable was product innovation output. However, as there was a very low level of responses across a range of variables for Irish firms, the same regression analysis procedure was repeated for other European countries in order to observe the relationship between the dependent and independent variables when the response rate of firms was higher.

4.3.1 Measures

Dependent variable - To measure the innovative performance of the firms, a variable that indicates the ability of firms to produce innovations was computed. This variable, the product innovation output, was measured as the average of the sum of revenues (in the last three years) from new to market products and revenues (in the last three years) from new to firm products for firms doing product innovation.

Independent variable - As a determinant of the product innovation output, three variables from the CIS survey were included, these were, in-house R&D expenditure, purchase of external R&D and acquisition of external knowledge. All of the three variables are continuous variables.

A variable reflecting openness in terms of external co-operation firms engage in for their innovation activities was computed. The extent of openness score for the firms was measured in the following manner (adapted and modified from (Drechsler and Natter 2012) :

$$EO_i = EEI_{ji} + \sum_{j=1}^7 DC_{ji} + \sum_{j=1}^7 FC_{ji}$$

Where:

EO_i Extent of openness of firm i

- EEI_{ji} Engagement in external interaction which includes purchasing or licencing external knowledge
- DC Domestic collaborations
- FC_{ji} Foreign collaborations
- J Partners including other enterprise within own enterprise group, suppliers, customers, competitors, consultants, universities and government or public research institutes

Engagement in external interaction was included as a binary variable in the CIS survey, 0 being do not use and 1 being purchasing or licencing of external knowledge by the firm. For computing domestic collaborations, co-operation with external partners, again coded as 0 being do not use and 1 being use for each of the seven partners in the survey was added up. Score for domestic collaboration could thus range from 0–7, 0 when no partners are used, while the firm gets a value of 7 when the firm is collaborating with all potential collaboration partners. Similarly in case of foreign collaborations binary codes for each of the co-operation partners for other Europe, US, China or India and All other countries as listed in the survey were added individually, re-coded as 0 and 1 and then summation for all the seven partners was done. The score for foreign collaboration thus could also range from 0–7. Based on the above calculation, the extent of openness score of a firm could range from 0 to 15, implying that firms with count 0 do not adopt any open innovation practices while firms with count up to 15 have high degree of openness.

Control variables - Firm size and industry or sectors the firm operates in were included as control variables. Firm size included in the survey is measured by the number of employees. It is binary coded, with 0 being <50 employees while 1 being ≥50 employees. Food sector is the focus of the study so industry variable was measured by binary coding food firms as 1 and all other firms as 0.

4.3.2 Statistical Method and Results

To evaluate how well collaboration and innovation expenditure variables predict product innovation output level, a multiple regression analysis was conducted. The dependent variable was product innovation output and the independent variables were extent of openness, in-house R&D expenditure, purchase of external R&D, acquisition of external knowledge, with firm size and industry as the control variables. Upon

examination of the data it was observed that only 39 firms in Ireland provided complete data for all the variables included in the regression model, hence regression for these firms was conducted. Table 4.5 below summarizes the descriptive statistics and analysis results. The independent variables account for 34% of the product innovation output variance ($R^2 = 0.340$).

Of the independent variables, in-house R&D expenditure, acquisition of external knowledge and firm size did not have significant impact on the product innovation output. Extent of openness and purchase of external R&D were found to have significant and positive relationship with the product innovation output ($b=0.359$, $p<0.05$; $b=0.288$, $p<0.10$), indicating that firms with higher scores on these scales were expected to have high product innovation output. While Industry (Food or Non-food sector) had a significant and negative impact (opposite in sign from its correlation with the criterion) on the product innovation output ($b=-0.262$, $p<0.10$), indicating that firms of non-food sectors were expected to have higher product innovation output.

Although the results indicate that the extent of openness impacted the innovation output of firms; owing to the small sample size of the Irish firms, other European Union (EU) countries' CIS data was analysed to explore the impact of openness on product innovation output. Of the 16 EU countries included in CIS 2008, data for 11 countries was available to carry out the regression analysis. Results summarized in Table 4.6 below show that for most countries like Spain ($n=16357$), Germany ($n=2539$), Estonia ($n=2238$), Portugal ($n=1336$), Lithuania ($n=749$), Bulgaria ($n=522$) and Hungary ($n=420$), extent of openness had significant and positive effect on the product innovation output, suggesting that firms with greater extent of openness can be expected to have high product innovation output.

Table 4.5: Regression results - Ireland

Independent Variables	Dependent Variable (Product Innovation Output)		Mean	Standard Deviation
	Coefficient	p-value		
Extent of Openness	0.359	0.019*	3.59	3.20
In-house R&D expenditure	0.139	0.373	909179	2599367
Purchase of External R&D	0.288	0.073**	318453	945314
Acquisition of External Knowledge	-0.051	0.735	747418	4179617
Firm Size	-0.191	0.216	0.54	0.50
Industry	-0.262	0.081**	0.08	0.27
n	39			
R	0.583 ^a			
R ²	0.340			

*p <0.05, **p <0.10

^aIndependent variables: (Constant), Extent of Openness, In-house R&D expenditure, Purchase of External R&D, Acquisition of External Knowledge, Firm Size, Industry

4.4 Findings: Innovation in Ireland (CIS Data)

To summarise, the analysis of innovation in Irish firms using the CIS data reveals the following findings:

- a. Firms regard improving the quality of their goods and services as the key objective for practicing innovation. While for the food sector firms the key innovation objective is to increase their market share.
- b. More firms practice internal R&D than external R&D or purchase or licence external knowledge. The food sector firms are the most active in this regard across sectors.
- c. Process innovation is the most common type of innovation for the firms across sectors.
- d. Firms generally collaborate with 1-3 external partners for innovation. The most common collaboration partner is suppliers followed by customers. Competitors are the least preferred co-operation partner choice and these patterns are consistent across sectors.

- e. The average extent of openness is highest for the food sector firms across sectors, and firms with greater extent of openness can be expected to have high product innovation output.

Overall, the CIS data analysis presents an overview of innovation and open innovation practices in Ireland with a particular focus on the food sector. Describing the extent of openness of firms in Ireland and its impact on product innovation output of firms the data outlines the emphasis of Irish firms on innovation and open innovation. The implications of these findings are discussed in Chapter 7.

Table 4.6: Regression results of EU countries included in CIS 2008

Independent Variable	Spain (n=16357)				Germany (n=2539)				Estonia (n=2238)			
	Dependent Variable (Product Innovation Output)		Mean	Standard Deviation	Dependent Variable (Product Innovation Output)		Mean	Standard Deviation	Dependent Variable (Product Innovation Output)		Mean	Standard Deviation
	Coefficient	p-value			Coefficient	p-value			Coefficient	p-value		
Extent of Openness	0.126	0.000*	0.73	1.665	0.250	0.000*	1.40	2.231	0.105	0.000*	1.84	2.216
In-house R&D expenditure	0.025	0.006*	417051	3254299	-0.005	0.905	3997807	52886548	0.029	0.200	58846	344877
Purchase of External R&D	-0.012	0.172	136195	2423170	0.006	0.892	810787	14908314	-0.049	0.026*	12871	69778
Acquisition of External Knowledge	0.001	0.863	57949	2683711	-0.003	0.862	216959	3559714	0.064	0.003*	2386	13843
Firm Size	-0.046	0.000*	0.56	0.691	-0.125	0.000*	0.80	0.774	-0.146	0.000*	0.50	0.500
Industry	-0.012	0.127	0.08	0.271	-0.025	0.187	0.04	0.203	-0.033	0.114	0.09	0.281
n	16357				2539				2238			
R	0.133 ^a				0.253 ^a				0.198 ^a			
R ²	0.018				0.064				0.039			

*p <0.05, **p <0.10

^aIndependent variables: (Constant), Extent of Openness, In-house R&D expenditure, Purchase of External R&D, Acquisition of External Knowledge, Firm Size, Industry

Independent Variable	Portugal (n=1336)				Lithuania (n=749)				Bulgaria (n=522)			
	Dependent Variable (Product Innovation Output)		Mean	Standard Deviation	Dependent Variable (Product Innovation Output)		Mean	Standard Deviation	Dependent Variable (Product Innovation Output)		Mean	Standard Deviation
	Coefficient	p-value			Coefficient	p-value			Coefficient	p-value		
Extent of Openness	0.163	0.000*	4.10	2.645	0.168	0.000*	2.79	3.288	0.110	0.011*	3.28	2.278
In-house R&D expenditure	0.043	0.117	530756	3916268	0.040	0.280	79146	396293	0.056	0.200	49689	343077
Purchase of External R&D	-0.021	0.471	130265	900671	0.005	0.898	22823	151098	0.059	0.163	6963	76776
Acquisition of External Knowledge	0.016	0.575	41162	391552	-0.062	0.103	13124	105209	0.089	0.039*	26808	336140
Firm Size	-0.172	0.000*	0.75	0.757	-0.145	0.000*	0.95	0.707	-0.251	0.000*	0.56	0.729
Industry	-0.051	0.058**	0.04	0.184	-0.007	0.851	0.06	0.238	-0.047	0.265	0.11	0.307
n	1336				749				522			
R	0.214 ^a				0.215 ^a				0.288 ^a			
R ²	0.046				0.046				0.083			

*p <0.05, **p <0.10

^aIndependent variables: (Constant), Extent of Openness, In-house R&D expenditure, Purchase of External R&D, Acquisition of External Knowledge, Firm Size, Industry

Independent Variable	Hungary (n=420)				Ireland (n=39)				Czech Republic (n=1939)			
	Dependent Variable (Product Innovation Output)		Mean	Standard Deviation	Dependent Variable (Product Innovation Output)		Mean	Standard Deviation	Dependent Variable (Product Innovation Output)		Mean	Standard Deviation
	Coefficient	p-value			Coefficient	p-value			Coefficient	p-value		
Extent of Openness	0.219	0.000*	4.25	2.850	0.359	0.019*	3.59	3.20	0.036	0.122	2.52	2.956
In-house R&D expenditure	-0.071	0.167	797697	4761692	0.139	0.373	909179	2599367	0.031	0.213	340338	1894511
Purchase of External R&D	0.096	0.099**	671361	6620187	0.288	0.073**	318453	945314	0.031	0.208	202564	2880541
Acquisition of External Knowledge	0.150	0.008*	287959	2419246	-0.051	0.735	747418	4179617	0.031	0.169	33848	415813
Firm Size	-0.026	0.589	1.35	0.674	-0.191	0.216	0.54	0.50	-0.251	0.000*	1.08	0.777
Industry	-0.035	0.454	0.07	0.262	-0.262	0.081**	0.08	0.27	-0.047	0.265	0.07	0.250
n	420				39				1939			
R	0.303 ^a				0.583 ^a				0.158 ^a			
R ²	0.092				0.340				0.025			

*p < 0.05, **p < 0.10

^aIndependent variables: (Constant), Extent of Openness, In-house R&D expenditure, Purchase of External R&D, Acquisition of External Knowledge, Firm Size, Industry

Independent Variable	Cyprus (n=408)				Romania (n=310)			
	Dependent Variable (Product Innovation Output)		Mean	Standard Deviation	Dependent Variable (Product Innovation Output)		Mean	Standard Deviation
	Coefficient	p-value			Coefficient	p-value		
Extent of Openness	0.010	0.858	4.10	2.645	-0.077	0.233	0.13	0.336
In-house R&D expenditure	-0.056	0.395	28552	161142	0.110	0.060**	301331	1627461
Purchase of External R&D	-0.047	0.491	166328	415989	0.013	0.825	20013	166401
Acquisition of External Knowledge	0.159	0.006*	38444	181619	0.092	0.160	11657	64424
Firm Size	0.099	0.059**	0.36	0.481	-0.070	0.238	0.97	0.727
Industry	-0.034	0.504	0.13	0.339	-0.007	0.904	0.10	0.305
n	408				310			
R	0.208 ^a				0.151 ^a			
R ²	0.043				0.023			

*p <0.05, **p <0.10

^aIndependent variables: (Constant), Extent of Openness, In-house R&D expenditure, Purchase of External R&D, Acquisition of External Knowledge, Firm Size, Industry

Chapter 5

Interviews Data

5 INTERVIEW DATA

Exploring the innovation process, for the practice and management of innovation, this chapter describes the innovation activities of the eight interviewed firms individually, with a particular emphasis on their significant innovation (Section 5.1–5.8).

For each firm, an outline of the firm is first presented followed by the firms' delineation of innovation. The significant innovations the firm does are then described, detailing the way innovations are carried out and managed at the firms.

A brief overview of the eight firms studied is outlined in the Table 5.1 below

Table 5.1: Overview of the four medium and four large size firms

	Firm A	Firm B	Firm C	Firm D
Company Background	One of the largest mushroom companies in the world. Supplies a full range of fresh mushrooms to national and international retailers in the UK, Ireland, Canada and USA	Food and beverage division of a large diversified investments group and holding company. It does sales, marketing and distribution for its own products as well as for third party products to both the grocery and pharmacy sectors	One of the largest importer, roaster and supplier of fresh coffee in Ireland. The firm has sales/distribution, coffee solutions and contact catering operations in Ireland, UK, Europe and USA	Grower of fresh fruits and vegetables. The firm grows, sources, ships, markets, sell and distributes its products to major retailers and foodservice customers in Ireland, UK and Europe.
Founded	1981	1976	1840	1926
Headquarters	Tyholland, Ireland	Dublin, Ireland	Dublin, Ireland	Dublin, Ireland
Activities	Growing , sales, marketing and distribution services	Sales, marketing and distribution services Category management and merchandising services	Importer, roaster and supplier of fresh ground coffee and tea Hotels, restaurants, cafes Coffee solutions (including coffee machines, staff and engineers training, marketing material), Contact catering	Growing, sourcing, sales, marketing and distribution services Management solutions consultancy services
Products	Mushrooms	Gluten free foods, Healthy snacking, Beverages, Functional foods and supplements	Tea, Coffee	Fresh Fruits Salads, Vegetables Flowers and Plants
Operational in Markets	Ireland, UK, Canada and USA	Ireland and UK	Ireland, UK, Europe and USA	Ireland, UK, Europe and Asia
Revenues (2012)	€ 200m	€ 223.4m	€85.4m	€300m

	Firm E	Firm F	Firm G	Firm H
Company Background	One of the largest manufacturers, marketers and distributors of branded beverages in Ireland. The firm has sales/distribution and manufacturing operations in Ireland, UK and USA	One of the world's largest sandwich manufacturers, the firm provides wide range of chilled and frozen foods to major retail, manufacturing and foodservice customers in UK and Ireland, Europe and USA	A global nutritional solutions and cheese group. The firms' business consists of three segments, namely US Cheese and Global Nutritionals, Dairy Ireland and Joint Ventures and Associates and distributes its products in over 130 countries	A leading player in the global food industry, the firm manufactures and supplies food, food ingredients and flavour products to customers in more than 140 countries
Founded	1852	1991	1997	1972
Headquarters	Dublin, Ireland	Dublin, Ireland	Kilkenny, Ireland	Tralee, Ireland
Activities	Manufacturing, sales, marketing and distribution services	Manufacturing, sales and distribution services Trading services	Manufacturing, sales, marketing and distribution services	Manufacturing, sales, marketing and distribution services
Products	Alcoholic Beverages	Chilled foods, Frozen foods	Dairy & Cheese Products Dairy Ingredients Flaxseed Solutions Micronutrient Premixes	Food ingredients and flavours Dairy spreads, cheese and cheese snacks Ready meal, water and juices Cooked meats and sausages
Operational in Markets	Ireland, UK and USA	Ireland, UK, Europe and USA	Ireland, UK, Europe and USA	Ireland, UK, America region, EMEA and Asia-Pacific region
Revenues (2012)	€716.7m	€1.2b	€2.2b	€5.8b

5.1 Firm A

5.1.1 Introduction

Firm A is one of the world's largest mushroom companies. Founded in 1981 by an Irish entrepreneur the firm initially started as a modest producer of mushroom compost, selling it to local growers, buying the mushrooms back from the growers and processing them. The firm has grown to become one of the leading mushroom producers in the world. Headquartered in Tyholland, the firm currently employs around 3,000 employees across the group and owns the largest mushroom farms in the UK, Ireland and Canada. The business is today jointly owned by the entrepreneur and another Irish food plc.

The firms' business consists of supplying a full range of fresh mushrooms to leading national and international retailers in the UK, Ireland, Canada and USA. Recently the firm has diversified into compost production and now runs mushroom composting facilities as well.

5.1.2 Innovation at Firm A

According to the interviewees, innovation at Firm A is looked at as an activity with wide horizons, an activity whose scope spans beyond just product development. The commercial director explained –

“Innovation in our business is much broader than product innovation and new product development (NPD) is one of the smaller elements of our process. Innovation in our business is more focused on process improvement, process understanding and process enhancement.”

The innovation activities at the firm aim at achieving efficiency on all fronts of the business. Primarily driven by market pressures, the firm regularly engages in innovation to bring about improvements in all its functioning said the commercial director. He elaborated –

“We manufacture compost in which we grow our mushrooms, so innovation process is how we do that to try and improve our efficiency, probably driven by market pressures to compete at a certain price points. So we try and bring a lot of efficiency in our business and that drives lot of our innovation, be it in energy conservation, product enhancement, product improvement or performance

improvement. We put some robotic handling here couple of years ago to improve our packaging handling time; in our compost manufacturing we work with equipment suppliers to increase our efficiency.”

5.1.3 Significant Innovation

With innovation embedded in every activity that the firm undertakes on a daily basis, the interviewees mentioned a few significant innovations the firm has done. Detailing a product and a packaging innovation, the commercial director highlighted that though the firm focuses more on packaging innovation and on innovative ways of communicating with the customers, the firm does maintain a product pipeline that aims at bringing out new product ideas. He says –

“Most of our consumer focused innovations are around packaging development or around innovative marketing tools; innovative ways to communicate with the customer, innovative ways to get the customer to pick up the product. But we do have a product pipeline in which we have 15 – 20 ideas coming to market at different times.”

Regarding development of a new strain of mushroom as one of the firms’ significant product innovation, the commercial director elaborated –

“We have developed a new strain of mushroom. We do not produce the mushroom seed; we purchase it from Sylvan which is a global mushroom seed producer. About 5 years ago we collaborated with Sylvan to do R&D to develop a new mushroom strain and we launched the product called Forestiere. So it was a collaborative innovation, they did the breeding of the mushroom and we spent about 2 years perfecting the husbandry and cultivation process for it.”

He further said that the firm also engaged in packaging innovation around the product for differentiating and promoting it.

“It was subtly different in shape and colour and size, so we tried to magnify the differentiation from regular mushroom by way of packaging, branding, labelling etc. So it’s a new inherent product with new packaging solution.” - Commercial Director

Suggesting that the need for the innovation was routed in consumer insights, he further outlined how the firm engaged in extensive R&D to develop a film for improving and differentiating the packaging of the product.

“It was identified as a need in the market looking at our market research data at the consumer level. Also to differentiate our product we developed a film that was suitable to use with mushroom. We have an extensive R&D department and we researched different film types to develop a film that worked. Then we also researched the equipment to top seal it, most mushrooms are wrapped, this one was top sealed.” - Commercial Director

The commercial director also outlined how the firm worked with various suppliers and manufacturers while developing the innovation.

“For this film type we worked with our machinery suppliers to make sure the machinery worked with the film type. We worked with label suppliers and label equipment suppliers to develop labels that make the product look more luxurious and are also environment friendly. So we developed the backless label, which may not mean anything to the public but it’s a waste reduction initiative.”- Commercial Director

Referring back to the idea of innovation spanning beyond just product innovation and being embedded in all activities of the firm, the Marketing Head detailed the launch of the new range of pack sizes for mushrooms, an innovation he regarded as another of its significant packaging innovation. He explained –

“We introduced a new range of pack size of our products. We sell mushrooms in different pack sizes and we felt we could get consumers to buy more mushroom if we increased the pack sizes across the board. So the first thing we did was we went and looked back at the consumption patterns, who was consuming, how much they buy, when they consume etc. We have a key metric which is called ‘weight of purchase’. And we observed that the average weight of purchase was higher than our bestselling pack size. So that gave us the data and consumer insight to go to our customers and say that if they increase the pack sizes across the board, they can get more consumers buy more mushroom more regularly.”

He highlighted that this innovation and most innovations the firm does relate back to the consumer.

“So it basically starts from the shopper, understanding the needs of the shopper and how can we meet those needs.” – Marketing Head

Mentioning another facet of innovation practiced by the firm the technical engineer pointed out a significant organizational innovation of the firm; the launch of the graduate recruitment programme.

“We are an expanding company but most of our managers and management has senior people, so it was quite a big change for the firm to begin taking on people with zero experience in the mushroom industry. So that has been a significant organizational change by the firm.”- Technical Engineer

He further detailed that with the organizational innovation the firm aims at improving aspects of its functioning it hadn't looked at before. Referring to his own engagement with the firm as an example he explained –

“I am involved in production hardware optimization. Working on air distribution and watering which is something we have never had a speciality in our company before. We would have always relied on our suppliers. We have now introduced a process of analysing our air distribution; previously we only specified the fan speed, air volume but did not get into the technical side of our fans. We have different size fans on all different farms and we would guess and leave it to growers to decide on what speed the fan should be running at. But now we have bought equipment to measure what quantities of air we are using, this has never been done before in our company or in our industry to the level which we are doing now. So it was an innovation to create a role for somebody to specifically work on these areas.”

Stating that the need for even this innovation came from their customer's requirements, he elaborated –

“We are expanding and our customers want the best quality but as an expanding company we lost a bit of a control of that quality. So for maintaining that quality that our customers are used to from our products and small facilities on a large scale we are now bringing in and training new managers and growers etc.”

5.1.4 The Management of Innovation

Innovation is an activity that is embedded in all functioning of the firm and the interviewees highlighted that the firm aims to be innovative in all areas. The commercial director stated –

“Innovation definition is much broader in our business, like we think about how our picking trollies are moving when mushrooms are harvested and our harvester management includes innovative thinking for improving it.”

The firm thus readily engages in developing facilities and focusing efforts for efficient management of innovation with the aim of achieving functional and economic efficiency. The commercial director emphasised –

“What drives our business is that we are very commercially focused and very cost conscious.”

The interviewees discussed how operating like an innovation funnel, the firm’s innovation activities are managed with the complete involvement of the senior management and despite not having a dedicated innovation budget, innovative projects have access to money as and when deemed necessary.

“We have our innovation funnel with loads and loads of concepts that are interesting, unproven, just ideas which are taken through feasibility stages.” – Marketing Head

“Senior management has a lot of involvement and do take a lot of interest in innovation and in the technical sides of things. So even if we don’t have innovation budget, money is allocated if we tell them or they see something new is required to be done.” – Technical Engineer

However, the interviewees at the same time also pointed out that the management of innovation at the firm isn’t only about managing the innovation as such, rather more importantly it is about managing the decisions around being innovative and perusing the innovation activities at the costs involved. The commercial director explained –

“The business examines the cost of the innovation as it’s an exercise we are not paid for; we have taken it up as an add-on. In a decreasing market when we get less and less every week and every month can we afford to be innovative?”

He further detailed that because innovation is not an easy activity to pursue and calls for investment both in terms of time and money; it is challenging to keep going given the increasingly competitive market place and economic scenario. He elaborated –

“We are Tesco’s lead supplier, we deliver their NPD, marketing etc. and we are expected to be their lowest cost supplier as well so it is very difficult for us to find the add-ons/ innovation over and above the commodity.”

“New processes can be done if they bring the cost down. But developing a film, investing years in it, okay it may be compostable, more consumer friendly, look better but we are not getting paid for it. We spend millions on meeting the needs of our customers and consumers but are told to match the lowest cost supplier so that’s the big question.”

5.1.4.1 Innovation Evolution

The interviewee believed that innovation as an activity is evolving in the firm and is beginning to be practiced in a more formalized manner. The marketing head stated –

“Earlier there was very little innovation; we are reasonably innovative now in our processes, in our product development etc. It is becoming more formalized now. Interactions with customers, consumers have increased. Our market share has increased and the percentage of share that comes from new products has also increased.”

“Innovation is something that is quite new to our company, up until few years ago we wouldn’t be seen as an innovative company. It is something that we are developing and learning, though it is not as structured yet as it should be.”-

Technical Engineer

The commercial director said that not only has innovation become more important in the firm, it has also evolved with regard to interactions practiced. He mentioned –

“Innovation has been given more importance now, interactions like brand development activities, consumer focus groups, market data analysis; yes there has been a significant increase in these.”

The graduate programme has also had its share in facilitating these increased interactions by infusing fresh ways of working in the firm highlighted the technical engineer.

“Interactions are evolving at the most, more so with the graduate programme.” –

Technical Engineer

5.1.4.2 Innovation Objectives and Effectiveness

The interviewees discussed that the primary objective directing innovation at the firm is to meet their customers' requirements, followed by their aim of maintaining their position in the competitive market. The commercial director said –

“What drives our innovation is to deliver a need of the customer and to hold our position in the market.”

The interviewees also outlined that though growing sales and making profits is their objective, but primarily their innovation activities are informed by their customers' needs.

“We want to grow sales ultimately and make more profits, that's the simplistic objective.” – Marketing Head

“Our innovation is more or less driven by our customer needs; how do we deliver them year on year growth, how are going to differentiate what we offer Tesco to what we offer Sainsbury. So then we think of giving them something new, that basically drives our innovation.” – Commercial Director

Detailing the way in which the firm analyses its consumers' needs and work towards innovatively fulfilling them, the marketing head said –

“We categorize our consumers into six different groups. Depending upon their lifestyle and their attitude towards mushroom we segment them into different groups and we want products that are relevant to all six different types of shoppers. We do under indexing of each of the category to find out these needs and then try to meet those needs.”

With regard to measuring the effectiveness of their innovations, the interviewees discussed how the firm looks at certain key matrices for the same and subscribe to data packages to keep a track of these. The marketing head detailed –

“The key matrices that we look at are: household penetration, frequency of purchase and the average weight of purchase. We subscribe to data packages from Dunhumby to know the shopper numbers and frequency of purchase etc.”

The firm also practices different ways of gauging the effectiveness of their product and process innovations and thereby diligently performs cost benefit analysis and budget allocations for them. Detailing the measures the commercial director elaborated –

“We do market analysis in case of product. We would follow or track our innovation very closely to see how it is doing, if it is delivering growth, increasing our margins, how the consumer is engaging with it. In case of process innovation, if the new process is introduced for improving productivity or performance that should be reflected in the amended budgets. If a new equipment or process is being introduced it would have to have a cost benefit analysis carried out and if it’s delivering it must be reflected in their budget. That’s how we track the performance of our innovations.”

“We also analyse our performance on the basis of revenues generated per square meter of growing area. We have innovation information systems we have developed over the years, data collection system about which harvester is harvesting when. We analyse that data and see where room for improvement is. We are also benchmarking like if one harvester is harvesting at a great efficiency, we try and see why all our harvesters not able to do that.”

However he also pointed out that because the product innovations are aimed at the customers their measure of effectiveness is better managed than the process innovations which mostly tend to enhance the efficiencies in house.

“The tracking of the effectiveness of new products is done well because we have to tell our customers every time we do the tender again that the product has done so and so good. While in case of process it is just us so it is probably not that well managed.” – Commercial Director

5.1.4.3 Innovation Team and Budget

Innovation is fast becoming an important activity at the firm, but a team dedicated purely to carryout and manage the same is yet to be in place. The interviewees indicated that though they have task forces for projects there is a growing need for a designated innovation team.

“We have task forces for projects but no innovation team.” – Technical Engineer

“We don’t have an innovation team, though we should have one which should spread across the business. Three four persons committee should lead that team.”
– Commercial Director

They however also emphasised that even in the absences of an innovation team, innovation is essentially a team based activity at the firm. The different departments

continuously think of innovative ways of improving their efficiencies and even working together for brain storming ideas.

“We are disjointed in the way we manage innovation but operations and manufacturing teams are always thinking of how to produce at less, marketing and commercial teams are thinking of how to meet customers’ needs in an innovative way.” – Commercial Director

“We even have regular brainstorming activities, sort of innovation days.” – Marketing Head

The interviewees’ further outlined that a simple matrix is followed to categorize ideas at the firm and together the different departments work to implement them. The marketing head detailed –

“We categorize ideas in a simple matrix: big ideas, small ideas, easy to implement, hard to implement. So we look if an idea has potential to sell a lot of product or a little product, then we see if it is hard or easy to implement. An easy to implement idea is something that you can do with the existing plant and machinery, requires very little capital and can be done quickly. For hard to implement ideas we might need new machinery, employee new people and so on. Sometimes we have big ideas that are hard to implement but that does not mean we don’t do that, we try to find ways how we can do it. What we are trying to do here is eliminate small ideas that are hard to implement as they just waste time. What we want are big ideas that are easy to implement, but by their very nature there aren’t many big ideas that are easy to implement.”

Because the onus of innovation is on all departments of the firm as against a single innovation team there is no allocations of innovation budget as such informed the interviewees. Being a cost conscious business the departments utilize their respective budgets judiciously for maintaining the innovation activity, the commercial director pointed out –

“Each of our division has its own budget to manage and look after. Inherently and culturally we are an innovative business but culturally we also a very cost conscious business so we need to ensure that if we are going to have a successful implementation that the budgets are managed accordingly.”

5.1.4.4 Internal and External Interactions

The interviewees indicated that all departments within the firm are very flexible about sharing information amongst them and have open interactions. They suggested that although internal communication channels aren't structured, the interactions are smooth and frequent. The technical engineer said –

“We are quite open within the organization, though we do not have channels of communication as much as we should, we don't have formal structures but we are quite flexible about information sharing within.”

They further indicated that smooth interactions are enabled as the different departments work in tandem with each other and moreover the launch of the graduate programme brings in a number of fresh graduates to the firm and as they work throughout the firm this further facilitating interactions.

“Our in house engineering department works all the time with the production team, working with experts and developing equipment solutions. Together we use lot of our own experience and lot of our own internal resources so that we can provide innovative solutions to our business.” – Commercial Director

“Our inter-departmental communication is not structured but the graduate programme has certainly brought together people from different departments and has helped in communication.” – Technical Engineer

With regard to interacting with people outside of the firm for its innovation activities, the interviewees suggested that the firm readily engages with its suppliers, customers and consumers. Referring to the packaging innovation of the film development, the commercial director emphasised the interactions –

“So in terms of bringing that product to market we worked collaboratively within our own R&D department who in turn worked with film manufacturers and then machine suppliers to setup the machinery to be used with the new film and then with printers and so on and our customers.”

He further highlighted that these are the regular interactions the firm has for almost all its innovations –

“So that basically is our consistent process. Our R&D department works with packaging, manufacturing, operations and equipment suppliers and so on.”

Additionally for our brain storming sessions we have our internal people and we invite our customers and some other outside people.”

Having mentioned the external people the firm interacts with, the commercial director also emphasised that the firm believes in interacting with its customers at later stages of its innovation, in fact presenting to them the final finished product. He said –

“We contact our customers late in the game. We would have a well-developed idea, need being identified by the account manager then engaging our marketing department to find out what could we do, then working with our R&D department. Reason being that we want things completed before we present it to our customers. As a business we tend to perfect something before we launch.”

Customer focused is what the firm is all about suggested the interviewees, and being market oriented is being increasing embedded in all functioning of the firm.

“We produce what our customers want to buy. We conform to a lot of rules that our customers lay out. We always give them the quality and quantity they want.”
– Technical Engineer

“Most companies in our industry would have a minimum order quantity, but we do not have a minimum order quantity. We are focused on meeting the needs of the customer. Things that start small can grow to be very big so why put a barrier at the very first incident.” – Marketing Head

However the interviewees also suggested that not just being customer oriented the firm now readily engages in gathering market insights for its innovation activities.

“Firm A is a market oriented organization and it has transitioned into being a market oriented organization in the last five six years, prior to that it was a sales oriented organization. This has helped us grow and if we want to continue to grow we need to be market focused. We are a market focused, a consumer focused organization, more so than we were five years ago.” – Commercial Director

The firm thus involved with its consumers more and more and believes in designing its innovations to meet the consumers’ needs and also on insights gathered from them. The marketing head said –

“Our innovations always stem back to the consumer. We try and understand what the needs of the consumers are, we also look at what problems there are like

problems around shelf life, around quality, around ease of use, around knowing how to use, around texture , flavour etc. So we look at how through innovation we can find solution for these. So it basically starts from the shopper, understanding the needs of the shopper and how we meet those needs.”

“These needs filter back into the business, into the commercial arena, R&D arena, marketing department then looks for ideas in different markets for meeting those needs.” – Commercial Director

The commercial director also pointed out that the insights they gather from consumers are a potential source of ideas to feed their innovation pipeline.

“We run various consumer focus groups; frequency of these depends on the need of the business. The focus groups are a source of some conceptual ideas and feedback. We try to source from these consumer focus groups ideas to feed our innovation pipeline.”

The techniques the firm employs for gathering the market data involves continuously conducting market research and also subscribing to global databases so as to keep a track of their markets as well as of global innovation in the sector it operates in, informed the interviewees. The marketing head pointed out –

“We are always doing market research. In 52 weeks of the year we certainly do research 25 weeks. Then we buy continuous research from panels like A.C Neilson, Dunhumby, EMAI so that we can see all the innovations that are happening in our sector, in our category across the world. We have analyst who dig deep, who turn the data into information which allows the managers in the business to make informed decisions.”

The technical engineer summed up the firms approach by mentioning –

“We are very market oriented and that’s something that is clear to everyone in the business.”

Interactions with customers, suppliers, consumers and market research agencies are a regular practice at the firm. However, the interviewees simultaneously mentioned that the extent of these interactions is limited and very carefully managed at the firm. The marketing head said –

“We work with our customers; we would be reasonably close to our suppliers, we are fairly open but you don’t share everything with them. In our industry our

suppliers are also the suppliers to our competitors so you have to be careful when you talk about innovation.”

“We don’t share all, we’d be very careful on what we disclose, we’d also be careful on how we manage that communication process and at what level within our business that communication is managed, as it needs to be managed by people who are aware of the commercial implications of divulging such information. If we are in the early stages of developing a process like our film we would be keeping that in a very tight circle. We’d be very possessive of our intellectual property. Even with packaging suppliers and film suppliers we try to protect our confidential information through NDA’s” – Commercial director

Detailing the stages of their innovations at which they interact with external people, the interviewees stated –

“Our suppliers would be involved with us all the way through from idea stage up till the implementation stage.” – Technical Engineer

“With our customers, we bring them in our innovation only at the final stages. We get much better buy in from our customers if they feel they are part of the innovation, so we generate and develop the idea, bring it to them at a near finished stage, incorporate if they suggest any improvements and then implement them.”- Marketing Head

With regard to practicing open innovation, the interviewees indicated that though it has never been practiced at the firm, it shall be open to doing it.

“We haven’t done any outbound innovation so far but would be open to doing it.” – Marketing Head

Also elaborating about a competitor collaboration the marketing head suggested that the firm is open to practicing it but the amount of time commitment in terms of finding the correct partner and then practicing it that collaborations call for is the limiting factor. He mentioned –

“We are collaborating with one of our competitors as we have a mutual customer. Because we are the largest player in the market, by definition the smaller players have more to learn, it is unlikely that anybody could have more resources and tell us anything about mushroom that we wouldn’t know. However the competitor we are collaborating with operates in lot of different sectors as against us, we are a single sector company so we have expertise in

our single sector and they have multi sector experience, so we are looking at this collaboration facilitated by one of our common customer. We are actually so busy doing what we are doing to find time to look for collaborations. That's always a challenge."

While with inbound open innovation, the firm had had an experience but the interviewees believed that the practice lacked passion, the marketing director detailed –

"We have done an inbound open innovation but our instinct is that we like to develop our own ideas and bring them to market. Our passion is about our own ideas; we won't be that comfortable with working with somebody else's ideas. The one occasion that we did an inbound innovation, it was very short lived, it lasted for only 6-12 months basically because the passion was not there in the company as it was not our own idea. Your own idea is your own baby."

The firm, according to the interviewees, is an innovative organization but is yet to be an open innovative firm.

"We are an innovative organization but I would not say we are an open organization, we are very protective of our IP and I think we need to be as we have to differentiate ourselves."

"We are becoming an open innovative organization but it is still very early stages, it's not part of the company culture yet." – Technical Engineer

Referring to the development of the air distribution process and detailing with the example, the firms' move towards open innovation the technical director said –

"We have made improvements, it has paid off so far, we have standardized to a certain point but we need to extend that, we haven't fully solved the issue that we have. We have reached a point where we need further expertise, further method of analysis, so currently we are looking outside of our firm. We've reached a stage that is top of our industry, we are doing the best we can but we want to take it further so we are looking at other industries now, looking at getting help from other heating, ventilation and other air conditioning specialists. Previously we would only rely on our suppliers but now we want to look at people who would be dealing this stuff for other industries such as data centres. They would have similar requirements as us like large spaces that need consistent air speed and air flow to cool the data servers. So we want to bring in ideas that are more refined."

We are at a very very early stage of branching outside of our industry for expertise. It is very new for us; it's not something we are familiar with. It is difficult and we haven't found the correct avenues yet.

The approach we are considering taking is looking for consultancy from outside people, just to show us what they do. But ideally we would look at adopting these techniques, learning how to do it and may be hiring someone to work on it within our own company.”

Finally indicating that the firm is yet to develop an open culture, the marketing director concluded the firm's stance as follows –

“We are somewhere in between, we do have the desire to become a real true open innovative company but it's our organization culture not to become so open. We have a lot of staff who is used to doing things the way they were done, so the barrier in becoming an open organization is the culture but we are getting better.”

5.2 Firm B

5.2.1 Introduction

Firm B forms the food and beverage division of a large diversified investments group and holding company. Established in 1976, with its headquarters in Dublin, the firm principally focuses on production, sales, marketing and distribution of food and beverage products in Ireland. Apart from being involved in healthy foods, wines, fresh ground coffee and indulgence foods the firm also has frozen and chilled food, distribution services and is operational in retail restaurants and outsourced hospitality services through a joint venture.

The firms' business comprises of doing sales, marketing and distribution for its own products as well as for third party products to both the grocery and pharmacy sectors. It also provides category management and merchandising services to a broad range of customers including grocery multiples and independent retailers including pharmacies, off-licenses, hotels, restaurants and cafes. Providing temperature controlled distribution in Ireland, it offers a range of temperature controlled supply chain solutions (procurement, brand management and selling, warehousing and distribution) to retailers, manufacturers and food service customers.

Making the 'healthier choice the easier choice' is the mission the firm works towards. Its aim is to become the leading health food and natural food brand in Ireland, while additionally focusing on the UK market and beyond.

5.2.2 Innovation at Firm B

According to the interviewees, innovation at Firm B is all about providing a comprehensive range of healthy choices to their consumers:

"We believe that consumers believe that making the healthy choice allows them and their family to live a better life. So our innovative thinking is around that, trying to make the healthier choice the easier choice for our consumers." -
Managing Director.

From a production perspective the firm categorises its market as natural, organic, free from, better for you and functional; and focuses on providing innovative healthy solutions in each of these categories.

“We describe our market as natural, organic, free from, better for you and functional. So when we approach innovation we think in this sort of a framework.” - Managing Director

Not only is innovation looked at from a product perspective, the firm also focuses on innovatively expanding geographically. The managing director pointed out –

“Innovation comes not just in products but in regions, country and territory as well.”

5.2.3 Significant Innovation

Interviewees at the Firm B regarded the introduction of the wholesome breakfast cereal ‘Granola’ as their most significant innovation in recent times from a size and scale perspective. The managing director stated –

“For many many years all we focused on were traditional mueslis. Through innovation workshops and thinking and planning we’ve identified few years ago that there is opportunity to move into another category within wholesome cereals called granola. That has been the most successful new product that we have introduced in the company in recent years.”

Being a strong player in the breakfast cereal category, the firm had an understanding of the market. It was keenly observing emerging trends and what their customers were stocking and consumers preferring. Also by way of their knowledge of the global markets and through a lot of in trade research the firm analysed that there was a gap in the product offerings and thus zeroed in that there was an innovative opportunity for the introduction of a crunchy cereal:

“We saw a lot of muesli, a lot of porridge but we found a gap for a crunchy cereal. We had some knowledge of the granola market from the UK and USA where it originated; but there was definitely a gap as no brand or own label was offering it here at that time.” - Marketing Manager.

For providing the innovative healthy solution, the firm then started getting in touch with its ingredients suppliers and looked at lot of samples from them that would fit the requirement. The production department then did trial runs of different recipes which through a series of internal taste panels were screened to a list of 4 or 5 recipes that were believed would have longevity. This was followed by consumer tasting, wherein consumers were asked to rate the products on texture, taste and smell. Based on

all of these evaluations and re-evaluations the firm finally launched three variations of its new granola product:

“We did a lot of consumer testing. We have a panel of consumers we call in and then it is just friends and colleagues. We gave samples with tasting sheets to rate the product’s texture and taste and smell etc. All this was compiled and it boiled down to three products initially which we then launched.” - Marketing Manager.

Packaging innovation was another aspect of this innovation. Guided by consumer research the firm identified that freshness and the ability to reseal the package were the two most important things consumers were looking for, as far as packaging of their breakfast cereals was concerned. The firm thus worked with its packaging design partners to come up with re-sealable pouches that could keep the freshness and crunchiness of the product intact.

The product has had a successful run since its launch, so much so that the firm even launched a fourth version of it recently and is looking for more new recipes. Commenting on its success the marketing manager stated –

“Both the recipe and the packaging has contributed to the success of the product. We’ve even launched the fourth version a year and a half ago and currently we are looking for other recipes.”

5.2.4 The Management of Innovation

With the aim of providing healthier food choices to their consumers the firm is constantly involved in innovation activities. It focuses on fostering, managing and benefitting from these by inculcating a positive outlook about healthier living. The managing director pointed out –

“Very often consumers are told what to do about their health in a negative way, the tactic of scaring people. Our believe is that we should be motivating consumers more, encouraging them to engage in a healthier life style, not just in terms of what they eat but also in terms of what they do from an activity perspective.”

Additionally he said that –

“The good news is that we are very much in an expanding category, something that more and more consumers are thinking about. 75% of Irish consumers think that –I consider what I eat very important for my wellbeing. 62% of Irish

consumers have made their top priority to live a healthier life. So we should be benefiting from these facts. Lot of issues like obesity, diabetes and other issues have a lot of people wanting to solve these, so anything that makes consumers build better health is going to be good for all of us.

The firm is increasing its efforts to manage its innovations. It advises its category partners to work on their innovations so as to sell more.

“We advise our category partners how to manage their categories, give consumers the best innovative solutions and ultimately sell more.” – Managing director

5.2.4.1 Innovation Evolution

Innovation is constantly evolving into being a more and more structured activity at the firm. Every year the firm now engages in preparing a three year plan which is generally finalized in September – November and additionally an annual plan which is prepared in January- February. These plans are focused on understanding the emerging trends in the markets and the requirements of the consumers and consequently devising the firms’ strategies and action plans to meet them. The managing director elaborated –

“The three year plan is about understanding and analysing the ecosystem, looking at what is happening from a consumer perspective. Summarizing these trends, looking at what implications these have for our business, in the context of our own competitive advantage against what else is out there and taking all of these implications into our actions and strategies. So it’s a very formal process. Similarly with our annual plans we are looking more specifically at the year ahead.”

With regard to the evolution of interactions with people outside of the organization, the firm though currently engages with its suppliers, customers and sister companies, it believes that with rising costs and complexities of development such interactions are set to increase. The brand manager said –

“I think in the next 4–5 years with the cost of development going up, partnerships will develop more and more. As in case of the European claim on the pack, the cost of getting the claim approved is very substantial so I would suppose more and more competitor companies will come together. We as a company will

consider a view of collaborating with a competitor to get our claim. So I think in future competitor collaborations will go up as the cost of development goes up.”

5.2.4.2 Innovation Objectives and Effectiveness

The primary objective with which innovation is pursued at Firm B is making ‘the healthier choice the easier choice’ for their customers and consumers.

“We want to make the healthier choice the easier choice not just for our customers but ultimately for the consumers.” – Managing Director.

Working in this direction, the firm frequently engages with its consumers, motivating them for healthier living and providing them range of choices for the same. Stating an example the managing director suggested –

“Recently we have been communicating with our consumers about ‘because it feels good’ proposition and our own brand’s proposition is to provide as comprehensive a range of choices under that strategy as possible.”

Additionally, expanding its product portfolio and entering new markets are other objectives that the firm seeks to achieve by way of innovation. The managing director stated –

“We want to be the most comprehensive and leading health food and natural food brand in Ireland both in grocery and pharmacy. Ireland is a fairly small country and a mature market place; still there is room for growth particularly in our category. Also we are in the process of building our brand in the UK and looking beyond that as well. So export to the UK market is our new target.”

Effectiveness of these innovations is gauged and measured by the revenues they generate for the firm.

“It depends on the category; we would forecast the sales volumes. Revenues are the hard measures and then it is about fulfilling consumer needs and offering choices” – Marketing Manager.

5.2.4.3 Innovation Team and Budget

Innovation is an important activity at the firm yet a team dedicated purely to innovation is not in place. However there’s a cross functional team driven by the

marketing department, with responsibility for innovation. The marketing manager pointed out –

“We have a cross functional team, were one of the objective of the team is new product development. Primarily driven the marketing function but it does extend to other functions. Its role isn’t solely new product development but that’s where new product development fits.”

The cross functional team annually hold an innovation brain storming session which is referred to as the NPD (new product development) day at the firm. Internal people and sometimes consultants and design agencies go offsite for a day and juggle with innovative concepts to extract out ideas to feed the firms’ innovation pipelines. The managing director elaborated –

“We annually have a process of innovation brain storming. We try to involve as many people from different disciplines as possible. In advance of this we give people certain areas to research or pre read, with a task of extracting ideas or insights that are relevant to the business. Constant discussions during the day are focused on identifying new ideas. Not just pre readings we also ask people to out in the market place, to visit retailers to check product ideas or examples of packaging”

The team then votes for the top ideas among the ones discussed during the NPD day. From that prioritization the ideas are then then looked at from a financial, annual turnover, difficulty and ease of implementation and from a challenge and ease perspective. The ones with promising potential are then incorporated in the three year and one year plans of the firm. Plans around specific responsibilities for these are also put in place.

“We have a voting for the top ideas on our NPD day, we pick from everybody’s votes what’s our top selection but we also make sure that we capture every single idea that comes from the day. It’s worthwhile to revisit the list on future sessions.” – Managing Director.

Additionally the brand manager elaborated –

“We have a three year pipeline and a one year pipeline and to drive these pipelines we set up a list by quarter of the products that we want to launch on the basis of our research, our NPD day and market trends.”

For efficient management of innovation, the firm always allocates a large proportion of the marketing and advertising budget for implementation of innovative ideas. The only critical factor that at times limits the innovation activities at the firm is the people time commitment it calls for. The managing director emphasised –

“It’s more about people time”

5.2.4.4 *Internal and External Interactions*

As suggested by the interviewees, the firm believes it has smooth internal interactions and easy flow of information across departments within the organization. This is facilitated to a great extent by the cross functional team which has representation from almost all departments in the firm and is presided over by the senior management of the firm. Additionally apart from the fixed meetings, regular meetings among different divisions are also scheduled as and when the need arises and these further aid in facilitating information exchanges. The marketing manager elaborated –

“Cross functional team has presences from sales, production, purchasing and all. We meet, could be fortnightly or weekly depending on what’s happening. Then there are the board meetings. Then we have meetings with our sales force, these are bi monthly meetings. Annually we also have our sales conference with our entire company, when plans are shared with all.”

With regard to interacting with people outside of their organization, the interviewees point out that Firm B frequently involves its suppliers and customers. This is for gathering insights about consumer needs and market trends. It engages with packaging and design consultants for their expertise during its innovation processes.

“We have a range of manufacturers that we work with. Meeting them, visiting them at their factories, having them come to our meetings and discussing what gaps are there. So we really use their expertise in specific categories. We gain a lot of insight for NPD in this way.” – Marketing Manager.

The brand manager also points out that the firm regards its customers as a vital source for market information and even rates their opinion for its innovations as very important. He said –

“If we haven’t got a good response from them for our innovation at the prototype stage, we probably wouldn’t go for it.”

“There could be numerous products that would want launch but it’s always good to talk to the retailers because they have a good feel of what categories are performing well in the market.”

However, having said that the brand manager also mentions that though important the customers are trusted less than its suppliers by the firm. This is primarily because of the risk of the customers being close with the competitors. So with regard to getting their opinions pertaining to the firms’ innovation, the firm tries to get their response without revealing to them exact information about the innovation. He said –

“We share a lot more with our suppliers than with our customers, though we do have one or two customers we have a very good relationship with. We try and paint a picture without telling too much. There is surely a level of information you don’t share with customers because no matter how well you get on with them there are always competitor products they have and they may have a good rapport with them.

Information sharing depends on how we look at people; if we look at them as a resource we share a lot of information with them.”

Market orientation is one of the key aspects of the functioning of the firm suggest the interviewees. Being increasingly involved with its suppliers and customers, the firm is constantly on the lookout for emerging trends and information in the market place. It regularly buys databases to keep updated about market developments and innovation launches across the globe.

“We base our business very much on consumer insight.” – Managing Director

“Depending upon the need for NPD we buy data; we search across Europe or worldwide what launches have been in our area and what claims those are making and just read consumer trends.” – Marketing Manager

Stating an example about being customer focused and incorporating those insights for their innovation, the brand manager elaborated –

“Our customer base is very important for us. We do have budgets an all but we need a lot of support from our customers. We identified that in pharmacy there is a niche that people are looking a lot more for work life balance and there is need for energy and only by talking to our customers we identified that we do not have a product offering in this area. So later we did launch a product in the category and it has been very successful.

Buying market research data is very costly so we do buy some but we look at our customers more for insights about categories.”

For being interactive and informed about the requirements and trends of the market place, the interviewees inform that another aspect that the firm engages in is trade shows. Using these as a resource for getting ideas and market information, the firm involves with its existing suppliers and customers as well as new people at the trade shows.

“We use trade shows as a resource for ideas.” – Managing director.

“We can go there (trade shows) with a list of what we may be looking for and we might find things we may not have considered even.” – Marketing manager

Opening up with customers and suppliers for market information and insights is a regular practice at the firm. However opening up towards combined innovation efforts with these or any other external people is not an approach the firm looks up to, suggested the interviewees. The concept of inbound innovation though is acceptable to the firm and is viewed as an opportunity for acquisition. The managing director stated –

“We have never done inbound innovation but we certainly will be open to doing it. We are all the time looking for development opportunities. Acquisition is always on our agenda.”

While in case of outbound innovation, the interviewees point out that the firm believes that if it's unable to work on an innovative concept on its own, it would rather pass it on to its suppliers and benefit from it but engaging with competitors will not be its outlook.

“We have not done outbound innovation but if we are unable to work on a concept we would pass it over to our supplier partners, so we could still make benefit from it, if not under our own brand.” – Managing Director

Finally, the firm attributes its reluctance to opening up in its innovation process to a few factors. Open innovation is not its priority owing to the risks involved in collaboration; to the difficulties in finding an appropriate partner and because the firm believes that developing an idea and getting it to the market first is difficult and so collaborations should be avoided. The managing director emphasised –

“To find something and to get it to the market first is difficult. There is a very high risk in collaboration. Collaboration is easier when there is more strategic fit and then its prioritization as well.”

5.3 Firm C

5.3.1 Introduction

Firm C is one of the most recognized Irish food brands and a premier purveyor of coffee, and tea in Ireland. Established in 1840, the company produces tea and coffee for sale around the world. It is the largest importer, roaster and supplier of fresh coffee and was the first coffee company to import fair-trade certified coffee into Ireland.

From its origins in tea trade in the nineteenth century the firm's business has expanded into coffee importation, roasting and distribution and the operation of coffee shops around Ireland, UK, Europe and USA. Ever since its foray into the beverage space, Firm C has grown to become the largest tea and fresh coffee brand in Ireland. With over 4,000 hotels, restaurants and cafes in Ireland serving the firm's tea and coffee, it is also unanimously found in supermarkets and convenience stores around the country. The company is renowned for its world-class product portfolio, coffee roasting techniques and its unique "Barista" training academy. It employs over 1,000 people worldwide, with a team of 175 people based at their Dublin headquarters.

In addition to its strong domestic presence, the firm owns a growing international portfolio, which includes a 1,600-tonne roastery, 80 cafes, 520 franchisees and a branded product portfolio not only in the UK and Continental Europe but also in the US.

The firm's business is described as a 'pyramid of value' by its managing director. He describes that the firm's cafes are only the shop front; while their business primarily is coffee food service called coffee solutions. A total one-stop solution to offices, convenience and forecourt sectors providing an expert range of equipment solutions and unrivalled technical support, training of staff, point in sales material together with a comprehensive range of coffees and teas, and extensive marketing consultancy to maximise sales and profits. He pointed out,

“Our approach is how much money you can make by selling coffee not how much coffee you can buy from us”

5.3.2 Innovation at Firm C

According to the interviewees innovation at Firm C is regarded as a way of taking existing ideas and technologies and putting them together in a new way which solves a

problem or takes out cost or sells more. The interviewees reported that innovation has always been an integral part of the functioning of the firm whether its innovation of their tea and coffee products or that of the equipment they provide to food companies in Ireland and it has come a long way said the senior engineer –

“If we look at the history of innovation in our firm, 10 years ago it was expected that innovation would either generate very little revenue or fail”

However, the current scenario is, said the managing director –

“We are quite structured now in relation to how we treat innovation. We have a budget and it has people who are dedicated to delivering it.”

5.3.3 Significant Innovation

Interviewees regard their coffee in store concept or the ‘CIS’ concept as they call it, as the most significant innovation of the firm. The concept was introduced in the year 2004 for the first time in Ireland, and basically involved installation of coffee dispensing units in convenience stores for selling retail coffee and providing consumers an option of ‘coffee on the go’.

The trend had already started in USA. Ireland at that time was entering a period of high economic growth, the so-called Celtic Tiger era. A feature of this time was expansions in the convenience stores industry. Three groups, namely Spar, the Maxwell Group and the Musgrave Group expanded rapidly. It was at that time that the firm decided to introduce this innovation –

“We thought about it and felt there was an opportunity for us to innovate.” –

Managing Director

The firm thus set out to identify equipment that could serve coffee without needing an attendant. It had to be more than just a push button vending machine because it had to appeal to the senses of the consumer, providing them with the experience of the smell of coffee, the sound of the coffee grinding and the sight of the milk steaming etc. yet, at the same time safe enough not to injure or burn the consumer in any way. The firm developed a few prototypes in collaboration with steel manufacturers and placed them at its own expense at busy location stores to get customer feedback detailed the interviewees. Analysis from a health and safety and quality point of view coupled with feedback from customers’ lead the firm to continuously refine its prototypes. Other considerations like the machine had to be mobile, must be placed near the payment till

in the store to catch the attention of the consumer, were also taken into account. When the machines were finally set out for sale, the initial projection was to sell 4 machines. However 6 months later, the firm had already sold 40 and in the subsequent 3 – 4 year period it captured the Irish market with 400 of its CIS units installed in convenience stores all over the country, the interviewees informed.

“It was almost like a revolution. With about 3000 of these fully branded units now positioned in convenience stores, it is this innovation that our customers and the coffee trade would know us for”. – Innovation Manager

Since 2011 and building on this success of CIS, the firm, mentioned the interviewees, had been focusing its innovative efforts in developing the second generation of its CIS innovation which they call the coffee express. They further informed that the idea and need for advancing the innovation originated because a similar machine was launched by a high profile competitor in UK, because of the high demand by consumers for ‘food on the move’ and because

“We identified that more opportunity of consumption you present, more people will drink coffee.” – Managing Director

The interviewees suggested that the innovation this time had the involvement of customers from the pre prototype stages. Three customers, precisely, a manager of a café in a hotel, a manager of a café in a hospital and a manager of a café in a Dublin convention centre were shown images of the machine to get feedback for developing the prototype. Manufacturers were involved from when the idea was finalized to be moved forward. Another observation that was made during the development process was, that for maximizing the output the machine needs to be functional at all times. The Managing director emphasised –

“The machine needs to talk to us”

Telemetry was therefore needed, and because no coffee machine supplier provided telemetry, the firm worked with cigarettes vending machine manufactures who provide telemetry services in their cigarettes vending machines to get a similar thing in place for their coffee machine, detailed the interviewees.

The machine was launched at the Irish catering show Catex in February 2013. The firm now plans to partner up with a few of its customers for the initial soft launch to get feedback before the complete launch.

5.3.4 The Management of Innovation

The interviewees indicated that innovation was becoming an important activity underlining all functioning at the firm and suggested that the firm was thus dedicating increasing efforts to manage the same.

“We have a formalized innovation process, which we learnt from an Enterprise Ireland course –The stage gate innovation process” – Managing Director

5.3.4.1 Innovation Evolution

Innovation has come a long way at the firm. It has evolved from being an activity that was considered would generate little or no revenue to an activity that is very structured, has a defined budget and people who are dedicated to delivering it informed the interviewees. Interactions with people outside of the organization for innovation had also evolved over the years; however there was still ample scope for advancing such interactions felt the innovation manager,

“We would love to have more interactions but its difficult, because of the costs involved and more importantly the time required.”

Although from year 2007 to year 2010 innovation wasn't at the forefront in the firm due to the economic recession, but ever since it's been reinvigorated in late 2011, it has evolved to being a very important activity within the organization and practiced with much enthusiasm. The senior engineer said –

“Last 12 months have really been very exciting as you are given the freedom to innovate, it was there before also but there was never enthusiasm in it, which is there now. There is motivation in the new innovation team and having the freedom to go out and meet people who are building things for you is inspiring and very helpful”.

5.3.4.2 Innovation Objectives and Effectiveness

The interviewees suggested that the objectives with which innovation is pursued at the firm included, entering new markets, increasing their current market share, improving the quality of their products and services and for reducing costs but over and above all of these objectives what really drives the innovation at the firm was their

focus to match the functioning of the market. However the innovation manager stated that the firm still does not focus on market insights as much as it should

“Customer feedback is not at the very top of our agenda. We don’t do enough market research to have all consumer insight and I don’t think we put the consumer at the heart of the innovation we do.” – Innovation Manager

The measurement of the effectiveness of the innovation is gauged only by the revenues or new sales it generates.

5.3.4.3 Innovation Team and Budget

The interviewees suggested that innovation as it stands today is quite a structured process in the firm. Although it took a back seat from 2008 onwards following the economic recession in the country, it has been reinvigorated since early 2012. The firm now has a defined innovation budget. For driving and managing sales from new business launches their method includes writing the proposed business launches on the sales budget of the following year and isolating them as the KPIs (key performance indicators) of 2 or 3 senior managers, whose bonus is calculated on the basis of the sales achieved on these new launches. The annual sales report also includes all innovations done in the last 10 years.

There is a designated innovation task force with complete involvement of senior managers who are part of the innovation team. The innovation manager outlined–

“The approach to innovation has always been a team based approach”

The interviewees detailed that the team comprises 10 members including the managing director, sales managers, innovation managers, finance managers, procurement or supply chain managers, marketing managers, new product development managers and managers from the quality control department. The team meets once every month to discuss and feed the innovation hopper. A management sheet is also maintained to keep a track of the stages at which the ideas are. Additionally every employee in the organization is encouraged to come up with innovative ideas and there is a prize of 100 euros for any executable good idea. Also anybody who travels for the company is required to submit a form about any new idea they saw outside. However, despite all these efforts, said the managing director –

“Biggest difficulty is to get good ideas.”

“HR does send out weekly updates on innovation but it hasn’t been consistent, and internal communication system is not great for ideas.” – Innovation Manager.

5.3.4.4 *Internal and External Interactions*

“We are a small company so I guess it is easy enough to exchange information.”
- Managing Director

Internal interactions with respect to innovation are smooth within the organization and very much facilitated because of the cross functional innovation team.

“Being on the innovation team is helping me understand what the sales or other people are looking for and I am able to better connect with them now.” – Senior Engineer.

The human resource department’s weekly email information to all employees about innovation and functioning within the firm keeps everyone updated and on the same platform as,

“Innovation is almost embedded in what we do functionally” – Innovation Manager

Maintaining and managing a flow sheet on who is working on what and by ranking projects on a 2x2 matrix of high value, low value and easy to do, hard to do, is another way by which the firm facilitates easy exchange of information internally indicated the interviewees.

External interactions at the firm are typically confined to talking to their customers and suppliers. The innovation manager pointed out –

“We have open relationship with our customers and we share information with them from the early stages of the innovation”

There are open discussions if need be about who will own the IP and about signing NDAs. However the level and strength of the personal relationship with their customer and suppliers defines the openness of the interactions suggested the interviewees.

The firm regarded themselves as a market oriented organization. Apart from the regular market research study they do each year, they try and keep a track of their

competitors along with a focus on their customers, suppliers and consumers, the interviewees indicated.

Being an organization with a strong focus on innovation, the firm still distance themselves from the concept of open innovation to an extent,

“We are open but it just doesn’t happen and where is the time” – Innovation Manager.

Although inbound open innovation, i.e. bringing in ideas from outside the organization would still be welcome, outbound open innovation is a complete no. The innovation manager emphasised –

“We are very proud of being the number 1 coffee company in Ireland and we position ourselves as the experts so we just don’t want to share. If the word goes out that we couldn’t get their idea to market, our credibility is gone”

The senior engineer however holds a slightly different opinion and felt that,

“Ideas can come from anywhere and it’s really all about communication.”

“Only 5 of 100% is the level of information that is very confidential to the company, rest can be talked about. Also technical people are more open to technical people when they are discussing stuff, management I suppose are more protective of what is happening in the company.”

He too however agrees that the firm had reservations about giving away their ideas. The scenario at the firm is best summed up by the managing director,

“We are paranoid about commercial secrecy, so we typically collaborate only with our known customers and suppliers.”

5.4 Firm D

5.4.1 Introduction

A renowned Irish food company, Firm D is a grower of fresh fruits and vegetables. With its growing experience dating back to 1896, the firm was established in 1926 and in the 1930s began growing fruits and salads for supplying to the local Dublin market. Headquartered in Dublin, the firm employs around 2000 employees in its 5 business divisions –Retail, Farm Fresh, Market, International and Solutions.

The business consists of growing, sourcing, shipping, marketing, selling and distribution for its products to major retailers and foodservice customers in Ireland, UK and Europe. The firm is currently expanding in Asia and has a supply base spanning 6 continents and 42 countries. Apart from growing and selling fresh fruits and vegetables the firm also offers Management Solutions Consultancy, specialising in Information Technology and Supply Chain Management.

5.4.2 Innovation at Firm D

According to the interviewees, innovation at Firm D is embedded in all its activities and focuses on improving its functioning. The marketing director stated –

“Innovation has been around making the operations faster, cheaper and better.”

“We are extremely innovative on our farms. They are constantly thinking of what new varieties. Our operations team is always looking if we are doing this fast enough or if there’s a machine that can better do it. So there’s innovation in all parts of our business.”

The Marketing manager however pointed out that being a firm that grows and sells fresh fruits and vegetables; it is not new product development (NPD) that’s the prime focus for its innovations. He said –

“Innovation is a simple enough process for us as we do not change recipes, we are not processing stuff. We do not turn our fruits into jams so we try to innovate around packaging.”

“We innovate our products in packaging and how we get to the end consumer. It is about how we can get more food into people’s hands more of the time and at different times of the day. ”

5.4.3 Significant Innovation

Describing the innovation regarded as the most significant innovation done by Firm D, the interviewees suggested that the innovation has three layers to it. These include deciding to extend the season for production of soft fruits in Ireland, launching of the firm’s own brand and finally introducing a berries snack pot under the said brand.

Tapping onto the growth opportunity, presented by the increasing consumers demand for fresh fruits, the firm decided to and invested in extending the season for production of soft fruits in Ireland. The marketing director detailed –

“Our most significant innovation was the decision around trying to extend the season for soft fruits. People love buying Irish strawberries, they pay more to buy Irish strawberries, so what we have done is that we have extended the season for strawberries right from the end of March to very close to end of December because we now have hot glass houses, cold glass houses, tunnels etc.”

He further highlighted that though it had been a difficult decision to make, it had successfully paid off for the firm.

“That was a gutsy and very brave decision, but we now produce more than 50% of Ireland’s strawberry all here” – Marketing Director.

Primarily being an own label producer, the interviewees indicate that the second biggest piece of their innovation was the decision about launching the firms’ own brand. The marketing director stated –

“In fresh produce industry a vast majority of products are sold under an own label. We are predominantly an own label producer and we see ourselves as service providers to people like Dunnes and Tesco etc. So the second biggest piece of the innovation was deciding that we should launch our own brand.”

He further elaborated that the need for deciding to launch the firms’ own brand was triggered by a significant loss in business from one of its major customers. The firm thus decided that in order to have a long term future they needed to connect with the consumers directly and therefore went on to launch their own brand. Detailed consumer

research, collaborative work with a brand creator and a period of 7–8 months went into finally creating a brand mentions the marketing director. He said –

“The shock of losing some business and realizing that may be we need to have some business which we call ours. So may be if we have direct relationship with the consumers through a brand it would give us a longer term future.”

“So through a series of consumer research and some work with a brand creator, a guy who is professional at creating brands we ended up in the Firm D brand. The process took 7–8 months.”

Making the brand come alive the firm then launched a berries snack pot.

“It’s our berries in pots, for the on the go consumption.”- Marketing Manager

The idea for this innovation as for all innovations the firm does was rooted in consumer research and market insight informed the marketing manager. He said –

“What we try to do and aim to do is to understand what the micro trends are. The micro trends in this case were that the consumers are snacking more, also that they want to get healthy but cannot on the go.”

Following extensive consumer research the firm realized informed the marketing manager that there was a growing demand but a gap in a healthy fruits offering that simultaneously ensures convenience. In order to seize the opportunity the firm therefore went on to launch their berries snack pot under their own brand name.

“We did three focus groups across the country on the target markets, and the insight was that I want to eat healthy but cannot because of time constraints and the mess. So following a process that went through the NPD pipeline we launched our berries in a snack pot as being convenience to the category which was not there before.” – Marketing Manager

The marketing director summed up the innovation –

“So the initial piece was creating and growing soft fruits in a very commercial way and the next piece was extending it into a brand and then making the brand come alive.”

5.4.4 The Management of Innovation

With the launch of its own brand and thus a growing focus on innovation, the firm is beginning to increase its efforts in managing the activity mentioned the interviewees.

Though embedded in all its functional aspects, the activity is spearheaded and managed primarily by the marketing department.

“It is brought through as a pipeline internally. So research is one part and then there is an operational point of view, a commercial point of view and a packaging point of view and then at the end marketing is driving it, talking to all these people.” – Marketing Manager

Additionally, the interviewees suggested that efforts are being focused to formalize the activity at the firm by way of formation of innovation team and their regular meetings, by way of allocation of budgets for the activity as well as by senior management overseeing its progress.

“We have weekly NPD meetings and commercially the second tier management is involved in it.” – Marketing Director

5.4.4.1 Innovation Evolution

Innovation is fast becoming an important activity at the firm. Its focus is evolving beyond just catering to the customers' demands, indicated the interviewees.

“We were a customer focused organization so all our innovations were centred around lets deliver what the customer wants and as fast as we can. We have a functional piece of NPD now; it's not too big yet. I think our NPD is still very much at the start of where it can get to.” – Marketing Director

Innovation at the firm is evolving to becoming a more structured activity with regard to aspects like formation of dedicated innovation team and allocation of budgets. However it is still a long way to go pointed out the marketing manager –

“Stakeholder management is our objective but we would like to have a more formal structure on innovation.”

5.4.4.2 Innovation Objectives and Effectiveness

The primary objective the firm seeks to achieve when innovating is to be known as the best grower of berries in the market. The marketing director highlighted –

“One of the reasons we innovate is that we want to be known as the best people who grow berries in the market from a pure quality perspective. Reason being

that we believe that a consumer will eat more if the product that they eat is brilliant.”

He further mentioned that apart from that there are the obvious sales objectives –

“In sales and marketing it’s about can we sell more, what we need to do to drive consumption and sales of these products, like suddenly a packaging innovation makes the consumers think about the product in a different way.”

Additionally, expanding into new markets and thus having more customers is another objective the firm aims at when innovating. The marketing manager summed up by outlining –

“Another objective is new markets and that would relate to new customers for us.”

“We would like innovation to be consumer led, so that we understand our end consumers so well that we could have a new product every year that fits their need and different parts of their day and makes them healthy.”

Effectiveness of its innovations, informed the interviewees, is gauged and measured at two levels. The firm measures its innovations’ penetration in the market and its extent of consumer consumption and categorize these as the soft measures while the hard measures include the keeping a track of the sales and profits the innovation generates.

“We measure penetration. We measure consumption. These are the soft measures and the hard measures are did it sell, did it make profit and we watch that weekly” – Marketing Director.

“Measure of effectiveness is sales, gross profit and distribution” – Marketing Manager

5.4.4.3 Innovation Team and Budget

Innovation is fast becoming an important activity at the firm, indicated the interviewees. The marketing director highlighted that realizing the importance of having a constant focus on the market, the firm now has sales and marketing and innovation teams dedicated to carrying out marketing and innovation activities. He said –

“Now we have an innovation team. We now have sales and marketing team, we didn’t four years ago. Because the type of industry you are in, you buy fruits and

you sell fruits but what happens is that you become very transactional. So you need a team that could focus on the market.”

“So we do have an innovation team now, made up of the marketing and sales team in its entirety. Then we use our packaging guys in its operations, the operations manager who manages the factory and our other technical experts (our people who know our fruits). Generally we use one person from commercial as well, so overall its people in the factory who know what we do, the technical people who know what we can do, the packaging experts and the sales and marketing team.”

Adding on to what is indicated by the marketing director, the marketing manager elaborated that the onus of carrying out innovation activities at the firm is spread though out the different departments at the firm but it is the marketing department that spearheads the activity. He highlighted –

“There is no exclusive task force as such, innovation is placed on everybody’s shoulders and marketing takes it on.”

For driving the innovation activities at the firm the NPD team meets regularly and has complete involvement of the senior management. The progression though handled by junior managers takes place under the supervision of senior managers.

“We have weekly NPD meetings” says the marketing director.

The marketing manager detailed –

“Depending upon the start and scale of the project, people are part of the innovation meetings. For example, at the start of a project we would have more senior people and once the project is on the roll more junior people drive it further. Then there are updates with them every couple of months. The minutes of meetings are sent out to everybody. So there is commercial, operations, packaging, finance and driven by marketing with senior management at the start and at key milestones.”

For efficient management of its innovation activities, the firm also allocates a proportion of its budget for implementation and management of innovation activities at the firm.

“We allocate approximately 4% of our total budget for innovation” informs the marketing manager.

5.4.4.4 *Internal and External Interactions*

As suggested by the interviewees, the firm believes that its internal interactions are smooth and information flows easily across departments within the firm. The different departments work in tandem with each other and moreover because their business involves sequential processes of growing and harvesting fruits and vegetables the different functions work with close co-operation and collaboration.

“Everybody is very supportive in what is being done.” – Marketing Director

“We consult with our growers all the time.” – Marketing Director

The regular NPD meetings and the flexibility of open exchanges further facilitate smooth internal interactions within the firm emphasised the interviewees.

“Information sharing within the firm is very good because of the nature of the business, the products you grow and harvest. Then through NPD meetings and all projects have their own teams and they regularly meet.” – Marketing Manager

“We have this email address that employees can send ideas to and we have a very open door policy.” – Marketing Manager

With regard to interacting with people outside of the firm the interviewees indicated that the firm frequently engages with its consumers and customers for gathering insights and innovative ideas, for understanding consumer needs and market trends. The marketing director pointed out –

“We look at ideas from both our customers and consumers.”

Additionally the interviewees also highlighted that they not just engage with their consumers and customers but engage with them at each stage of the progression of their innovations.

“We do series of group research. First of all on the concept then on the product then on packaging and things are moved and changed and fixed. At every stage there are interactions with the consumers, to get the idea, to develop the concept and then on the actual product.” – Marketing Director

“There were three phases around the snack pot. One around the ideation stage, one when we had a concept and then when we had the samples and at each stage we went back to them.” – Marketing Manager

The marketing manager at the same time also pointed out that though the firm increasingly engages with its customers, it is always conscious of the extent of information it exchanges with them. He detailed with an example –

“First to market is imperative. So if Tesco wants our innovation for their own label, to them it’s an own label innovation and it is our branded innovation. So there is a constant struggle. So if we have something very much on the pulse, we want to grow our brand, we want to have it for a year or two before we share it with them.”

Market orientation is fast becoming an important aspect of the functioning of the firm. The interviewees indicated that although the firm has always been customer centric, the firm’s focus on the market is expanding to newer dimensions with the launch of its own brand.

“We are an organization which is oriented towards the customers, the Tesco, Dunnes, Supervalue, Superquinn etc. The market is growing so more and more we would be looking at our end consumers.” – Marketing Manager

“We are very customer centric. Whatever it is that our customers require we will endeavour to deliver. We spend a lot of time with growers and bring that information to our customers. We have always been customer focused, but since the brand you now have to bring things that are different. We now have to bring things to the customer to say this is actually what the consumer wants.” – Marketing Director

The firm now regards both its customers and consumers as an important source for its innovative ideas highlighted the interviewees.

“A lot of our innovation comes from our customers, what gaps they see in their product range.” – Marketing Director.

“Our customers drive some of our innovations. For example if Tesco wants a twin pack, we work on that.” – Marketing Manager

Additionally apart from buying market research data the firm also regularly engages in gathering market insights, taking customer feedback and doing consumer research on its own for exploring innovative ideas and concepts. The marketing director informed –

“We try to take customer feedback / research annually and we buy Nielson data once a week.”

“We watch the market, what people are doing and we do consumer research to understand why don't people eat more fruits and vegetables and we ask consumers what do they want to see. Ireland is a very small country so we keep our eyes open probably in a non-prepared or unsystematic way.”

The firm believes in open interactions with its consumers, customers, market research agencies and brand creation consultancies indicated the interviewees. Engaging with its customers and suppliers are part of the regular functioning of the firm whether it is for gathering consumer or market insight or for development of a product. The marketing manager said –

“We are open with customers, we are open with suppliers, we demand a lot from them and they demand a lot from us.”

The firm is sceptically open to the idea of inbound innovation and the marketing manager indicated that the firm would refrain from it if it causes it to lose its competitive advantage. He said –

“Yes we will be open to inbound open innovation, but if we lose competitive advantage in the Irish market we will not.”

However, interactions with competitors is something that the firm completely disagrees with because of the increasing completion in the industry and more so it believes that because its competitors lack the level of insight the firm has about the industry it operates in, such collaborations can not materialize. The marketing director emphasised –

“We are not open with competitors because in the industry we are in it is very easy to copy and so often the differentiation is very subtle, it's about the branding and packaging. And I don't think our competitors have the level of insight we have.”

5.5 Firm E

5.5.1 Introduction

A leading player in the global food and beverage industry, firm E is one of the largest manufacturers, marketers and distributors of branded beverages in Ireland. Headquartered in Dublin the firm employs over 2,200 people between Ireland and Northern Ireland and owns several beverage and savoury snack brands.

With both sales/distribution and manufacturing operations in Ireland, UK and USA, the firm aims at building a substantial international cider-led, Long Alcohol Drinks business through a combination of organic growth and selective acquisitions.

5.5.2 Innovation at Firm E

According to the interviewees, innovation is the prime focus of the firm and is believed to be the activity that can enable the firm to achieve sustainable growth over the years. The commercial manager said –

“We are very keen to innovate and very keen to see new ideas all the time. The only way we can be here in 10, 20, 30 years’ time is by continuing to innovate and grow ourselves. We operate in a very competitive market and innovation is the only key to keep going and growing.”

Mentioning that the firm is an innovation led firm, the innovation manager went on to detail what being innovation led meant at the firm –

“We are an innovation led firm meaning that we build on our capabilities and product categories that we have rather than look at what’s new to world. Doing new to world requires lot of capabilities / resources that have to run parallel to the day to day stuff which is difficult and most of the time very expensive. So certain innovations that are of appeal are beyond reach at times.”

However it was also highlighted that the firm reckons innovation as a challenge and engages in elaborate thinking and strategizing when perusing the same.

“Innovation is a challenge, its caution to a point that you have to do at some point something or you will stagnate. There is always a caveat around innovation and thinking where by its very important to think what sort of innovation strategy

you want to pursue, can you be entrepreneurial or do you need to be more conservative or both, the innovation funnel, the dynamics of short term, long term innovation all inform your strategy for the business.”

5.5.3 Significant Innovation

Interviewees at the firm E regard the launch of the pear cider as one of the most significant innovation of the firm. Elaborating the firm’s innovation journey up to the launch of the pear cider, the packaging manager said –

“Historically we weren’t a very innovative company. We were selling apple cider and doing well at it. We started exporting to UK in 1999, early 2000, we started with Scotland and then worked our way down. Things really took off in 2005/2006 and we were doing really really well in the UK. We then looked at selling to the UK multiples, Tesco, Sainsbury etc. It was then that we started looking at other products like pear cider.

Speaking on the same lines the innovation manager highlighted –

“Our business structure changed since 2009. From 2009 to 2013 things have evolved quite a lot we added both companies and brands to our portfolio and we went on from being a cider company to a drinks company. In the mid 80’s we moved from bottled cider to draught, that was our first innovation. In 2003 we launched our low calorie version but still apple and then in 2009 we launched our pear cider which was our first innovation beyond apple. The process has evolved but it is broadly similar. We are still a cider dominated business, within cider we are the definitive brand. So for a brand that’s synonymous with apple, which has everything to do with apple, to move from apple to pear was quite a departure.”

Thus though the firm had had innovations but since they were only apple variants, the interviewees regard the launch of the pear cider as one of the most significant innovation of the firm.

“Our pear cider is the big big piece of innovation. The company was used to selling draught, pint bottle and long but there was no massive innovation in the company until our mid strong and light versions were launched. These were only apple variants but the big game changer was our pear cider. It was a completely

new way of thinking around our product, around our market.” – Commercial Manager

Discussing about the origin of the idea of the pear cider the interviewees indicated that they saw the emergence of the concept of pear cider in UK and decided to follow it. The innovation manager said –

“To a point we were followers in the innovation but it was quite brand leading for us.”

However the interviewees also highlighted that it was market research that guided them through this innovation as for all innovations the firm does.

“We started with a piece of research to see if there is a market for pear cider. This kind of allows the consumer to tell us what they want and would like to see.” – Commercial Manager

“So in that instance like we do in pretty much all innovation cases to date, we would engage with external agencies to a greater or lesser extent.” – Innovation Manager

Detailing the sequential steps the firm undertook for the pear cider innovation and which is reflective of the firm’s process in general the commercial manager said –

“We bring our research information and look at what the product should be what it should look like, taste like and feel like. Then we start making and trying some liquids. Internally what we do is, between teams we try liquids and see which works and tastes best before we bring it to research. Then the selected liquid would go into research to see if it’s the right liquid for the market. Once the liquid is selected and agreed then begins the brand identity. So from there we start looking at what the brand would look like, what the packaging would look like, the label of the bottle etc., what the marketing would look like, what the above the line, below the line activities would look like and all this would be happening while the liquid is being developed in the background. So then you get to a point where the two meet, production and marketing. The commercial team then comes into work on how to sell the product. We have our team of sales guys and then we also team up with wholesalers. We pick up top 5 wholesalers and we incentivise the team to get the product to market. Once we get the finished product to market we try and build some distribution and when we

reach 40% of our distribution target we start some above the line and below the line advertising. It is at this stage that we begin sampling at pubs etc.

Mentioning about the promotional piece involved in the innovation the innovation manager said –

“Because we are a brand led business, we invest constantly in promotional campaigns. There is an entire task in preparing a promotional campaign to support the launch. We sell into retail. Most pubs are individual owned so our sales team work with them, for retail outlets it is the head office the sales team gets in touch with. So if we want something to be seen from May we advertise it from March and 10 weeks back from that it should be completely ready with barcodes etc.”

The next step to the innovation, point out the interviewees was the beginning of the diversification of its ranges by the firm.

“We started diversifying our range. We had a couple of those variations and then we moved on to specials which were various flavours. We then had a cooler wine type product that didn’t work too well and then we had a hot ginger product. So that was all in the cider theme.” – Packaging Manager

Referring to another significant innovation by the firm on the packaging side of things, the packaging manager said –

“We’ve had a big project and very innovative as well, in terms of our pint bottle. It is a big seller for us and we took a lot of weight off the bottle and that involved working with our glass supplier. It has a lot of impact on the environment. Less weight of glass for transporting, our bottles got a little smaller so we could now have more bottles on a pallet and so on a truck. So it has taken off a lot of truck movement for us.”

Elaborating on how the innovation came about the packaging manager said –

“Historically we’ve had the pint bottle for like forever. The same bottle produced by the same manufacturer. In the Irish market pint bottles are returnable bottles, we fill the bottles send it to the customers (pubs) they pour it and return it to us, we wash them and re-use them. It’s a cycle of 10-15 days. When we started exporting to the UK market we could not maintain the returnable bottle thing, we didn’t had the infrastructure in UK to collect the bottles and bring back to us, so we needed a one way thing.”

He further detailed that the firm then started engaging with various glass suppliers to reach solution in this regard.

“At that time we were doing huge business in the UK, we were a huge customer of glass bottles so we were looking at various suppliers. So in conjunction with ourselves, the glass manufacturers and some independent testing labs we worked on the bottles. We did a lot of development with them, lot of testing as we needed to be sure that the bottle is safe to go out in the trade and not cause any trouble.”

The packaging innovation took 6–8 months and a series of trials before the firm came out with their light weight bottles while continuing to look for further lighter versions informed the packaging manager. The innovation led to big savings for the firm along with the positive impact on the environment.

“We decided to move from our 438gm bottle to 390gm bottle and tested for 6 – 8 months to see if all was ok and we continued testing further light weight bottles in the meantime. So it gave us a lot of savings and lesser environmental impact.”

– Packaging Manager

Along with the details of the packaging innovation, the packaging manager also highlighted that for this innovation, in order to safeguard their margins with their customers the firm refrained from divulging any information about the success of this innovation. He informs –

“In terms of packing side of things that has been our very successful innovation and it happened without the market knowing about it. We did it and we had the benefit of it without the market noticing it. Our competitor did a similar stuff but they announced in the market that they had done such savings. We didn’t want to do that because then the likes of Tesco etc. would come to us saying we want to pay you less because you are paying less now.”

5.5.4 The Management of Innovation

The firm believes in being innovation oriented all the time and thus engages in increasing efforts and strategies for managing the same. Explaining the way the firm manages its innovation activities, the innovation manager informs –

“So the macro process that we have is the stage gate process. It is the decision-progress-agree model. The gates of decision are varied. The process is owned by

the marketing director. She has a seat at the executive committee table. On the day to day basis we managers are in charge, it is our responsibility to progress the projects. So it is a communication, project management liaison piece.”

The interviewees further outline that the firm categorizes its innovations in order to ensure their efficient management.

“We have two sides of innovation. One is the liquid side which goes out in the bottle and the other is the packaging side about how we present it to the customer. Then there is another side we look at, the environmental side of our innovations, about how can we make less impact.” – Packaging Manager

The innovation manager additionally mentions that firm has three innovation managers in different territories of the business who liaison regularly with each other as well as with other units of the business with the onus of managing the innovation activities.

“There are forums whereby the 3 central innovation managers and others who have role, be it recipe, process, compliance, setup system, development etc. would interface, usually on 6 weekly bases. We have bi monthly conference calls and in person meetings to ensure things are moving.” – Innovation Manager

Simultaneous to mentioning the ways in which the firm manages its innovation activities, the interviewees also highlight that though the senior managers are very ambitious about the firm’s innovation, operationally it is a challenge.

“The ambition is that we would be quite entrepreneurial in our innovation at the senior level but the realities of that are quite difficult at operational level.” – Innovation Manager

5.5.4.1 Innovation Evolution

Innovation at the firm is constantly evolving indicate the interviewees, both in terms of becoming a more formal activity as well as with regard to increased interactions. The commercial manager said –

“We are getting better and better. Now it is a lot more focused and formalized. The business as a whole is more and more focused.”

Innovation as an activity is more formally structured and planned at the firm now, detailing about the same the innovation manager outlined –

“We have had versions of stage gate, what has been the major difference from earlier is that now we are a multisite business, so it has become more formal. The scale has evolved as against the process. Because we were informal within the company earlier, so were the relationships with the retailers. It is not so now because everybody is driven by promotions and their cycles are according to promotions so there is less flexibility and so we are bound by timings now.”

Referring to the way interactions have evolved at the firm with regard to increased communications with people external to the firm, the packaging manager said –

“We are certainly more outward looking now, we are talking more now. We are also taking on quite a bit of on demand packaging i.e. a brand owner would come to us to either make a product or pack a product for them. We have some of the supermarkets coming to us that they want an own label beer or cider, so we make a product for them, we do some testing for them. So that has increased the number of products we put through our plant. So we are getting quicker on our feet now.”

He further emphasised that the fact that they started exporting and moved beyond the Irish market, played a pivotal role in the firm evolving to be more formally innovative with increased interactions with external people.

“In recent years we have become a lot more innovative, a lot more willing to take risks. In 2004/05 when we opened to other markets, it opened us up. Before that we were happy with the Irish market as an Irish brand, but now we are out in the big bad world so we had to react faster, work efficiently. Irish market is traditional; if you drink our brand you will always drink our brand, while it is much more experimental in UK and beyond. The fact that we are exporting, the fact that we are doing contact packaging has brought lot of outside people into our business.”

5.5.4.2 Innovation Objectives and Effectiveness

When introducing new innovations in the market, whether product or packaging the primary objective the firm aims at is profit and building its market share informed the interviewees.

“You are always trying to build market share.” – Commercial Manager

“At the end of the day its profit, we are a PLC and we have to take care of our shareholders.” – Packaging Manager

While when developing an innovation the objectives the firm looks at were also pointed out by the packaging manager, he said –

“In terms of raising something, we think of: can we do it, can we make the product, are we going to do it economically, will we have enough sales. We have to have a minimum run size to make it worthwhile, we can’t just do 100 litres. The marketing / commercial people go out to consumers run taste panels, focus groups to see if there is an appetite. We do blind testing as well, and then we also do session testing i.e. if people drink more than 2 or 3 drinks will it affects them in anyway.”

The interviewees also highlighted that because the markets have been down, in order to retain their profits, innovation has become one of the major objective of the functioning of the firm. The commercial manager said –

“The market is down so if you want to make the same profit as last year, you have to fill that gap with some innovation or some new product. So unless you innovate in some shape or form that gap cannot be filled.”

He further informed that the firm is also considering innovative ways of selling their products with the objective of maintaining their profit figures in a declining market.

“We have a beer portfolio and we are going and signing commercial deals with bars, so that they give us certain amount of volumes. It is a new way of looking at things; all they sell is our products. So it is not a new product innovation but strategically it is innovation for us to fill that gap of loss in volume sales.” – Commercial Manager

With regard to the measures of effectiveness of the innovations the firm does, the interviewees indicate that it is more or less in money terms.

“At the outset we would set volume targets (e.g. so many million litres) and distribution targets (e.g. 1000 accounts).” – Commercial Manager

“The rate of sales and the re-orders” – Packaging Manager

“Volume and ultimately revenues” – Innovation Manager

However, they also suggest that beyond this the firm also looks at effect the brand creates.

“We look at the effect of the brand, could be that we don’t lose shelf space or may be replacing a competitor.” – Innovation Manager

“We look at the noise on social media or the media in general.” – Packaging Manager

5.5.4.3 Innovation Team and Budget

Innovation at the firm is a team based activity; however it can more precisely be defined as a liaison based activity between the different business units indicated the interviewees. The innovation manager said –

“It is the liaison between what the commercial team wants or needs and the backhand technical team, who may not understand why pressures are being put. So it is a project management piece”

The interviewees also inform that it is the innovation manager who has the onus and authority of managing these interactions for innovation at the firm and the firm has three innovation managers across the business.

“The innovation manager is the central figure who brings in people from commercial, marketing, production etc. to develop the innovation, as apart from the regular meetings for a specific idea we always have 3 - 4 projects on the floor” – Commercial Manager

“I am the innovation team. Me being the innovation manager I am the go to. So if commercial team, which is the customer facing side of the business wants anything whether it is a pack or if they have an idea for a new product it channels through me because ultimately then I interface with the group at large for what’s needed. We have three of us (innovation managers) across the business, we share project updates and advice each other.” – Innovation Manager

Though the firm does not have a dedicated innovation budget, the marketing department uses its allocated money for innovation and it is even easily allocated as and when necessary. Also the innovation team meets regularly to keep the projects going suggested the interviewees.

“The marketing team have the budget and if new things are being proposed money will be allocated, but we specifically do not have a budget for innovation.” – Packaging Manager

“The innovation forum meets once a month it is conference calls then 2 -3 times a year we get together for a day.” – Packaging Manager

The composition of the firm’s innovation team as it stands today has had its share of revision and re revisions over the years. The packaging manager outlines the various models of innovation teams the firm has had before reaching its current status. He elaborates –

“We have had many models of innovation. Initially it was somebody came up with an idea, so it was an ad hoc kind a thing. Earlier people were only selling beers, ciders etc. now you have flavours and light and what not, the market has fractionated quite a lot, the product mix are changing so then we realized that innovation was an important part of our business. So a structure was put in place, the innovation team and then there was lot of discussion around what we call innovation and renovation. We had a big line between the two. A team was put in place with representation from different business units, it was based on different markets; there was an Ireland team, a UK team and a rest of the world team. The teams has projects and monthly meetings and targets etc. we worked like that for a while.

We then looked at the renovation side of things which was defined as any pack change or brand extension. Any new liquid would be innovation. These however got muddled over the years and people got confused, people changed over the years and the whole focus came back to innovation and renovation being together. We see that as a better model now, it’s all sort of one team looking at it now.”

5.5.4.4 Internal and External Interactions

The firm believes in being a close knitted organization and facilitates this by having smooth information exchanges across departments and business units. There however are minor road blocks in these interactions but these are easily ironed out as all are working towards a common goal indicated the interviewees.

“Internal interactions are good as everyone is working towards a common goal.”

– Commercial Manager

“Internal interactions are quite good. We have a central technical team, we have 4 production plants, marketing people are spread all over and we have quite a good rapport, there are differences sometimes because marketing people may want something quick which may be difficult for others so managing people’s expectations is required. We sometimes forget each other’s priorities but we get on well.” – Packaging Manager

These interactions are facilitated by the regular cross functional meetings and other activities the firm conducts for bringing the people together for generating and discussing innovative ideas. The firm however is beginning to avoid brain storming sessions as the perception is that these rarely generate radically new ideas. The interviewees outlined –

“We are constantly sharing information, though we have not gone for brain storming sessions for the last two years. We do more of cross functional meetings than brain storming sessions as they don’t really generate new news.”

– Innovation Manager

“We launched a programme called ‘doing our bit’ and we did a kind of road show internally when everyone was given a apple shaped card and was asked to come up with innovative ideas on product, process whatever and the best three ideas were rewarded.” – Commercial Manager

The interviewees also inform that the interactions have moved beyond just the marketing team and have become more formal and structured with the expansion of the business. The innovation manager detailed –

“Earlier marketing was very central to everything and we did everything from forecasting to running the quality meetings. We now have special units with ownership and that brings with it changes. It is more formal now that we are bigger. There are formal reviews against the objectives. There is on-going collaboration. Interactions are via the cross functional groups.”

With regard to interacting with people outside of the firm, the interviewees suggest that the firm engages with various external parties at different levels. The innovation manager outlined –

“If we are looking at new to world innovation we work with consultant agencies around scoping if we don’t know much about it. With their help we try to understand the market, we talk to consumers to see where the opportunity might be within that market. We develop concepts with design agencies which we might then present to consumers to see what they think about them. To refine them we do qualitative and quantitative research to a point where we are satisfied that they are worth proceeding. We might need to do physiological testing as with food and drinks you have to be sure that there are no adverse effects. We have in house compliance managers who check pack designs and pack labels to ensure they are compliant with EU and Irish legislations and we also work with third party agencies.”

“We interact with agencies at the very start as these would be running research groups for us, creating market plan or point of sales for us.” – Commercial Manager

The interviewees also inform that though these interactions with external people are a regular practice at the firm these are carefully managed and the confidential information exchanges are judiciously safeguarded.

“We have good expertise in-house but there are always collaborations, but there is always a balance between discussions of interest and protecting confidentiality. If we are planning something we talk to our suppliers, customers in our regular meetings to see if there will be interest in it. If it’s a new to world thing and we are sure we are doing it then we make formal presentation to them after the informal discussions. For general discussion it is okay but further down the line discussions, sharing the brand name, samples etc. we would be very careful. It is also generally down to relationships.” – Innovation Manager

“If we get deeper into stuff we get people to sign NDA’s. We share confidential details with some of our key suppliers after signing off NDA’s.” – Packaging Manager

Referring to the pear cider innovation the innovation manager, the innovation manager summed up the various interactions both internal and external the firm engages in.

“The pear thing was technically led internally. We had our own cider people; we had a technical team for the recipe. For the physiological testing etc. we worked

with a agency on that. We then had an advertising agency who worked on our communication and creative. The pack design was external and the sale was by our own team.” – Innovation Manager

Being oriented towards the trends in the market and the requirements of the consumers is the regular way of functioning of the firm and the interviewees indicate that the firm believes that it is in fact the most important aspect of its functioning.

“If you know what the trade wants, what the consumers want it is more important than any research you could do. We are very market oriented, the consumer is our big priority, without the consumer you haven’t got a product” – Commercial Manager

“We are certainly very market led and also marketing led organization, putting in a lot of investment in building our brands.” – Packaging Manager

Detailing how the firm engages in gathering market insights, the interviewees mention –

“We have our agency that does general market research for us, blind taste tests etc. with different segments in the market. We do it quite heavily before we bring a product to market.” – Commercial Manager

“We do a piece of qualitative research every year to find out what are people drinking, seeing or trying. Procurement tells us something, packaging tells us something, and consumer research tells us something. The sales team is running on the roads and if they see something new happening they feed that in. We constantly hear back from our customers what they want, what they like. So we look for insights from business challenges rather than what we need to do and innovation falls from them.” – Innovation Manager

They emphasise that the firm keeps a track of not only their specific markets, but of markets globally in the sector they operate in.

“We constantly keep a track of what’s happening in the market globally.” – Commercial Manager

With respect to the pear cider example highlighting the importance and relevance of their market research the commercial manager also said –

“Market research told us that there is an appetite for new variants and flavours in the market. It guided us to see that flavoured ciders are beginning to grow and there seems to be a market for them.”

On the pack side of things although the firm does take note of what the customers want as well as what the competitors are doing, it is the suppliers who are the main source of market insights suggested the packaging manager.

“We are constantly in touch with our suppliers for what is new, people who supply us boxes, bottles, labels etc. then we also talk to our ingredient suppliers about what are the new trends in flavours, these guys are out in the market and they know best. We do look at what our competitors do, and we often get ideas from our multiples like Tesco for what the consumer wants.”

The interviewees informed that opening up with customers, consumers and suppliers for market information and insights is a regular practice at the firm. While these interactions take place all along the innovation process they are more prevalent at the early stages.

“We would interact along the whole innovation chain, we talk to customers, to suppliers initially about the ideas of the product then we later give them some visuals mocked up with packaging and we talk to them if it is achievable.” – Packaging Manager

“We open more so in the early stages, we do a lot of consumer research. May be during the course of it as well but particularly at the start consumer tasting is very very important.” – Commercial Manager

Outlining the firms approach about opening up the innovation process the interviewees mentioned –

“No it is very difficult; it depends upon the scale and thinking. To liaison and align would be very insecure at a certain scale because of competition” – Innovation Manager

“We have done contract packing for one of our competitor but innovation no. Operationally we do but for innovation no.” – Packaging Manager

The belief is, they highlighted that opening up is for small players who have limited resources, also opening up to out of category people though is risk averse but can be a distraction so it is better avoided, moreover being a drinks company they have to be very sceptical about the collaborations they enter into. The innovation manager emphasises –

“The small guys can open, their capabilities are limited, their sensitivities are less so they can.”

“Out of category people approach us but it can be distracting, you are back to will it add value. Moreover we are alcohol so we have to be very careful of how we present ourselves and who we associate ourselves with. We could do a tetra pack of apple juice for kids but we are drinks brand so who will drink it? We have different sensitivities associated with us so it is a very early litmus test for us. There could be huge commercial benefits but you just wouldn’t go near it.”

The firm is open to practicing inbound open innovation should an opportunity present, the interviewees indicated.

“Certainly we would like to work with people and there might be an agreement as to how the sharing happens as we will put in the time and effort.” – Packaging Manager

“We could buy or buy into somebody’s idea and help them develop.” – Commercial Manager

However, the outlook is very different in case of outbound open innovation; the interviewees suggested that the belief is that the firm will refrain from venturing into an innovation in the first place than to need to collaborate with people outside of the firm.

“Generally we look at things we could do ourselves; we don’t go to a point where we have to sell it to a competitor or somebody else. We probably would not look at something like that.” – Commercial Manager

Additionally, culturally the perception at the firm is that they have worked their way up with a lot of effort and so would not be keen on sharing their hard earned expertise.

“Culturally we won’t do outbound. The thought would be at the back of our heads that why we should give our innovation away, it might work someday.

Similarly when small companies come to us for contract packaging, do we give them advice? Well not really, sometimes we do but sometimes not. It has taken us a long way to reach here so we hold back on giving our expertise; we just do what we are asked to do. They might not be competitors now but why would you do it.” – Packaging Manager

5.6 Firm F

5.6.1 Introduction

One of the world's largest sandwich manufacturer firm F is a leading food company of Ireland. Established by the Irish Government in 1991 through a flotation (IPO) of the state-owned Irish Sugar Corporation, the firm today is a leading international manufacturer of convenience foods. Headquartered in Dublin, the firm currently has 22 convenience foods manufacturing sites in the UK and USA. Apart from manufacturing convenience foods the firm is also involved in ingredients and related property. These activities were a part of a diversification out of the sugar business and formed a part of the Group since its floatation on the Stock Exchange in 1991.

The firms' business consists of two segments, namely the convenience food division and the ingredients and property division. The Convenience Foods Division focuses on providing wide range of chilled and frozen foods to major retail, manufacturing and foodservice customers in UK and Ireland, as well as many in Europe and USA. The Ingredients and Related Property Division comprises of trading companies and specialist property teams that work to maximise the Group's property.

5.6.2 Innovation at Firm F

According to the groups' communication manager, innovation defines the existence of the firm F. It is an activity that is practiced all the time and throughout the organization. He mentioned –

“Innovation is critical for our business. It is the life blood of our business. It is what we have to do.”

The innovation activity at the firm is centred around the good food culture or the food first theme at the firm and aims at making the firm stand out as an expert in all its operations. The communication managers said –

“A lot of our product development is driven by passion for good food. It always starts with great food and great ingredients when we have a dialog with our customers; to that extent we also have a programme called food first. It's about the good food culture. It's about being known for being the experts. Knowing

that we understand our customers, our products and our markets we operate in.”

5.6.3 Significant Innovation

Interviewees at the firm F regard the development of their new business with Starbucks in USA as their most significant innovation. Highlighting that it was not just a product innovation but more of a business model amalgamation with the coffee-chain giant on a larger scale, the chief executive officer (CEO) of the firm said –

“It wasn’t just product innovation although there is significant bit of that. It was business integration with them and it was channel innovation as well.”

The firm had a presence in the US market for about five years before this innovation. It initially ventured into the US market upon visualizing a strong growth opportunity in the convenience food segment there, which had been its forte for over a decade in the UK-Europe market. The CEO elaborated –

“We first went to the US five years ago, at the end of April 2008. Three reasons for that – First we felt there was a strong market opportunity for chilled and prepared food in US. Their grocery was though quite sophisticated in a lot of their offerings but their chilled and prepared food offerings were weak. Secondly we had a lot of skills built up in this area, developed jointly with our customers over a period of fifteen - twenty years. It was also accelerated by lot of inbound customer enquiries we were getting at that time from variety of US grocers.”

However, for the first three years of their presence in the US market, the firm struggled to identify the appropriate strategy for the market. It struggled to figure out which product it should focus on and which customers and channels to target. The CEO suggested that it was then that the firm decided to change the existing strategy. He said –

“About a year ago in January–February 2012 we looked down on a strategy whereby we focused on small convenience stores and within that channel a set of industry leading operators. So that was the 7-Eleven convenience stores, Walgreens in the drug store channel and we identified Starbucks within the coffee chain channel.”

“We thought that we are going to have a much simpler range of products in terms of what we do and we are going to focus around immediate consumption or

‘food to go’ as we call it product area. This would mean very much led around a sandwich type of proposition rather than the broader range of products that we had been doing like ready meals, desserts, sauces, salads etc.”

So armed with the new strategy for the new market, says the CEO, the firm approached Starbucks and succeeded in securing an engagement to supply to them in the North East region. Starbucks had strong reasons to pick them as their chosen supplier the CEO highlighted –

“Our track record around food safety and supply chain integrity was different from what they were used to with their existing supply base. Secondly we have a global reputation around ‘food to go’. Thirdly we had the resources and the team that could not only take on their existing business but also help them develop their range more broadly going forward.”

As a part of that engagement of bringing in the firm in their supply base, Starbucks asked the firm to come up with multi regional solutions as against solutions just for Boston that the firm was offering, according to the CEO. He further outlines that in order to fulfil that requirement the firm went on to acquire two additional businesses which provided it the ability to expand its supplies to Florida, the Mid - Atlantic States, the mid-west and to Chicago and thus led to the supply agreement with Starbucks around the existing range of the firm.

As a next step to the innovation, pointed out the CEO, the supply engagement in due course is resulting in the two firms working together around their innovative offerings. He detailed –

“This got us a seat on the table around their NPD. We are working with them on their innovation around the development of a new breakfast range, lunch time sandwich range and also some occasion specific range they are doing, sort of end of day or about the store footprint like range for competing with the pubs and bars.”

5.6.4 The Management of Innovation

The firm boasts of being more innovative than most innovative firms in the business and engages in increasing efforts and strategies for managing the same.

“Most innovative companies generally target to have 15–20% of their stuff new each year and they define new as being typically less than 24 months old. At firm F we have 40% of our stuff that would be less than one year old” said the CEO

Although most of these innovations are incremental, the CEO pointed out that the firm engages in a strategy of carrying very little finished products to bring out and manage increasing number of its innovative offerings. Outlining the firm’s strategies the CEO said –

“The level of product churn we have is very very high. A lot of that would be incremental innovations, change in recipe, packaging, flavours etc. but we have a system in place which can generate very very rapid new products. One of the ways we do that is we carry very little finished food stock; rarely have we more than two days stock. So that enables us to change recipes etc. quite quickly. So we are a company that has very high level of product innovation that ways.”

“Secondly having little finished goods stock enables us to try new things. So we don’t have to do great amount of pre-launch testing, we do some but then we just put the goods in the market and see how it goes. We do have to manage the packaging risks of course.”

5.6.4.1 Innovation Evolution

Innovation is constantly evolving into becoming a more and more interactive activity at the firm. Designations like group communications manager are being created to foster collaborations across categories in the firm. Additionally the firm is beginning to run internal competitions to ensure different parts of the business work together for innovation. The communication manager elaborated –

“We are getting better at the transfer of knowledge skills and ideas. Partly my role is to support that communication piece.

Something that is relatively new is that the NPD consultants get together on a regular basis and we now have internal competitions so that chefs from different parts of the business come together.”

5.6.4.2 Innovation Objectives and Effectiveness

When rolling out increasing number of incremental innovations in the market, the main objective the firm focuses on is expanding the growth of its categories according to the communications manager. The firm also strives to achieve its objective of entering new markets as it focuses its efforts on innovation. He stated –

“We look more at incremental innovations as opposed to anything majorly radical and our main objective is to grow the market and the category.”

Also another objective that is fundamental to the functioning of the firm suggested the communications manager is the firm’s aim to be the best supplier for its customers.

“Our whole objective is to be the supplier of choice for our customers; this platform is the commonality across the business.” – Communications manager.

The effectiveness of the innovations the firm does is gauged in money terms, he further suggested. It is primarily the sale the innovation generates that is considered as the measure of the innovation’s effectiveness by the firm. He indicated –

“Effectiveness, most part of it would be sales.”

However the CEO points out that the firm also takes note of the innovation’s performance with the consumers additional to the sales it generates to measure its effectiveness. He said –

“Effectiveness is measured by the innovations’ performance in the market with consumers; the wealth it generates; the growth and if it meets the economic expectations we have for it in terms of margins.”

5.6.4.3 Innovation Team and Budget

The firm has five different business units and innovation though central to the working of the entire firm is managed separately by each unit. There are different NPD teams for different categories and these are categorised based on customers.

“Product innovation activity happens within different divisions in our group. We have five different business units and each one has extensive product development activities” says the CEO.

The communications manager detailed –

“We have NPD teams for categories; these are split up by customers. Each category has its own head of NPD and their own product development teams including developers, technicians and skilled chefs etc.”

Apart from the separate NPD team for each of its categories, the firm also has a central business development team to manage its innovation activities and to look for expansion opportunities for the firm. The CEO stated –

“Not a central product development team but we have a central business development team which kind of tracks category trends in the market and also looks at geographic opportunities and mergers and acquisition opportunities for our group.”

Budgets are allocated to the different business units as they individually carry out their innovations based on their customers’ requirements jointly with the customers.

5.6.4.4 Internal and External Interactions

As suggested by the interviewees, the firm has very smooth internal interactions. Facilitated by frequent information exchanges and discussions on market insights across departments, these are considered as a very important and integral part of the functioning of the firm. The communications managers indicated –

“We have very very smooth internal interactions. We call them as links in the chain. Like for idea development there is input from marketing department, production department, from sales, commercial and packaging people.”

“Our heads of NPD across the business meet on a regular basis to exchange ideas and discuss innovation.”

The CEO also suggested that the internal interactions are smooth but at the same time points out that these are more for non-product ideas like for technical solutions or for general consumer research. He suggested that because the firm supplies to customers who are each other’s competitors, the firm has to maintain this balance when exchanging information internally.

“Our internal interactions are pretty good on non-product ideas, technical solutions, supply chain efficiencies, distribution solutions or on purchasing incentives; but because we supply to customers that are competitors we have to have fenced customer teams who would not share ideas with each other. But if

we do consumer research on consumers' attitude on price etc. that we can do across for all divisions and share, it need not be replicated” – CEO

With regard to interacting with people outside of the firm, the interviewees suggested that their customers are their prime target for such interactions, they almost all the time engage with their customers when innovating. The CEO emphasised –

“Fundamental of how we do innovation is that we do it almost always jointly with our customers. They are a big big source of directing our innovations, collaborating in our innovations, testing and informing us on innovations.”

The CEO further highlighted customers' involvement in their innovations by detailing an example –

“In September 2012 we rolled out a new range of Italian ready meals for one of our customer. As a part of that we jointly owned that development, both their team and our team went to Italy for ten days and looked at the trends there in terms of ingredients etc. Came back put that into production, put packaging solution around it jointly and launched the business which is about £100m in our sales and about 200m of retail for them.”

The interviewees also suggested that the firm is almost completely open with its customers for their innovations and regard their relationships with their customers as very important.

“We are almost completely open as it relates to the products. Areas we and they are less open are around the underlying economics and margin implications for us and for them” says the CEO.

The communication manager also pointed out –

“We are very careful and protective of our relationship and commercial arrangements with our customers.”

Additionally the interviewees also informed that the practice of signing non-disclosure agreements (NDA) is not common between the firm and its customers, however they also indicated that such practices are common place in the US market where they are now expanding. The CEO said –

“With our customers very little NDA's are signed. There is a very strong understanding about the confidential nature of what we are working on but it is

not guarded by formal NDAs. This is general practice here but in the US it is more about formal supply contracts etc. regarding information sharing.”

In addition to interacting with its customers for its innovation activities the firm also engages in gathering market insights. It interacts with market research agencies and consultants to keep a tab of market trends, upcoming innovations globally as well as of consumers’ likes and dislikes to inform its innovations. The communication manager elaborated –

“We gather lot of insights, we subscribe to a lot of trends analysis reports, some external consultants etc. It is all about understanding food trends both nationally and internationally. We spend time looking at what’s in the market, talking to people, buying samples etc. We thus capture what the trends are and map them against our consumer understanding. Marrying the two things we develop proposals talking to our developmental chefs and then look at the costing based on what retailers are asking for.”

The interviewees suggested that firm F is a very market oriented organization. It actively engages in gathering market trends and consumer information all the time. The CEO mentioned –

“Yes we are certainly very market oriented. We are almost paranoid around what is happening in the market every day.”

He further outlined that being a supplier to branded customers the firms’ strategy is to focus its efforts more on gauging the performance of current products than on exploring upcoming trends in the market.

“We have a lot of focus on current performances while we tend to devote fewer resources than global branded food companies on foresight into future performance. Our model tends to be more on collaboration with customers and fast following when we see some kind of fundamental change in trend” – CEO

“We do less of direct independent market research than the branded companies would tend to do, in parts because the delivery mechanism for us is the brand for our customers, so it’s all private labels. So we do consumer tracking through market data we get from A.C. Neilson, TNS, and Mintel etc. We do focus groups; we tend to invest in consumer research alongside our customers when developing something.” – CEO

Additionally, indicating that being market oriented is the need of the hour and so the adopted approach by the firm for its functioning, the communications manager said

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“It is a very competitive environment so we need to excel in what we do. Consumers are more interested in food today than ever before. Look at the number of cook books, cookery shows on TV etc. So to understand what the market and consumer trends are so that they buy products from our customers we closely watch them.”

Opening up with customers, consumers and suppliers for market information and insights is a regular practice at the firm indicated the interviewees. However, the firm embraces open innovation practices a step further by engaging in collaborative innovation activities with its customers and even with its competitors. Detailing an example of competitor collaboration for innovation done by the firm the CEO said –

“Yes we are open innovative. Our sources of open innovation would be our customers, our suppliers and competitors. With competitors it happens like with customers. For example we have two-third of the sandwich business of one of our customers and another firm has the other one-third. So it is the three of us who sit together and construct an agenda around Christmas range or health range or summer range. The idea being that we will respectively focus on different parts of the range under a common banner.”

Not just doing a part of an innovation done collaboratively, the firm is equally open to practicing inbound and outbound innovation. The firms’ communications manager suggested that though the firm has not done an inbound innovation so far, it will be open to doing that following doing a risk benefit analysis of the offer. He detailed –

“We do get start up ideas on quite a regular basis but I don’t think we’ve worked on any yet. Unless we are guaranteed high volumes we don’t do it. We tend not to do niche products. We would be open to it but it depends on the circumstances, we’d look at the IP etc.”

Similarly with regard to practicing outbound open innovation, the firm strongly believes that it has the best of capabilities in its product areas yet is flexible for giving out an idea that does not ultimately works for it.

“Our product development is quite focused, we are very strong and we believe if we can’t make it work no one can.” – Communications manager

“We will try and drive the innovation until we can, to a level that if we can’t we don’t care who takes it up.” – CEO

Highlighting another important aspect of being open, the CEO emphasised that it is critical for the firm to be open within, simultaneous to catering to customers that are each other’s competitors. He emphasised –

“One of the very important bits of being open innovative for a company of our scale is being open within. We have for example twelve different manufacturing plants between UK and US and a big part is sharing ideas between these twelve plants and doing that without compromising the individual recipes and agendas of their respective markets.”

5.7 Firm G

5.7.1 Introduction

One of Ireland's leading food company firm G is a global nutritional solutions and cheese group. Having its origins in the Irish co-operative movement that evolved over the last century, the firm was established in 1997 as a result of a merger of two public limited companies. Headquartered in Kilkenny, the firm has manufacturing and processing facilities in seven countries with both business-to-business and business-to-consumer focus. It currently has a direct presence in 17 countries with products distributed in over 130 countries. The USA and Europe are the major markets the firm focuses on and it is expanding its presence in the Middle East, Asia Pacific and Latin America regions.

The firm's business consists of three segments, namely US Cheese and Global Nutritionals, Dairy Ireland and Joint Ventures and Associates. The US Cheese and Global Nutritionals segment focuses on business-to-business, large-scale, low-cost production of cheese. The Dairy Ireland division manufactures milk and dairy products and the third segment, Joint Ventures and Associates focuses on establishing joint ventures in the markets the firm operates in.

5.7.2 Innovation at Firm G

According to the marketing manager, innovation is the activity central to the functioning of the firm G. It is practiced all the time at the firm and is purely based on consumer insights. He mentioned –

“We do innovation all the time, so we do research all the time.”

“Rarely does it happen that it starts with some very good idea that someone has, so whether for a new brand or a new category it generally starts with that mining of consumers for insights.”

The marketing manager also suggested that innovation at firm G is about complete co-operation across the business functions for developing the innovation, it's about complete involvement of the senior management in the process and recently it is beginning to be about exploring the idea of co-creation with the consumers.

5.7.3 Significant Innovations

The marketing manager regards the launch of its fusion soup range as one of the most significant innovation the firm had done recently. The firm was the first to create a very successful fresh soup category about two decades ago but realised that in recent years there has been a surge of premium soup ranges in the market and the firm lacked any offering in the category. The marketing manager mentioned –

“Firm G was the first company to create the fresh soup category some 22 years ago and that had grown and grown to be the number one soup brand in the market place, it was however in the sort of everyday soup category. Recently there has been a growth in the premium soup category, like soups for one person, in the plastic tub that is easy to carry, microwave etc. and we didn’t had any product in that area.”

So it was then that the firm set out to seize the innovation opportunity to launch a product for meeting the growing market demand. Although the decision to launch a premium soup range was made the firm wasn’t sure of what it would exactly be, so they started gathering consumer understanding and market information for the same. The marketing manager pointed out –

“At that time we didn’t know what exactly it is going to be, what brand etc. So we started developing an understanding of people who buy into that category.”

“We started to mine our consumers, what’s the category and attitude of consumers for this kind of product; what are the competitors; what are the set of products that people could actually use for this or eat at that time of the day.”

With the aim gathering as much consumer insight as they could before starting the development process, the firm conducted research focus groups and workshops to get a clear perspective as to what the consumers were looking for in such a product.

“We were looking for the insights to start developing. We did research focus groups, exposed people to various product thoughts, conducted workshops and got them to create some soups. So at that stage we more or less knew what consumers wanted.” – Marketing Manager

From these consumer insights and its understanding of the market, the cross functional team, comprising of the marketing, operational and commercial side of the business, then began exploring ideas for the soup range. It was at this stage suggested

the marketing manager, that the firm started engaging with market research agencies and brand innovation consultancies to decide about the offering. He elaborated –

“At this stage we decided to work with a brand innovation consultancy to decide about the innovation offering. Through our research we came across the idea of street food. We saw Mintel, Euromonitor data about growth of street food. So we started thinking what it might look like in the soup category. What would a street food influence look like in a soup category?”

Similarly few other ideas were shortlisted and the cross functional team did further brainstorming on them; these were researched again across qualitative focus groups so as to gauge their order of preference. The marketing manager stated –

“We discussed them in our cross functional sessions, this time including chefs and food technologists from within our business, and we looked at what these soups might be. We researched these again across qualitative focus groups; we scored them as to what was most magnetic and what didn’t have much interest.”

The marketing manager further suggested that having judged that the street food idea was the top idea, the cross functional team then shortlisted four countries, namely India, Morocco, Thailand and Mexico, based on their research, upon whose street food they planned to base the soups. He elaborated –

“We then delved into these four places’ street food. Came out with a list of ingredient, spices, and the way they cook food and then made some soups. We then took it back to consumers for test.”

Following consumer testing, the firm went on to develop their recipes and then looked at the packaging, brand and positioning side of the innovation.

“So we developed the recipes further, the brand identity further, the packaging further and we called them as a taste of the city from which it was inspired.”

Enjoying phenomenal feedback from the consumers, the firm attributes the success of its soups range to the consumer insights it gathered. The marketing manager emphasised –

“Success has been mining of the consumer insights we had.”

5.7.4 The Management of Innovation

Innovation is the activity underlining all functioning at the Firm G suggested the marketing manager. The firm thus engages in developing advanced facilities and employs increasing efforts to manage the same. Practices like formation of a dedicated innovation team and allocation of regular innovation budgets are carried out to ensure that the firm regularly and smoothly engages in innovation activities.

“We operate like an innovation funnel.”

“We have an innovation centre that is shared across our food and nutrition businesses. We have a development kitchen, we have lab facilities and sensory analysis facilities, new product development managers and technologists as well” mentions the marketing manager.

Additionally senior management at the firm is always completely and actively involved in looking after and managing the innovation process at each stage. The marketing manager pointed out –

“We have a board of directors and our commercial director sees over all our innovation developments.”

5.7.4.1 Innovation Evolution

The marketing manager believed that innovation as an activity has evolved and continues to evolve at the firm. It is becoming a defined and structured process with designated innovation teams and separate budgets for idea generation and development to launch of the innovation. He further suggested that concepts like co-creation with consumers are beginning to make their way as regular innovation practices at the firm.

“Innovation has changed quite a bit and it continues to change with ideas like co-creation with consumers. For our soups innovation we dedicated the end of our focus group to an exercise of guys and girls creating innovative soups.” –

Marketing Manager

Innovation at the firm is also evolving in terms of increased interactions the marketing manager suggested that the firm is now engaging more and more in practices like online research, in home testing, focus groups and co-creation.

5.7.4.2 *Innovation Objectives and Effectiveness*

The marketing manager indicated that the main objective with which innovation is carried out at firm G is to expand their product portfolio; the firm strives to span its consumer base by innovating for new products or product lines. Also entering new markets is another objective the firm has in focus when innovating.

For measuring the effectiveness of its innovation the firm sets volume and value targets for all the innovations it does, suggested the marketing manager. He elaborated –

“We have a business plan behind the innovation which says we deliver so much volume and value and we monitor that on a weekly basis from launch onwards.”

Additionally for gauging the effectiveness of their innovation and that of the advertising and awareness around their innovation, the firm engages with market research agencies.

“Another important thing is consumer diagnostics. Have we hit the target market? So who is buying our stuff, what are they switching from? Are they new entrants to the category? These are the main means we use basically.”

“Also means around the awareness and effectiveness of our advertising, we do a certain piece on that through our market research agencies.” – says the Marketing Manager.

5.7.4.3 *Innovation Team and Budget*

Innovation is essentially a team based activity at the firm G with the level of interactions across departments varying as the innovation advances through various stages indicated the innovation manager. The innovation team or the large cross functional team comprises of people not only from the operational, marketing and commercial sides of the business but also technical people like technologists and innovation chefs. Additionally the firm’s innovation facilities including its innovation centre, development kitchen, lab and sensory analysis facilities are shared across the business. However the marketing manager also highlighted that though a cross functional entity, both the team and innovation at the firm are led by the marketing department. He pointed out –

“The innovation team is same across the sectors in the business; it is usually led by the marketers.”

“Essentially it is the marketing team that drives the innovation.”

For maintaining regularity and effectiveness of their innovations the firm tries to manage the activity by dedicating proper budgets to the same to keep it going, even allocating different budgets for different stages of the innovation so as to ensure that budget does not act as a constrain for innovation at any stage from its inception to development to launch.

“We start from idea generation budget to get to the ideas. We then switch to another budget that gets us from the factory to the super market shelves” – Marketing Manager.

5.7.4.4 Internal and External Interactions

The firm attributes the smooth management of its innovations to their regular internal interactions and effective communication follows. The marketing manager suggested that the firm even credits these as being partly responsible for the success of its innovations. Information exchanges across the firm are to a large extent facilitated by the cross functional team that involves people from throughout the organization and has regular meeting when advancing along the innovation stages. The marketing manager elaborated –

“Our internal interactions are good, key being our communications. Our business manager division, the people who manage our retailers, our operations division, packaging division etc., our logistics team, planning team, finances team, everybody’s communication is very important and part of our success.”

With regard to interactions with people outside the organization, the marketing manager stated that the firm engages with different people to different extent and at different stages of its innovation process. Talking to its consumers and retailers is a regular practice at the firm; while the firm increasingly engaged with its consumers, it is involved to a lesser extent with its customers with regard to its innovations. The concept of co-creation with consumers is also being imbibed by the firm recently. The marketing manager mentioned –

“We keep very very close to our consumers.”

“We constantly talk to our field team who talks to the consumer all the time.”

However, the marketing manager also indicated that though the firm engages with its retail partners it is more towards informing them about the innovation rather than involving them in the process of innovation. He detailed –

“We collaborate with our retail partners but it is generally two-third the way of the innovation before we involve them. It’s like part of our selling meeting with them.”

“The challenge is that the retailer can be very much driven by their category needs rather than our needs. For a retailer it’s very difficult to think like a brand owner. So it is more like a courtesy to show them the stuff before launch. So we share all the stuff but quite at a later stage.”

In addition to these the firm regularly engages with market research agencies for gathering consumer insights and market information and also for gathering consumer information around the effectiveness of their innovation. Advertising agencies are involved for pre-launch promotion purposes of the innovation.

“We use AC Neilson for our research, then we use Dunnhumby data, we also do a piece through Millwood Brown around the effectiveness and awareness of our innovation” – Marketing Manager

The firm has also recently begun interactions with brand innovation consultancies for their innovation process; the role of these however is not independent of the firm and remains confined to generation of consumer insights to feed the innovation pipeline of the firm.

“We get people from outside, like the brand innovation consultancies, their role is to manage consumer insight generation but very much with us” Marketing Manager.

The marketing manager highlighted that firm G is all about being market oriented, it is the key aspect that underlines all functioning at the firm.

“We spend a lot of time in the market place.”

“Every single hour of every single day is around the market place. No decision happens on anything new unless there is an understanding of what’s happening in the market place” – Marketing Manager.

The firm regularly and deeply engages in gathering market insights and developing consumer understanding for exploring ideas and concepts for its

innovations. It engages with a number of market research agencies for the same. Consumers are regarded as the prime source not only for innovative ideas but also for ways and forms the firm could improve their innovations.

“Consumer driven is what firm G is all about.”

“Consumers are very innovative. They have a lot of good ideas. If you love a brand you are very interested in how the brand delivers innovation. You are very willing to be part of it. They send you surveys, make calls etc. They are very interested in being part of the brand” reflects the Marketing Manager.

However he also pointed out that though the firm increasingly engages with its consumers and tries to meet all their requirements and expectations, the firm does not involve any party external to the organization for matching those needs. He indicated –

“We try and do ourselves what consumers ask for.”

Apart from mining consumer insights and observing market research agencies data the firm also keeps a constant note of the emerging trends in the market place, of the innovations in related categories and also on the activities of its competitors.

“We keep an eye on our competitors, what they are doing and being aware of the products they bring to the market. We also look at adjacent categories like ready meals and convenience foods etc.” mentions the Marketing Manager.

Interactions with consumers, retailers, market research agencies, advertising agencies and brand innovation consultancies are involved in the regular functioning of the organization. Except for interactions with consumers, interactions with all other parties are focused more towards gathering market insights than towards collaborative innovation in any manner. However in case of consumers the interactions are not just limited to gathering insights but the firm is also beginning to explore the concept of co-creation or collaborative innovation with them.

“Co-creation with consumers is going to become more and more important.” – Marketing Manager.

However beyond co-creation with consumers the firm is reluctant to embracing open innovation practices any further. The marketing manager suggested that the firm is apprehensive about confidentiality issues with the idea of opening up and in no way agrees to collaborating with competitors in any shape or form. He highlighted –

“It comes back to confidentiality of things. I don’t think it will ever come to a point of involving competitors. You meet and discuss things on forums etc. but you never really collaborate.”

With regard to practicing inbound innovation, the marketing manager suggested that the firm increasingly gets requests from small firms but the decision of taking on board their innovation is taken based on a detailed cost benefit analysis by the firm.

“New start-ups come to us all the time. It comes down to can we do it at the price they want” says the Marketing Manager.

However in contrast for outbound open innovation the firm believes, suggested the marketing manager, that given the size and scale of the firm they have the best capabilities and hence are not keen for any collaboration. He mentioned –

“Because of our scale and size, we have the most capability in most of our categories, so we are not interested.”

He summed up the firms’ current outlook towards being open in their innovation practices by stating –

“It is very much by ourselves, the door is only slightly open but it is almost closed as such.”

5.8 Firm H

5.8.1 Introduction

A leading player in the global food industry, firm H is one of Ireland's successful, publically traded company. It started as a private dairy processor with three shareholders, evolved into a dairy co-operative, and then into a public company. From its modest beginning in the south west of Ireland about thirty years ago, it has grown to span operations in 24 countries across five continents. Headquartered in Tralee, Ireland, the firm employs about 36,000 people in its manufacturing, sales and technical centres worldwide, supplying food, food ingredients and flavour products to customers in more than 140 countries.

The firm's business consists of three activities: ingredients and flavours, foods and agribusiness. The food business supplies both its own branded and customer branded food products to independent retailers, convenience stores and supermarket chains across the UK and Ireland. Its largest segment, the ingredients and flavours division is a provider of ingredients, flavours and integrated systems. The agribusiness is concentrated in Ireland, producing milk and related dairy products.

5.8.2 Innovation at Firm H

According to the innovation manager, innovation at Firm H is about new concepts, new ideas and how they translate back into their business. It is about extensive co-operation across business functions, brainstorming for ideas and engaging with their stakeholders and about filling a consumer need as an add-on to its portfolio.

“It is good to have a light bulb moment, but how do you translate it back to the business model for people to engage with is important.” – Innovation Manager

Moreover, any innovation that the firm does is not looked at in isolation, it is considered as a baseline from which other variations can emerge out. The innovation manager pointed out,

“So when we look at innovation, we don't look at it in isolation, from one concept we have to see how can it grow and how can we open different categories with the same innovation.”

“So once we have that base identified and have different criteria aligned to our manufacturing and facilities, then we can look beyond that unit.”

5.8.3 Significant Innovation

The interviewee regards the launch of their 100% natural ingredients ham as the most significant innovation Firm H had done recently. It took about 6 years for the concept to become reality and the product went to the market in September 2011.

The idea for the concept originally came from the extensive consumer research done by the firm,

“We know from talking to mums that they want the best for their families and, increasingly, ‘natural’ food products form a big part of this - in fact, two thirds of consumers now actively look for ‘natural’ food.” – Chief Marketing Officer

The firm engaged in research to identify and understand consumer preferences. In case of this innovation they engaged in consumer research to identify:

“What are the consumers looking for in ham, how they understand ham, the ingredients etc., what it means to them” – Innovation Manager

The research highlighted that the consumers were concerned about the increasing number of ingredients used in ham; they felt that it was something they would cook themselves and so didn't want all the extra ingredients in it. Firm H then set out to look for an innovative solution for the concern raised by its consumers. Different teams started to look at different aspects of the problem; the technical people focused on making ham from 100% natural ingredients, the marketing team did further research to understand how best they could translate the product for the consumers

“We also did a lot of home testing, giving the product to consumers in their homes to try and see what different types of packaging would they like, could it translate into other formats. Like at the moment it is a pre pack, would they like it in bulk form and how would it look like.” – Innovation Manager

Developing a product with complete natural ingredients had some difficulties for the firm ranging from issues around taste to shelf life. These issues were dealt with entirely in-house by cross functional teams. It took the cumulative efforts of the R&D, operations, commercial, packaging, brand and marketing teams a period of 6 years to

develop, continuously refine and finally bring the product to the market. For this innovation as in the case of other innovations the firm followed the stage gate process in that they began by scoping and moved through a series of stages including: building the business case, development, testing and validation, and finally product launch. The process involved doing consumer research at each stage so that they would develop further insights and could relate to and gauge consumers' requirements and expectations. This consumer research was driven by a need to develop and refine the product so that would be accepted by consumers:

“We did further and further research to see what would translate for the consumer.” – Innovation Manager

The firm finally launched the product in September 2011, positioning it as the only ham in the market that does not contain anything artificial. It contained ingredients that were unprocessed. Regarding the product as a “game-changer” for the ham market, the firm supported the launch with a “multimillion-pound campaign” that comprised of television, print, digital and in-store activities. Engaging with a brand activation agency the firm backed the adverts by an outdoor push like themed park activities as well as by sampling activities and in-store promotions in the super market chains.

Following the successful run of the innovation, the firm is now looking beyond; for ways they could diversify or grow their innovation.

“We are at the next stage now, as to where do we bring this further.” – Innovation Manager

5.8.4 The Management of Innovation

Being a firm with a large portfolio of products and operating in three business divisions, the firm employs increasing effort to manage their innovation process. A belief that is central to the functioning of the organization is that innovation is regarded as a key to creating value for its customers and consumers. The senior management at the firm is actively involved in presiding over and managing each stage of the firm's innovation process.

“In relation to a process in innovation we are very much stage gate.” – Innovation Manager

“Senior management is actively involved in innovation, specially our CEO of marketing and our innovation director who is also our R&D director. So that’s where the stage gate comes in, we have to pitch to the senior management; it’s like dragon’s den.” – Innovation Manager

5.8.4.1 Innovation Evolution

Innovation, though an important activity for the firm, has over the last two years further come to the fore. The firm has started to keep a record of the emerging trends in the market and analyse how these trends could affect their business. The firm is beginning to utilize these trends for advancing its efficient and innovative functioning. Not only does the firm pay attention to the upcoming trends and changing aspects in the food sector, the firm has also been tracking any relevant technologies and practices that might have some impact in the future. The innovation manager pointed out,

“From the last 2 years we have really looked at the front end piece and seen if we have optimized upcoming trends and far reaching trends and some trends like beauty from within and how can we translate it back into food; even nano technology and what does that mean for the future in case of food.”

The main driver for fostering this proactive and long term innovative thinking in the organization has been a senior manager who recently joined the organization. His pattern of working is ensuring that the firm maintains a balance between short term deliverables and long term sustainable innovation pipelines and a balance between expanding their portfolios and maintaining their brand visibility.

“In the last two years innovation has taken a jump and that’s because somebody joined the business who came from a very innovation led organization. It was the turning point for our firm, because until then we were more short term driven, but now we were thinking about funnels and pipelines and to make sure we have a portfolio not only from a scientific point of view but also from brand that we were building and had visibility of throughout.” – Innovation Manager

Interactions with people outside of the organization for innovation have also evolved over the years reported the Innovation Manager –

“Interactions with outside people have increased, especially from an agency, consultancy point of view. We have brought in a lot of new agencies in relation

to consumer research. The front end innovation piece has also evolved using consultants and agencies to give us that new outlook.”

5.8.4.2 *Innovation Objectives and Effectiveness*

The objectives with which innovation is pursued at firm H include, entering new markets, to extending their portfolio and to stay ahead of competition. The firm constantly engages in short term innovation to keep its competitors out while long term objectives of entering new markets are pursued for adding value to their categories.

“You innovate to stop gap, to keep competitors out, that’s where you have the short term delivery. Then from an innovation point of view its new markets, for creating value to the category.” – Innovation Manager

Although innovation is regarded as important, it is often held back due to its financial constraints. The profits or revenues an innovation generates are the sole criteria the firm applies for measuring the effectiveness of its innovation. Any new innovation requires development time and financial investment which could instead be channelled to the regular products to generate revenues, therefore there is always a struggle within the firm to prioritize between innovation and short term deliverables, explained the Innovation Manager –

“With new products you always have a period where it has to develop on the market and it has to evolve in its own time and not always does the consumer get it from the first. It could be like 18 months before the product matures, and then there is always a pressure from the business to deliver on the short term. So more often than not it gets frustrating between the commercial end and the innovation end.”

The case for the innovation if built on strong consumer insight and one which could be translated into money terms for the business passes the stage gate to be pursued and generate money for the firm.

5.8.4.3 *Innovation Team and Budget*

Innovation at the firm is purely a team activity, with specific teams designated for handling different aspects of and types of innovations the firm does. The firm always

approaches its innovation at two levels, as short term and long term innovations, consequently all activities concerning each are handled by separate teams.

“We have an innovation specific, technology and innovation team that looks at the long term innovations and upcoming technologies, and then there is a short term delivery team who works on the day to day gaps that exist within the market and on extensions of our current brands.” – Innovation Manager

An innovation budget is always allocated to the teams and they meet once every quarter for brainstorming ideas for innovation. The focus of the brainstorming sessions is more or less on consumer trends and market insights for pulling out innovative ideas. The firm has a wide portfolio, hence focuses on growth areas. In this context, the Innovation Manager elaborated –

“We meet once a quarter because you do don’t want to have so many ideas and do nothing, we try and focus on areas that we think can have growth and then come back to other areas.”

In addition, the firm also has a team called the innovation marketers who are constantly engaged in keeping a close watch on the upcoming trends and practices in the market place. This team is also involved in doing consumer testing, in house testing and early stage quantitative and qualitative analysis for on-going innovations or even for the upcoming concepts.

“We do both qualitative and quantitative research. We do as much quantitative research as we can as it is the cheapest form of getting an understanding. We do that quite regularly for different concepts.” – Innovation Manager

Being a brand player as well, the innovation teams also have the responsibility to oversee that their brands are aligned with their innovative concepts. This is to ensure that consumers could relate the new innovation to the brand and the new innovation does not fail because of a mismatch.

“We need to make sure that our brands can carry the innovation and it fits in that category and brand strategy.” – Innovation Manager

“Our innovation teams link with the brand marketers to make sure that which brand would fit with the innovation and how then would they develop from a

concept into an actual on the shelf product that emulates both the brand and the innovation and try and get the two together.” – Innovation manager

To encourage and monitor innovation activity throughout the organization, the firm used to have idea forms and suggestion boxes for employees to inform the innovation team of any potential valuable ideas. This pattern of gathering suggestions from employees has however changed to a new format. The firm now publishes an internal innovation magazine that has snippets on innovation and about what is coming up. Everyone in the organization is a part of it and is encouraged to speak about their innovative suggestions for the firm on the platform.

“It kind of empowers people and they come back with their ideas” – Innovation Manager

The firm is currently in discussions for taking this initiative a step further, it is looking for a software or technology by way of which the ideas and suggestions could be gathered and stored:

“Something like a chatter feed where everyone can feed and discuss ideas.” – Innovation Manager.

5.8.4.4 *Internal and External Interactions*

According to the interviewee, internal interactions for innovation are smooth within the organization. Open plan offices throughout the organization and regular cross functional meetings facilitate the easy and frequent exchange of information within the firm. Often the R&D team works with the commercial team and branded innovation team would work with marketers and commercial team to ensure that there is smooth flow of information and all are working in tandem towards achieving the same goals. Describing the scenario, the Innovation Manager pointed out –

“All our offices are open plan so that we have open communication. We have weekly meetings, monthly meetings, conference calls, web access etc. across the different geographies. Yes we have very effective internal communication.”

With regard to interacting with people outside of their organization, the firm is constantly in touch with its suppliers, customers and government agencies. Interactions with suppliers and customers are primarily focused on gathering market insights,

feedback and ideas for the own label products, while with government agencies they are directed towards getting industry information. Recently the firm has even started engaging with consultancies for consumer research and brand promotion purposes. Additional to buying data for category information from market research consultancies the firm also involves with them for getting a breakdown of the most inspirational innovations coming to the market.

The firm also holds membership with a large number of trade associations and forums which provides it with monthly information and updates about innovations across the globe. These relationships are regarded as important by the firm but more from an information perspective than anything beyond. The Innovation Manager said –

“We spend a lot on trade associations and we do get value from them, but not from an innovation point of view more from an information point of view”

Firm H regards itself as a market oriented organization; it constantly focuses on gathering market insights and updates on consumer trends. With a focus on its customers, suppliers and consumers it is not only vigilant of the innovations that its competitors bring to market but also of innovations happening beyond the food sector.

“We do take inspiration from other businesses outside of food” – Innovation Manager

“Within the firm we try and have cross functional input to make sure we are getting a good feel but it comes more from market insights like we look at consumer trends and try to pull some ideas from them” – Innovation Manager

However, having said that the innovation manager also reflects that they have to almost all the time be very careful in the manner in which they interpret consumer insights. This is because often there may be a mismatch between what consumers need and what they think they need and so the firm believes in being very judicious about their innovation spending. The Innovation Manager said –

“When you talk innovation it could be quite alarming as to what consumers understand and what their needs are. You really need to do that work upfront before you engage in any actual development and to make sure you are on the right track because what your interpretation being a technical person, could be completely different from what the consumers’ need would be”

Additionally the innovation manager also feels that despite being a market oriented, innovative organization the firm has to have a constant focus on its short term deliverables. This is because it feels that balancing innovation spending with regular revenue generation is of critical importance. The Innovation Manager said –

“We want to be a market led organization but the heart of our firm is profit driven. We are a PLC; we have a board that we are responsible to. So even though we are doing as much as we can to be market driven we still have at the back of our heads that we have to deliver. So there is that short term delivery that we have to. So it is getting that mix correct, and that’s what we are striving for.”

With regard to being open in terms of their innovation activities, the firm looks at its innovations at two levels. One being the innovations it does for its own brands while the other being the innovations done for the private labels. Innovations for the branded piece are generally guided by market insights, consumer trends and feedbacks gathered by market research. The firm is very protective about divulging any information about its brand innovations. These innovations are done almost completely in house by the firm and only revealed to the retailers just prior to their market launch.

“You need to guard your idea till it comes to a particular stage, then you can engage with retailers etc. We set up road shows etc. with retailers but only when we are ready to launch and not giving them time to develop anything on the same lines” – Innovation Manager.

These innovations are regarded as the more important ones by the firm, which have a bigger impact on both revenues generated and the firm’s image. The Innovation Manager mentioned –

“Innovation with brands is the bigger fish and also with brands you can’t take chances. You have to have your risk measured before you go out with your product with the brand. With the brand the effects if wrong can be very damaging in the long run. So you have to be very careful”-

In contrast to these, the own label innovations that the firm does are open, with interactions happening with people outside of the organization particularly the retailers, throughout the process ranging from the very inception of the idea to its development and market launch. The Innovation Manager elaborated –

“In case of own label piece, it’s the retailer who has the insight, they have their research done as to what the consumer is looking for. Where they feel the gap in the market is. They come to us with an idea and that’s where the delivery team comes in, they would look at the idea and try to match a product to the retailer’s brief. So its very much the retailer coming with an understanding or a brief and the delivery team delivering on it”

Irrespective to how the firm manages its categories of innovations, it strongly believes that it is not open to the practice of open innovation. Indicating the scenario the innovation manager emphasised –

“We are a closed shop. No inbound. No outbound.”

Chapter 6

Findings and Analysis

6 FINDINGS AND ANALYSIS

This chapter analyses the innovation activities of the eight firms individually, with a particular focus on the interactions the firms engage in along the IVC as they develop their innovations (Section 6.1–6.8). Analysing the management of innovation and extent to which the innovation process is open in each firm and across the eight firms a cross firm analysis is presented in Section 6.9

6.1 Firm A: Analysis

6.1.1 The Management of Innovation

Innovation at the firm, as indicated by the interviewees is an activity with a scope much broader than only product innovation. Though the firm focuses increasing efforts on product innovation, it believes in constantly looking for innovative ways of enhancing and improving its manufacturing processes with the aim of achieving efficiency on all fronts of the business. Directing efforts towards managing these innovation activities, the firm maintains an innovation pipeline or funnel and regularly feeds it with ideas with the objective of meeting its customers' and consumers' demands and so constantly engages with them for gathering market insights. The interviewees however also pointed out that because the firm has only recently transitioned from being a sales oriented organization to being market oriented the firm lacks a defined team and budget dedicated purely to innovation. Nonetheless the innovation activities enjoy complete involvement of the senior management at the firm and thus easy allocation of money as and when needed.

The firm has a market focused approach and innovation orientation in its activities yet it can also be observed that the biggest challenge that the firm faces in terms of its innovation is deciding to be innovative and perusing the innovation activities at the costs involved. The firm's perception is, suggested the interviewees that innovation is not an easy activity to pursue and requires investment both in terms of time and money and therefore the decision to be innovative in an increasingly competitive market place is challenging.

Figure 6.1 outlines a few key quotes the interviewees mentioned with regard to the firm's innovation as it progresses through the innovation value chain

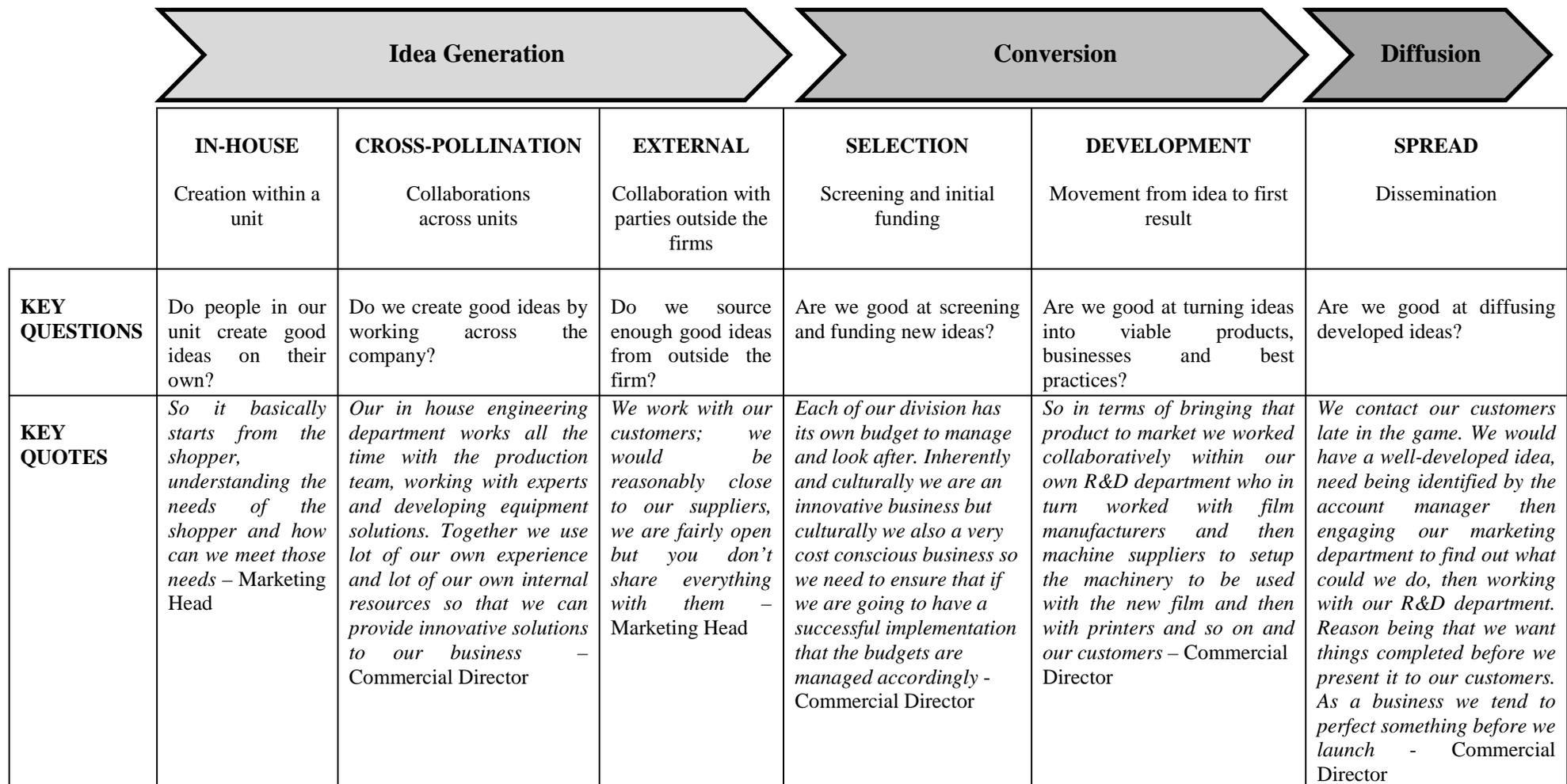


Figure 6.1: Interactions across the innovation value chain

6.1.2 Extent of Openness

Mapping the firms' significant innovations as suggested by the interviewees on the IVC, the interactions the firm has during its innovation process are analysed. The interviewees indicated that these are reflective of the firm's general pattern of interactions for its innovations. The most interactive stage of the firm's innovation is the idea stage or first stage of the value chain, during which the firm engages with its customers, suppliers, consumers and market research agencies. The interactions are aimed at gathering market insights, developing an understanding of the needs of its consumers and what do their customers demand, also at gathering information about the market trends and innovation launches in their industry globally.

Despite the lack of a designated innovation team, the second stage or the conversion stage of the value chain of the firm's innovations is all about the different departments working together for extracting innovative ideas and concepts from the gathered market insight and then developing the innovation. The development process though involves the firm working together with its suppliers; these interactions are limited and very carefully managed.

The firm believes in perfecting and polishing its innovations before introducing them to their customers yet for the commercialization stage or the diffusion stage it engages with them a little prior to the launch so as to incorporate the improvements and advancement suggested by the customers. Here the perception of the firm is that they get a better buy from their customers if the customers feel they were consulted and were in a way part of the innovative offering. Thus the diffusion stage is all about bring the innovation to market by themselves and just consulting the customers only pre-launch.

The significant innovations outlined by the interviewees, whether product, packaging or organizational innovation all stem back to fulfilling the needs or meeting the demands of the firm's customers and consumers. Broadly speaking the firm for all its innovations has a market oriented approach and believes in exploring innovative ideas and concepts from the gathered market insights and from information on innovations happening globally in the sector it operates in.

Judiciously interacting with its customers, suppliers and consumers on a regular basis the firm has an innovation orientation in all its activities and believes it is their regular way of functioning. The interviewees however considered that the firm is

midway between desiring to be completely open and practicing open innovation and they attribute this reluctance to the organization's culture.

Innovation at the firm is evolving; from being a completely sales focused organization the firm is now beginning to design its innovations based on market insights. Interactions with external people are increasing and collaborations being embraced. Yet it must be highlighted here that though market orientation is the new found approach of the firm, open innovation is an activity it still distances itself from. The innovations at Firm A thus are market oriented, open for consumer insights but their development is very much a guarded process.

6.2 Firm B: Analysis

6.2.1 The Management of Innovation

Innovation, as suggested by the interviewees, is one of the key aspects of the functioning of Firm B, focused on making the 'healthier choice the easier choice' for its consumers. The activity is formally structured and efficiently managed at the firm with defined short term and long term plans and product pipelines, dedicated budgets and complete involvement of senior management. The onus for innovation currently lies with a cross functional team which is primarily driven by the marketing team and performs innovation as one of its many activities. The interviewees believed that people time that innovation calls for is its biggest limiting factor at the firm.

With the objectives of offering healthier product choices to its consumers, expanding its portfolio and entering new markets the firm is constantly involved in interacting with its suppliers and customers and also keeping a tab on innovations globally launched in their categories to gather market insights which largely defines its own innovations.

Figure 6.2 outlines a few key quotes the interviewees mentioned with regard to the firm's innovation as it progresses through the innovation value chain

Idea Generation			Conversion		Diffusion	
IN-HOUSE	CROSS-POLLINATION	EXTERNAL	SELECTION	DEVELOPMENT	SPREAD	
Creation within a unit	Collaborations across units	Collaboration with parties outside the firms	Screening and initial funding	Movement from idea to first result	Dissemination	
KEY QUESTIONS	Do people in our unit create good ideas on their own?	Do we create good ideas by working across the company?	Do we source enough good ideas from outside the firm?	Are we good at screening and funding new ideas?	Are we good at turning ideas into viable products, businesses and best practices?	Are we good at diffusing developed ideas?
KEY QUOTES	<i>We annually have a process of innovation brain storming. We try to involve as many people from different disciplines as possible. In advance of this we give people certain areas to research or pre read, with a task of extracting ideas or insights that are relevant to the business.– Managing Director</i>	<i>We have a cross functional team, where one of the objective of the team is new product development. Primarily driven the marketing function but it does extend to other functions. Its role isn't solely new product development but that's where new product development fits – Marketing Manager</i>	<i>We have a range of manufacturers that we work with. Meeting them, visiting them at their factories, having them come to our meetings and discussing what gaps are there. So we really use their expertise in specific categories. We gain a lot of insight for NPD in this way – Marketing Manager</i>	<i>We have a three year pipeline and a one year pipeline and to drive these pipelines we set up a list by quarter of the products that we want to launch on the basis of our research, our NPD day and market trends – Brand Manager</i>	<i>We did a lot of consumer testing. We have a panel of consumers we call in and then it is just friends and colleagues. We gave samples with tasting sheets to rate the product's texture and taste and smell etc. All this was compiled and it boiled down to three products initially which we then launched – Marketing Manager</i>	<i>Cross functional team has presences from sales, production, purchasing and all. We meet, could be fortnightly or weekly depending on what's happening. Then there are the board meetings. Then we have meetings with our sales force, these are bi monthly meetings. Annually we also have our sales conference with our entire company, when plans are shared with all – Marketing Manager</i>

Figure 6.2: Key quotations by interviewees about the firm's innovation

6.2.2 Extent of Openness

Mapping the innovation regarded as most significant by the interviewees on to the IVC, it can be studied that for this innovation the firm interacted with different external people at different stages of the value chain. Also, the interviewees suggested that this pattern of interaction is reflective of the firm's approach to innovation in general. The first stage or the idea generation stage is the most interactive stage, with the firm talking to its suppliers, customers, consultants and market research agencies for gathering consumer insights and market trends. Cross functional team meetings and brain storming sessions are held for exploring concepts and pulling out ideas from the gathered market information.

The second stage or the conversion stage of the IVC involves different departments of the firm working together for developing the idea or concept into an innovation output. At this stage, apart from its internal cross departmental interactions, the firm also engages with dietary consultants as well as with packaging and design consultants for development of different aspects of the innovation.

The third stage or the commercialization stage of the IVC at the firm involves the efforts of the different departments to bring the product to the market. The teams across departments collectively work bringing the innovation to market. So as highlighted by the interviewees, for the firm the diffusion phase is all about taking the innovation to market by themselves and does not involves engaging with external people.

The launch of the 'granola breakfast cereal' by Firm B was an innovation driven purely by consumer insights. Broadly speaking the firm engaged in a market oriented approach for this innovation and as suggested by the interviewees this is reflective of the firms approach to its innovations in general. The firm constantly engages with its suppliers and customers for consumer insights and market information. The interviewees believe that being vigilant for consumer insights; of emerging market trends and innovations globally in their category is the regular practice on which the firm bases its innovations.

Although innovation underlines all the efforts the firm makes towards achieving its aim of making 'the healthier choice the easier choice' for its consumers yet the interviewees believe that open innovation is not one of the firm's priorities. They suggest that this reluctance is because the firm believes that it is difficult to find a collaboration partner with a strategic fit and more over it is risky to open up the

innovation process as the belief is that developing an innovation and bringing it to the market first is a difficult process and involves increasing efforts so collaborations should be avoided.

In addition, it can be suggested that even though not purely for doing innovation together, the firm's interactions with external parties are evolving. Apart from engaging with its suppliers and customers the firm is also interacting with consultants and market research agencies for gathering consumer research information. Another observation that can be highlighted is that, though market orientation is the approach guiding innovation at the firm it is not leading to opening up of the innovation process at any stage of the value chain. Innovations are market oriented but the interviewees suggest that the firm is not keen on imbibing the practices of open innovation beyond gathering market insights from external people.

6.3 Firm C: Analysis

6.3.1 The Management of Innovation

Innovation at the firm as indicated by the interviewees is an activity about taking existing ideas and putting them together in a new way which solves a problem or takes out cost or sells more. Progressing as a stage gate process, innovation at the firm has evolved to be structured activity. It is managed by setting objectives, innovation team, measuring innovation effectiveness and by flexible internal and limited external interactions.

Being a highly market focused organization, the firm engages with agencies for conducting continuous market research. Allocates budget for innovation and has designated innovation team for carrying out innovation with the focus on improving the quality of their goods and services, to build market share and to enter new markets.

Figure 6.3 outlines a few key quotes the interviewees mentioned with regard to the firm's innovation as it progresses through the value chain.

	Idea Generation			Conversion		Diffusion
	IN-HOUSE Creation within a unit	CROSS-POLLINATION Collaborations across units	EXTERNAL Collaboration with parties outside the firms	SELECTION Screening and initial funding	DEVELOPMENT Movement from idea to first result	SPREAD Dissemination
KEY QUESTIONS	Do people in our unit create good ideas on their own?	Do we create good ideas by working across the company?	Do we source enough good ideas from outside the firm?	Are we good at screening and funding new ideas?	Are we good at turning ideas into viable products, businesses and best practices?	Are we good at diffusing developed ideas?
KEY QUOTES	<i>We bring our research information and look at what the product should be what it should look like, taste like and feel like – Commercial Manager</i>	<i>The approach to innovation has always been a team based approach – Innovation Manager</i>	<i>We have open relationship with our customers and we share information with them from the early stages of the innovation – Innovation Manager</i>	<i>We are quite structured now in relation to how we treat innovation. We have a budget and it has people who are dedicated to delivering it – Managing Director</i>	<i>We have a formalized innovation process, which we learnt from an Enterprise Ireland course –The stage gate innovation process – Managing Director</i>	<i>We would interact along the whole innovation chain, we talk to customers, to suppliers initially about the ideas of the product then we later give them some visuals mocked up with packaging and we talk to them if it is achievable – Packaging Manager</i>

Figure 6.3: Key quotations by interviewees about the firm’s innovation

6.3.2 Extent of Openness

Mapping the firm's innovation regarded as the firm's most significant innovation by the interviewees on to the IVC suggests that the first stage of the IVC, the idea generation stage at the firm can be described as an in house practice based on market insights. Though there are cross departmental interactions for brain storming and exploring concepts, their ideas for innovation are generally guided by emerging trends and requirements in the market place both global and domestic. The firm closely observes, highlighted the interviewees, its trade customers and consumers for what their needs are in each category to see where the cross is so as to identify what is to be offered. Simultaneously keeping a close watch on competitors' innovation and innovation rolled out by coffee firms globally.

The second stage in the IVC, the conversion stage involves translation of sourced knowledge into innovation output. The interviewees mentioned that the firm interacts with its trusted suppliers and trade customers to seek their response on its innovation concepts and prototypes. The firm's new product development, marketing, technical, supply chain, procurement, finance, sales, quality control etc. teams work together for developing the innovation, involving manufacturers, suppliers and customers as and how the need arises. This suggests that the innovation the firm does is open during the conversion stage, where interactions with suppliers and their retail customers for feedback, inputs and even technical support take place.

The third and the final stage of the IVC focuses on the commercialization of the innovation. At Firm C it is about launching their capabilities captured as product or process innovations into the market. The interviewees indicated that the teams collectively work to bring the innovation to market, partnering up with some customers for soft launches before completely diffusing the innovation in the market. The diffusion phase thus is more about taking the innovation to market by themselves, only involving retail customers for feedback on the progress of the innovation.

The interviewees also highlighted that the firm's approach for this innovation was reflective of its approach in general and broadly speaking it is about market oriented with a focus on the activities of the competitors, customers, suppliers and consumers. Based on the interactions with people outside of the organization, it is reasonably open innovative as well. Moreover, innovation is increasingly becoming a very important activity in the firm, embedded in almost everything that's done functionally. Constant

efforts are being made to structure and formalize how innovation is treated and managed, by ways like formation of innovation teams and allocation of innovation budgets and even innovation portfolios. However, it can be seen that even though the onus is spread throughout, it is essentially the marketing team that drives the innovation in the firm and even holds the designation of innovation managers additional to their marketing titles.

Although innovation is fast becoming the order of the day in the firm, the same cannot be said about open innovation. This is primarily because of two overlapping reasons, firstly the perception is that being market oriented is the same as being open innovative. For example taking customer/consumer feedback or talking to retailers and suppliers about trends in the market place is considered as being open in the innovation process. Secondly being open is not a new way of managing innovation, it has always been practiced in a limited fashion with few and well known external parties only. Perceptions around being open are layered; being open to suppliers, consultants, customers and consumers for information and insights are a regular practice. While being open to other enterprises in the sector or universities or research institutes for collaborative research is seen as difficult for want of time and compatibility for collaboration. Finding the time and a partner who is on the same page are considered the most critical factors limiting any such collaboration. And finally being open to competitors for collaborative innovation is feared as a loss of position and credibility. Interactions or collaborations in any shape or form with competitors are completely avoided because the perception is that there isn't a need for competitor collaboration and any such interactions will only lead to losing the market image and position.

However it can also be said that though practiced to a limited extent, interactions with external parties for innovation have evolved with regard to the level and kind of involvement the firms has with people outside of the core firm. A completely in-house innovation process has evolved to incorporate consumer focus groups, consultations, feedback on prototypes and concepts like soft launches in their innovation process. With regard to being open about their innovations and in their innovation process, the limited interactions that take place are with well-known external parties only. The kind and level of relationship shared with these parties determines the extent of the interactions and the level of information shared. The firm much appreciates the idea of inbound open innovation i.e. bringing in ideas from outside and developing them and is open to considering any such offer but at the same time it is absolutely averse to the concept of

outbound open innovation. The belief is that if the idea or the innovation at any stage is given out to external parties to develop upon it may project them as incapable of taking their innovation to market themselves and thus they may lose their market position.

Additionally it can be said that market orientation does impacts the opening up of the innovation process only at very rare occasions or in one off cases, when a customer feedback necessitates collaborating with external partners or opening up of the innovation process to external expertise for meeting the customer/consumers' demands. Otherwise innovations are market-oriented and they do not seek to open frontiers for the development processes of their products and services.

6.4 Firm D: Analysis

6.4.1 The Management of Innovation

Innovation is an activity that is embedded in all functions of the firm informed the interviewees. It primarily focused on improving the regular functioning of the firm, making the operations faster, cheaper and better and catering to the demands of the customers. However the interviewees pointed out that with the launch of their own brand the firm is now beginning to look beyond just packaging innovations and towards new product development. The firm bases its innovations on market insights, consumer understanding and the requirements of its customers and dedicates increasing efforts for managing the same. The cross functional innovation team having representation from all functions, involving technical experts and lead by the marketing team is designated to boost innovation activities at the firm. Additionally, suggested the interviewees, the regular NPD meetings, allocation of innovation budget and complete involvement of the senior management in supervising the innovations are other measures the firm engages in for managing its innovation activities.

With the belief that consumer will eat more if the product that they eat is brilliant; the firm approaches its innovations with the objective of being known as the best grower of berries in the market. Expanding in new markets is another of the firm's objective for being innovative, because the firm believes that new markets open up possibilities of new customers suggested the interviewees. For measuring the effectiveness of the innovations its does the firm employs procedures it categorizes as hard and soft measures of innovation effectiveness. The hard ones being the sales and

revenues generated by the innovation while penetration and consumption of the innovation are the soft measures inform the interviewees.

Figure 6.4 outlines a few key quotes the interviewees mentioned with regard to the firm's innovation as it progresses through the value chain.

6.4.2 Extent of Openness

Mapping the innovation regarded as the firm's most significant innovation by the interviewees on to the IVC, the firm's interactions with external people for this innovation can be studied. The interviewees suggested that this pattern of interaction also reflects the firm's interactions approach for innovation more generally. The most interactive stage at the firm's IVC is the first stage or the idea generation stage wherein the firm engages with its customers, suppliers and consumers for gathering market insights and developing consumer understanding. The firm also interacts with market research agencies at this stage for collecting market information to draw innovative ideas or concepts from.

The second stage or the conversion stage of the IVC involves the cross functional innovation team followed by the different departments of the firm working together for developing the concept into an innovation output. At this stage, the internal cross departmental interactions are supported by the firm's technical experts and farmers for development of different aspects of the innovation.

Efforts of the different departments to bring the product to the market mark the third stage or the commercialization stage of the IVC at the firm. The teams across departments work collectively to bring the innovation to market. At this stage the firm involves with its retail partners for launching its innovation in market.

The launch of the 'berries snack pot' by firm D was an innovation that had three parts to it, namely the firm extending the soft fruits production season in Ireland, launching of the firm's own brand and finally introduction of a berries snack pot under its own brand. The firm's decision of extending the season of soft fruit production in Ireland was based entirely on consumer insights and the firm focused on big investments for developing facilities for extending the soft fruit production season to avail the growth opportunity presented by the increasing consumer demand highlighted the interviewees. The second part of the innovation, emphasised the interviewees, or the firm's decision to launch its own brand came as an after effect of the shock of losing

business from one of its main customer. The firm then decided that to have a long term future they needed to connect with the end consumers directly and thus went on to launch their own brand following series of dedicated brand creation efforts. Finally, the third part of the innovation or the launch of the berries snack pot was also guided by market insights and the firm's consumer understanding. Broadly speaking, the interviewees indicated that for this innovation the firm engaged in a market oriented approach and this is also reflective of the firms approach in general for its innovations.

While opening up with its customers, suppliers and consumers with regard to its innovation activities is a regular practice at the firm, it believes that it is most flexible on its farm and almost completely open among growers. Appreciating the concept of inbound open innovation, the interviewees indicated that the firm believes in practicing it only if does not mar its competitive advantage. Additionally the concept of opening up with competitors is completely avoided by the firm, the perception is suggested the interviewees, that the competitors may lack the level of insight and capabilities the firm has and so such interactions would be of little use. Moreover given the industry the firm operates in, the differentiations in the product offerings are subtle and so competition is very high, thus the firm refrains from competitor collaborations the interviewees explained.

Innovation at the firm is evolving, not just in terms of looking further from packaging innovations and towards new product development. It is evolving to becoming a more and more structured activity at the firm, with innovation teams and budgets in place, with increased interactions with external people including consumers, brand creation agencies and market research agencies beyond the regular interactions with customers and suppliers suggested the interviewees. Yet it must be highlighted that despite having a market oriented approach for its innovations, the approach is not leading the firm to open up its innovation process much. The innovations at firm D can be regarded as market oriented, open for consumer insights and market information but guarded through their development and launch process.

	Idea Generation			Conversion		Diffusion
	IN-HOUSE	CROSS-POLLINATION	EXTERNAL	SELECTION	DEVELOPMENT	SPREAD
	Creation within a unit	Collaborations across units	Collaboration with parties outside the firms	Screening and initial funding	Movement from idea to first result	Dissemination
KEY QUESTIONS	Do people in our unit create good ideas on their own?	Do we create good ideas by working across the company?	Do we source enough good ideas from outside the firm?	Are we good at screening and funding new ideas?	Are we good at turning ideas into viable products, businesses and best practices?	Are we good at diffusing developed ideas?
KEY QUOTES	<i>We are extremely innovative on our farms. They are constantly thinking of what new varieties. Our operations team is always looking if we are doing this fast enough or if there's a machine that can better do it. So there's innovation in all parts of our business– Marketing Director</i>	<i>So we do have an innovation team now, made up of the marketing and sales team in its entirety. Then we use our packaging guys in its operations, the operations manager who manages the factory and our other technical experts (our people who know our fruits). We use one person from commercial, so its people in the factory who know what we do, the technical people who know what we can do, the packaging and marketing team – Marketing Director</i>	<i>We are open with customers, we are open with suppliers, we demand a lot from them and they demand a lot from us – Marketing Manager</i>	<i>We allocate approximately 4% of our total budget for innovation. - Marketing Manager</i>	<i>It is brought through as a pipeline internally. So research is one part and then there is an operational point of view, a commercial point of view and a packaging point of view and then at the end marketing is driving it, talking to all these people – Marketing Manager</i>	<i>We did three focus groups across the country on the target markets, and the insight was that I want to eat healthy but cannot because of time constraints and the mess. So following a process that went through the NPD pipeline we launched our berries in a snack pot as being convenience to the category which was not there before - Marketing Manager</i>

Figure 6.4: Key quotations by interviewees about the firm's innovation

6.5 Firm E: Analysis

6.5.1 The Management of Innovation

The firm believes innovation is the key activity that can help it maintain sustainable growth over the years indicated the interviewees and so continuously engages in developing its capabilities. However simultaneously realizing that it is also a very challenging activity the firm employs increasing efforts for managing and strategizing for it. The firm's innovation has come a long way from being a completely non innovation oriented firm to having an innovation inclination in all aspects of its functioning. Not just product innovation or packaging innovations, the firm focuses on improving its efficiencies on all fronts through innovative approaches. The interviewees attribute this advancement of the firm towards innovation to its expansion in bigger markets; the belief is they suggest that as the firm expanded beyond the Irish market it realized the dire importance of being innovative to continue selling in the market. The activity at the firm now is formally structured and progresses through defined decision gates presided over by senior management. The firm positions its innovation on market insights, customer requirements and consumer understanding with the aim to garner high revenues and conducts extensive market research for the same. Although innovation is a team based activity at the firm, interviewees highlighted that they do not function as a defined innovation team, instead they have three innovation managers across the business who liaise between different departments to carry out innovation, thus essentially practicing it as a project management piece. Similarly the firm does not have a defined innovation budget and because the onus of innovation is primarily on the marketing department, it uses its marketing budget to begin with. Money however is easily allocated if the proposed innovation has potential and thus passes the initial decision gates. Despite all the focus and management of innovation at the firm, the interviewees emphasised that although the senior management believes in being very entrepreneurial in their approach towards innovation, the ground realities for operational managers for carrying out the innovation activities are very challenging.

Figure 6.5 outlines a few key quotes the interviewees mentioned with regard to the firm's innovation as it progresses through the value chain.

Idea Generation			Conversion		Diffusion	
IN-HOUSE	CROSS-POLLINATION	EXTERNAL	SELECTION	DEVELOPMENT	SPREAD	
Creation within a unit	Collaborations across units	Collaboration with parties outside the firms	Screening and initial funding	Movement from idea to first result	Dissemination	
KEY QUESTIONS	Do people in our unit create good ideas on their own?	Do we create good ideas by working across the company?	Do we source enough good ideas from outside the firm?	Are we good at screening and funding new ideas?	Are we good at turning ideas into viable products, businesses and best practices?	Are we good at diffusing developed ideas?
KEY QUOTES	<i>We bring our research information and look at what the product should be what it should look like, taste like and feel like</i> – Commercial Manager	<i>The innovation manager is the central figure who brings in people from commercial, marketing, production etc. to develop the innovation</i> – Commercial Manager	<i>The pear thing was technically led internally. We had our own cider people; we had a technical team for the recipe. For the physiological testing etc. we worked with a agency on that. We then had an advertising agency who worked on our communication and creative. The pack design was external and the sale was by our own team</i> – Innovation Manager	<i>The marketing team have the budget and if new things are being proposed money will be allocated, but we specifically do not have a budget for innovation</i> – Packaging Manager	<i>If we are looking at new to world innovation we work with consultant agencies around scoping if we don't know much about it. With their help we try to understand the market, we talk to consumers to see where the opportunity might be within that market. We develop concepts with design agencies which we might then present to consumers to see what they think about them. To refine them we do qualitative and quantitative research to a point where we are satisfied that they are worth proceeding.</i> – Innovation Manager	<i>We would interact along the whole innovation chain, we talk to customers, to suppliers initially about the ideas of the product then we later give them some visuals mocked up with packaging and we talk to them if it is achievable</i> – Packaging Manager

Figure 6.5: Key quotations by interviewees about the firm's innovation

6.5.2 Extent of Openness

Mapping the innovations the interviewees regard as the firm's significant innovation on to the IVC, the various interactions the firm had for these innovations can be observed. The interviewees highlighted this is also the pattern of interactions for all innovations at the firm. Although the firm engages with its customers and suppliers all through its IVC, it is the first stage which is the most interactive one. The firm readily interacts with its customers, suppliers consumers and consultants for gathering market insights, understanding the trends and requirements of the consumers.

The second stage or the conversion stage of the IVC at the firm involves the different departments working together for developing the innovation. The innovation managers across the business liaison with the different teams to put together and run the innovation projects Interactions with customers and suppliers continue back and forth through this stage as well, as the innovation development takes place. This stage also involves the firm working with various consulting agencies on different aspects of the innovation.

The third stage or the commercialization stage of the IVC at the firm involves effort of the different departments under the project management by the innovation manager to bring the product to the market. The teams across departments work along with their customers for launching the innovation in market.

The significant innovations that the interviewees highlighted whether product or packaging all have emerged from market insights or from the firm's understanding of the consumer's requirements. The firm engages in gathering market information not just in the markets it operates in but in innovation happenings globally in its sector. Broadly speaking in its innovation focus the firm had a market oriented approach for the significant innovations as it has for all innovations it does reflected the interviewees. The firm believes in exploring insights from the gathered information as well as from the business challenges it is faced with and trusts that innovative ideas and solutions fall out from them.

Interaction with its customers, suppliers and consumers is a way of regular functioning for the firm and it believes in engaging with them throughout its innovation process. The perception is that because the customers and suppliers are out in the market they have the best understanding and knowledge about the market and because consumer is the one ultimately buying the innovation, understanding their requirements

is more important than any research. The interviewees however also emphasised that these interactions aren't completely open and are judiciously managed with signing of NDA's when confidential information comes into play. The firm believes that it is and can be open in the operational aspects of its functioning but with regard to opening up for innovation it has reservations. The perception is that opening up in the innovation process is for small players in the business as they have limited resources and will thus benefit from it; however for a firm of their scale collaborating for innovations is a risky proposition. Additionally the firm also believes that opening up to out of category players could be very distracting and moreover being a drinks company they have increased sensitivities around who they associate themselves with. Another insight the interviewees revealed was that the firm's reluctance about opening up its innovation process can be attributed to its organization culture. The firm strongly believes that it has worked long and hard to become the expert and to reach the position that it is at today and thus is not so keen on opening up its expertise.

Innovation at the firm has evolved from not being a focus at all to being practiced in all aspects of the firm's functioning. It is evolving to become more and more formal and structured with increased interactions with people outside of the firm. The belief is that external interactions have increased with the expansion of the firm in markets beyond Ireland so as to understand and function as per the said market. However, it is noteworthy that the firm though open to external interactions at operational level completely refrains from them for innovation purposes. Thus it must be highlighted that market orientation does guide the firm towards open interactions with external people but does not lead it to open up its innovation activities.

6.6 Firm F: Analysis

6.6.1 The Management of Innovation

Innovation, as suggested by the interviewees is the primary activity at the firm for its functioning and is carried out all the time and throughout the firm with a keen focus on the firm's central theme of food first or the good food culture. Not just product innovation, the firm spans its innovation activities to refining strategies or business model innovations as well to achieve its aims of entering new markets, expanding its categories or for becoming 'the supplier of choice' for its customers.

With a focus mainly on incremental innovations, the firm churns out large number of innovative products by strategizing to hold as little finished goods stock as possible and thus relatively easily and regularly experimenting with its ranges. For managing these throughout prevalent innovation activities the firm has separate NPD teams and budgets for each of its five business units. The teams are split by customers so as not to compromise the individual agendas of the competing customers or markets the firm caters to, the innovation activities are thus structured to be carried out separately by the different teams with different set of developers, technicians and chefs.

Figure 6.6 outlines a few key quotes the interviewees mentioned with regard to the firm's innovation as it progresses through the value chain.

6.6.2 Extent of Openness

The innovation regarded as the firm's most significant innovation by the interviewees when mapped on to the IVC can be used to study the various interactions the firm engaged in for the innovation. For development of their new business with Starbucks in USA, the firm engaged in extensive mining of market insights with an aim to explore growth and expansion opportunities. As such the firm engaged in a market oriented approach for this innovation, which is also reflective of the firm's approach in general suggested the interviewees. They further indicated that the firm has an open outlook with regard to interactions with people outside of the firm for its innovations. While in contrast it in fact has to manage being selectively open about its innovations across the different business units within the firm as they cater to customers that are competitors in turn.

For the first stage or the idea generation stage the firm interacts extensively with its customers, suppliers, consumers, consultants and market research agencies for gathering consumer insights and for developing market understanding. At this stage the NPD teams from the different business units do utilize from the common pool information regarding the consumers' perceptions and choices. During the conversion stage or at the second stage of the IVC the firm engages with its customers to develop the innovation together. The different NPD teams work independent of each other from this stage onwards, individually working on their innovations with their customers. Similarly the commercialization stage or the diffusion stage of the IVC comprises of combined efforts of NPD teams along with its customers for bringing the innovative product to the market.

The firm routinely collaborates with its customers and almost all the time carries out its innovations jointly with them. The belief is that because their products form the private labels for their customers, their innovations are in a way their customers' innovations and hence best done jointly. Also the firm strongly believes that being market oriented is increasingly important and it does currently and must always guide the innovation activities at the firm. However it must be highlighted here that despite being market oriented and at the same time open or flexible for interactions with people outside of the firm in its approach for innovation, the two activities are not interdependent at the firm. The innovations at firm F are market oriented and open with interactions ranging from customers, to consumers to suppliers to consultants and even competitors.

Idea Generation			Conversion		Diffusion	
IN-HOUSE	CROSS-POLLINATION	EXTERNAL	SELECTION	DEVELOPMENT	SPREAD	
Creation within a unit	Collaborations across units	Collaboration with parties outside the firms	Screening and initial funding	Movement from idea to first result	Dissemination	
KEY QUESTIONS	Do people in our unit create good ideas on their own?	Do we create good ideas by working across the company?	Do we source enough good ideas from outside the firm?	Are we good at screening and funding new ideas?	Are we good at turning ideas into viable products, businesses and best practices?	Are we good at diffusing developed ideas?
KEY QUOTES	<i>Product innovation activity happens within different divisions in our group. We have five different business units and each one has extensive product development activities – CEO</i>	<i>Something that is relatively new is that the NPD consultants get together on a regular basis and we now have internal competitions so that chefs from different parts of the business come together – Communications Manager</i>	<i>Fundamental of how we do innovation is that we do it almost always jointly with our customers. They are a big big source of directing our innovations, collaborating in our innovations, testing and informing us on innovations – CEO</i>	<i>We have NPD teams for categories; these are split up by customers. Each category has its own head of NPD and their own product development teams and budget- CEO</i>	<i>We gather lot of insights, we subscribe to a lot of trends analysis reports, some external consultants etc. It is all about understanding food trends both nationally and internationally. We spend time looking at what's in the market, talking to people, buying samples etc. - Communications Manager</i>	<i>Our internal interactions are pretty good on non-product ideas, technical solutions, supply chain efficiencies, distribution solutions or on purchasing incentives; but because we supply to customers that are competitors we have to have fenced customer teams who would not share ideas with each other – CEO</i>

Figure 6.6: Key quotations by interviewees about the firm's innovation

6.7 Firm G: Analysis

6.7.1 The Management of Innovation

Innovation, as indicated by the marketing manager, is one of the key activities at the firm underlining all its regular functioning. It is purely based on market insights and consumer understanding at the firm and the firm employs increasing efforts to manage the same. The firm maintains an innovation funnel or pipeline, and to regularly feed it having the objectives of expanding their product portfolio and entering new markets for increasing their consumer base, the firm manages its innovation activities in a formally structured manner. The firm boasts of sophisticated innovation facilities including the developmental kitchen, labs and other facilities that are shared throughout the business. It is the cross functional team that has representation from all divisions of the firm ranging from operations, marketing, finance, commercial, packaging along with innovation chefs and food technologists, that holds the responsibility of the regularly undertaking and managing the innovation activities at the firm. The firm allocates budgets not just for innovation but separate budgets are defined for the various stages the innovation goes through and the activity is presided over with complete involvement by the senior management. However the marketing manager also highlighted that in spite of the presence of the cross functional team and people with portfolios like new product development manager, it is the marketing team that drives the innovation at the firm.

Figure 6.7 outlines a few key quotes the interviewees mentioned with regard to the firm's innovation as it progresses through the value chain.

	Idea Generation			Conversion		Diffusion
	IN-HOUSE	CROSS-POLLINATION	EXTERNAL	SELECTION	DEVELOPMENT	SPREAD
	Creation within a unit	Collaborations across units	Collaboration with parties outside the firms	Screening and initial funding	Movement from idea to first result	Dissemination
KEY QUESTIONS	Do people in our unit create good ideas on their own?	Do we create good ideas by working across the company?	Do we source enough good ideas from outside the firm?	Are we good at screening and funding new ideas?	Are we good at turning ideas into viable products, businesses and best practices?	Are we good at diffusing developed ideas?
KEY QUOTES	<i>We were looking for the insights to start developing. We did research focus groups, exposed people to various product thoughts, conducted workshops and got them to create some soups. So at that stage we more or less knew what consumers wanted – Marketing Manager</i>	<i>We discussed them in our cross functional sessions, this time including chefs and food technologists from within our business, and we looked at what these soups might be. We researched these again across qualitative focus groups; we scored them as to what was most magnetic and what didn't have much interest– Marketing Manager</i>	<i>We keep very very close to our consumers. We constantly talk to our field team who talks to the consumer all the time – Marketing Manager</i>	<i>We start from idea generation budget to get to the ideas. We then switch to another budget that gets us from the factory to the super market shelves – Marketing Manager</i>	<i>We operate like an innovation funnel Rarely does it happen that it starts with some very good idea that someone has, so whether for a new brand or a new category it generally starts with that mining of consumers for insights So we developed the recipes further, the brand identity further, the packaging further – Marketing Manager</i>	<i>Our internal interactions are good, key being our communications. Our business manager division, the people who manage our retailers, our operations division, packaging division etc., our logistics team, planning team, finances team, everybody's communication is very important and part of our success – Marketing Manager</i>

Figure 6.7: Key quotations by interviewees about the firm's innovation

6.7.2 Extent of Openness

Mapping the innovation regarded as the firm's most significant innovation in recent times by the marketing manager on to the IVC, various interactions that the firm has had with external people during the innovation process can be studied. The pattern of interaction the firm has for this innovation is also reflective of the firm's approach to innovation more generally, suggested the marketing manager. The first stage or the idea generation stage can be regarded as the most open stage for the firm's innovation. The firm is most interactive with people outside of the organization at this stage, engaging with consumers, market research agencies, and brand innovation agencies for gathering consumer insights and for developing market understanding. Also, for getting information about emerging market trends and other innovation launches.

The second stage or the conversion stage of the IVC in case of the firm's most significant innovation and also of innovations in general at the firm is focused on extensive internal interactions and development of the innovation suggested the marketing manager. It involves the cross functional teams working together for extracting from the gathered insights an innovative concept and then developing it further into an innovation output.

The commercialization stage or the diffusion stage of the IVC for this innovation comprised of the efforts of the different departments of the firm for bringing the innovative product to the market. The firm engages with its retail partners and advertising agencies pre-launch of its innovation while to gauge the effectiveness of their innovation and of consumers' awareness about it the firm works with market research agencies. Similar pattern of interaction resonates for all innovations the firm does suggested the marketing manager. Thus the commercialization stage is all about the firm bringing its innovation to the market all by themselves.

The launch of the 'fusion soup range' by firm G was an innovation based entirely on consumer insights and requirements. Broadly speaking the firm for this innovation as for all its innovation engages in a market oriented approach towards innovation suggested the marketing manager. The belief at the firm is says the marketing manager that consumers are innovative, have some very good ideas and are very passionate about the brand they love, hence not just gathering information from consumers but also involving them while innovating or exploring the concept of co-creation with consumers is beginning to be the firm's approach towards innovation.

Although co-creation with consumers is the strategy the firm is beginning to adopt, it remains reluctant for opening its innovation process for any other external parties. The perception is says the marketing manager that being one of the largest players in their category they have the most capabilities and hence stand little chance to gain much from a collaborative innovation. Also, he believes that the firm is averse to collaboration because of confidentiality issues which it wants to completely avoid.

Innovation at the firm is evolving, the process is becoming more and more structured, interactions with external people are increasing and concepts like co-creation with customers are being embraced suggested the marketing manager. Yet it must be highlighted that despite being market oriented for its innovations, the approach is not impacting the firm to open up its innovation process much. The innovations at firm G are market oriented, open for consumer insights and market information but guarded through their development and launch process.

6.8 Firm H: Analysis

6.8.1 The Management of Innovation

Innovation is practiced in a structured manner in the firm, with systems in place for its effective management. Following the stage gate process the innovation is practiced with complete involvement of the senior managers. The firm has a defined innovation budget and separate innovation teams for the long term and short term innovations. It also has a team of innovation marketers in order to better understand the needs of the market and to come up with innovative solutions. Though innovation has always been an important activity at the firm, it has become even more central recently owing to the appointment of a very innovation oriented senior manager, indicating that senior management largely defines the way innovation is practiced and managed in the firm.

Maintaining a balance between practicing innovation and rolling out short term deliverables is another aspect the firm constantly strives to master for achieving its objectives of entering new markets, extending their portfolios and staying ahead of competition. The belief is that long term innovation requires time and resources while short term deliverables are important for regular revenue generation and keeping the competitors out. Hence risk evaluation and prioritization are needed in order to manage

the two types of innovation and maximize benefits. Figure 6.8 outlines a few key quotes the interviewees mentioned with regard to the firm's innovation as it progresses through the value chain.

6.8.2 Extent of Openness

The two dimensions of the innovations done by firm H namely, the branded innovations and the own label innovations can be mapped onto the IVC separately. Studying the progression of the branded innovation on the IVC it is seen that these innovations are practiced in house by the firm. The first stage or the idea generation stage of the value chain for these innovations is guided entirely by consumer insights and emerging trends in the market. Brain storming sessions and cross functional meetings are practiced but these are centred on exploring concepts and pulling out ideas from the gathered market information. The firm closely observes emerging trends and consumer requirements in the food industry and beyond both in the domestic market place as well as globally.

The second stage or the conversion stage of the IVC is focused on the collaborative functioning of the cross departmental teams within the firm for converting the gathered knowledge into an innovation output. The technology and innovation team, the commercial team, the brand team and the innovation marketers work together for developing the innovation in-house utilizing only the firms' available resources.

The third stage, the commercialization stage of the IVC is the only stage at which the firm interacts with people outside of the organization for its branded innovations. For facilitating the launch of their innovation, the firm engages with brand activation agencies as well as its retailers to bring their product out in the market. These interactions however are focused on the operational side of diffusing their innovation than in any way as collaboration for the innovation as such.

Mapping the other dimension of firm H's innovation, the own label innovations on the value chain suggests that the firm is more open with regard to these innovations. Although the development piece still utilizes only the resources available with the firm, interactions with people outside of the organization are a common place in case of the own label innovations that the firm does. The first stage of the value chain or the idea generation stage for these innovations is focused on collaborative working with the retailer for whom the innovation is being done. The retailer based on its market

research, consumer insight and feedback is the source of the idea for the own label innovation

The conversion stage involves the short term delivery team at the firm working collaboratively with the retailers for developing the innovation from concepts to prototypes to further refined and re-refined product stages. The development stage also involves the various teams within the firm working together while they continuously interact with the retailers as the innovation progresses.

Similar to the conversion stage, the third and the final stage of the IVC focused on the commercialization of the innovation also involves the combined efforts of the firm and the retailer to bring the innovation out in the market. The diffusion phase is thus about the firm and the retailer launching the innovation. These innovations are however treated as second in importance to the branded innovations by the firm so the firm's involvement varies accordingly.

Broadly speaking Firm H is a market oriented organization with a keen focus on gathering market insights. For the 100% natural ingredients ham innovation firm H pursued an innovation process that was driven by a process of gathering market insights. As such, in terms of this innovation, the firm engaged in what can be described as a market oriented approach. The interviewees suggested that this is reflective of the approach of the firm more generally. They suggested that the firm tries to keep a constant tab of the evident and latent needs of the customer as well as their likes and dislikes. Moreover the firm is always keenly observant of the emerging trends in the market place irrespective of whether they are in the food industry or otherwise. Market insights are the premise of all innovative developments in the firm yet the firm is also always observant of the fact that sometimes what consumers understand that they want is quite different from what they actually want. Hence the firm though increasingly market oriented is equally vigilant in its interpretations of the market insights.

Although innovation is an activity central to the functioning of the firm, open innovation is far from being embedded in any of its aspects. This is because being one of the lead players in the industry; the firm believes that there is no need for collaborations. The firm is averse to any form of inbound or outbound open innovation activity because it wants to completely avoid any collaboration. Interactions with suppliers, customers, consumers and consultants for gathering market information or feedback is a regular practice but any such interactions for innovation purposes are

completely avoided. The firm is highly protective of any information about its innovation as the perception is that if any information is revealed before launch others may quickly copy their innovation and consequently cause the firm to lose some portion of its market share.

In addition it can be suggested that though not entirely for innovative purposes, the interactions with external parties are evolving. The firm is beginning to engage with consultants and market research agencies for gathering consumer research information, even engaging with retailers and brand activation agencies for launching their innovations. Another observation that can be made is that, market orientation though forms the premise for all innovation activity in the firm it cannot be credited for causing opening up of the innovation process at any stage. Innovations are market oriented but the firm does not look for opening its boundaries for the development processes of its product and services.

	Idea Generation			Conversion		Diffusion
	IN-HOUSE	CROSS-POLLINATION	EXTERNAL	SELECTION	DEVELOPMENT	SPREAD
	Creation within a unit	Collaborations across units	Collaboration with parties outside the firms	Screening and initial funding	Movement from idea to first result	Dissemination
KEY QUESTIONS	Do people in our unit create good ideas on their own?	Do we create good ideas by working across the company?	Do we source enough good ideas from outside the firm?	Are we good at screening and funding new ideas?	Are we good at turning ideas into viable products, businesses and best practices?	Are we good at diffusing developed ideas?
KEY QUOTES	<i>So when we look at innovation, we don't look at it in isolation, from one concept we have to see how can it grow and how can we open different categories with the same innovation. So once we have that base identified and have different criteria aligned to our manufacturing and facilities, then we can look beyond that unit</i> – Innovation Manager	<i>Our innovation teams link with the brand marketers to make sure that which brand would fit with the innovation and how then would they develop from a concept into an actual on the shelf product that emulates both the brand and the innovation and try and get the two together</i> – Innovation Manager	<i>Interactions with outside people have increased, especially from an agency, consultancy point of view. We have brought in a lot of new agencies in relation to consumer research. The front end innovation piece has also evolved using consultants and agencies to give us that new outlook</i> – Innovation Manager	<i>Senior management is actively involved in innovation, specially our CEO of marketing and our innovation director who is also our R&D director. So that's where the stage gate comes in, we have to pitch to the senior management; it's like dragon's den</i> – Innovation Manager	<i>In case of own label piece, it's the retailer who has the insight, they have their research done as to what the consumer is looking for. Where they feel the gap in the market is. They come to us with an idea and that's where the delivery team comes in, they would look at the idea and try to match a product to the retailer's brief. So its very much the retailer coming with an understanding or a brief and the delivery team delivering on it</i> – Innovation Manager	<i>All our offices are open plan so that we have open communication. We have weekly meetings, monthly meetings, conference calls, web access etc. across the different geographies. Yes we have very effective internal communication</i> – Innovation Manager

Figure 6.8: Key quotations by interviewees about the firm's innovation

6.9 Cross Firm Analysis

Analysis of the way innovation is practiced in each firm and across the eight firms shows that:

a. Innovation is practiced as a structured process

Innovation is practiced as a structured process at the firms. Being practiced as an organized activity, innovation has gained importance at the firms over the years. Owing to the growing competition and with the belief that being innovative in their offerings is one of the ways firms can sustain in the market place, innovation is being given great importance and is practiced as a formal activity at the firms; formal in terms of allocation of money for carrying out innovation and formation of designated teams who engage in regular meetings for managing the activity.

Firms either have a separate innovation budget or make use of part of their marketing budget for innovation purposes. Similarly while some firms have distinct innovation teams, others have task forces, new product development teams or cross functional teams managing the innovation activity. Regular meetings across departments and teams as well as brain storming sessions for innovative ideas facilitate smooth exchanges of information within the firm and thereby aid in managing the innovations being carried out at the firms.

b. Marketing Department drives the innovation activity

Regardless of the presence of a defined innovation team and dedicated innovation budget, it is the marketing department at the firms that drives and spearheads the innovation activity. Thus, innovation though gaining importance and increasingly being rooted in all functioning of the firms, the onus of carrying out and managing the process lies with the marketing department.

c. Innovation objectives vary across firms

The objectives with which innovation is carried out varies from firm to firm, however largely they range from entering a new market to increasing market share, improving the quality of the innovative offering, reducing the cost of production, meeting the demands of the customers or consumers, extending the product portfolio, staying ahead of competition, becoming the market leader or maintaining the market position.

d. Firms measure the effectiveness of their innovations through defined matrices

For managing their innovation activities for meeting these objectives, firms engage in measuring the effectiveness of their innovations so as to keep a tab on how well they are faring on the innovations they do and how can they be better managed. The key matrices firms use for measuring the effectiveness of their innovations include revenue or sales generated, household penetration, consumer consumption of the product and the market impact the brand creates.

However, it may be emphasised that though the range of objectives that firms have for achieving through their innovations is wide, the manner in which they gauge their innovations' value is predominantly in terms of sales achieved.

e. The understanding of innovation and open innovation varies across firms

As prior studies argue that the motivation with which firms practice innovation varies across firms (Brown and Eisenhardt 1995); this study shows that different firms have different notions about the concept of opening up their innovation. While interacting across their supply chain is regarded as being open by some, others do not consider it as being open unless it is coupled with an open innovation strategy.

f. Smaller firms practice open innovation on an ad hoc basis while large firms practice it consciously

In terms of the practices of open innovation, the study finds that the smaller firms that were part of the research, practice open innovations on an ad hoc basis. These firms open up their innovation processes only for certain innovations or activities. For example some prefer opening up only to their sister firms for its innovations or considering opening up a challenge and they engage in it only when they lack certain expertise and it is not disadvantageous to their market image.

While the larger firms in the study practice the activity more holistically and regularly displaying evidences of more conscious adoption of open innovation. For instance engaging with their end customers with the idea of co-creation for innovative offerings or working regularly with their retail partners when developing its innovations.

Thus the pattern of open innovation practice is more impromptu in the case of small firms while the larger firms more consciously practice open innovation activities.

g. Inbound open innovation is more common in firms than outbound open innovation

The study finds that regardless of their size Irish food firms in general are more inclined towards practicing inbound open innovation than the outflow of knowledge from the organization.

In summary, the analysis highlights that firms follow a structured pattern of innovation; the activity is driven by the marketing department and managed by setting objectives, by formation of teams, allocating budgets and measuring of innovation effectiveness.

While firms' understanding of open innovation varies, smaller firms practice it on an ad hoc basis and large ones engage in open innovation activities consciously. Nonetheless, firms are more inclined towards inbound open innovation activities. The themes explored across the medium and large firms are summarized in the Table 6.1 below.

Table 6.1: Practice of innovation in medium size Irish food firms

Themes			
	What is innovation?	How is innovation managed?	Who does the firm interact with?
FIRM A	Innovation is about achieving efficiency on all fronts of the business.	Commercially focused and cost conscious business. Innovation managed by setting objectives, task forces, measuring innovation effectiveness and by flexible internal and limited external interactions	Smooth internal interactions with easy information exchange across departments. No formal internal communication channels. Limited and carefully managed interactions with external people (including customers, suppliers, consumers and market research agencies)
FIRM B	Innovation is about making the healthier choice the easier choice for both its consumers and customers.	Innovation managed by setting objectives, formation of cross functional team, measuring innovation effectiveness and by flexible internal and limited external interactions	Smooth internal interactions with constant information sharing through cross functional meetings. External interactions with customers, suppliers, consumers and consulting agencies
FIRM C	Innovation is about taking existing ideas and putting them together in a new way which solves a problem or takes out cost or sells more	Innovation progresses as a stage gate process Managed by setting objectives, innovation team, measuring innovation effectiveness and by flexible internal and limited external interactions	Smooth internal interactions facilitated by cross functional innovation team External interactions with customers, suppliers and consulting agencies
FIRM D	Innovation is about making the operations faster, cheaper and better	Innovation managed by setting objectives, measuring innovation effectiveness, by regular internal meetings and limited external interactions under senior management's supervision	Smooth internal interactions with easy information exchange across farms and departments Limited interactions with external people including customers, suppliers, consumers and market research agencies and brand creation agencies

Table 6.2: Practice of innovation in large size Irish food firms

Themes			
	What is innovation?	How is innovation managed?	Who does the firm interact with?
FIRM E	Innovation is about developing its own capabilities. To build market share and grow profits	Innovation progresses as a stage gate process. Managed as a project management liaison piece	Smooth internal interactions with constant information sharing through cross functional meetings. External interactions with customers, suppliers, consumers and consulting agencies
FIRM F	Innovation at the firm is about good food culture. It is about understanding its products, customers and markets	Focus on incremental innovation. High product churn by maintaining little finished goods stock. Managed by individual category NPD teams	Smooth internal interactions for non-product ideas. Limited internal interactions for innovation as they supply to customers that are competitors to one another. External interactions with customers, suppliers, consumers, competitors and consulting agencies
FIRM G	Innovation is about complete co-operation across the business functions for developing new products or product lines	Innovation progresses as an innovation funnel. Managed by development of advanced innovation facilities, formation of innovation team, allocation of dedicated innovation budgets setting objectives and measuring innovation effectiveness	Smooth internal interactions with constant information sharing through cross functional meetings. External interactions with customers, consumers and consulting agencies
FIRM H	Innovation is about new concepts, new ideas and how they translate back into the business	Innovation progresses as a stage gate process. Managed by setting objectives, innovation teams, measuring innovation effectiveness and by flexible internal and limited external interactions under senior management's supervision	Smooth internal interactions with constant information sharing through open plan offices and regular meetings. External interactions with customers, consumers and consulting agencies

To explore the extent to which the innovation process is open in firms, the internal and external interactions firms engage in during their innovation process are examined in each firm and across the eight firms using the IVC framework, and the analysis of the innovation process for the extent of openness shows that:

(a) Firms are selectively open in their innovation activities

This study finds that while firms follow a similar pattern of innovation process, progressing through idea generation, development and launch stages, a systematic analysis of the IVC for interactions across it as the firms develop their innovations highlights that the firms engage in interactions with external parties at all stages of the innovation process but the nature and extent of these interaction varies at the different stages.

Different stages of the innovation process in firms are marked by flexible opening up for external interactions to limited or no engagement in external interactions. Similarly firms engage in external interactions only for their own label innovations while they completely refrain from interacting with external parties with regard to their branded innovation.

(b) External interactions are most common at the idea generation stage of the innovation process

Mapping the firm's significant innovations on the IVC and analysing the sequential steps of the framework, this study finds that the first phase or the idea generation stage is the most open stage for the firms. At this stage the firm's engagement with external parties ranges from their interactions with their customers, suppliers, consumers, to market research agencies and consultancies. Firms also engage in detailed internal interactions at this stage ranging from cross departmental meetings to brain storming sessions to inform their innovation activities.

(c) Conversion stage of the innovation process is characterized by in-house development of innovation

The second stage or the conversion stage of the innovation process is primarily marked by internal interactions amongst cross departmental teams in the firms. At this stage the firm's new product development, marketing, technical, supply chain, procurement, finance, sales, quality control etc. teams work together for developing the innovation, involving manufacturers, suppliers and customers as and how the need arises. Firms also engage with consultancies at this stage for seeking guidance with

regard to development of their innovations. The study finds that this stage is more or less an in-house development stage in the firms with the firm's internal teams working in close co-ordination for developing the innovation.

(d) Perceptions of competitive threats limits the openness at the conversion stage of the innovation process

This study suggests that firms have only few external interactions during the conversion stage if any and these are only for operational purposes with manufacturers, suppliers and customers as the innovation at this stage is being developed by the firm's cross departmental teams. For example firms communicate with their farmers or growers when developing an innovation or interact with their suppliers to feed into their innovation as it is being developed.

The interactions at this stage in the firms apart from being limited are also very tightly managed. The firms refrain from divulging detailed information about their innovations as their suppliers or manufactures also cater to their competitors. Moreover it must be highlighted here that the level of relationship a firm shares with the external parties largely defines the extent of interactions with them at this stage. Hence competitive threats limit the extent of external interactions the firms engage in at this stage and openness in their innovation activities is least adopted by the firms at the conversion stage of the IVC.

(e) At the diffusion stage of the innovation process, open interactions are mostly limited to engagement with retail partners

The final stage of the innovation process focusing on the commercialization of the innovations the firms do, is again an interactive stage in the firms. Although it is the firms' internal teams that work towards bringing the innovation to the market, the firms do interact with customers or retail partners for launching the same. The firms open up their innovation activity by collaborating with these external parties for diffusing their innovation into the market. Additionally firms also engage with brand activation agencies and advertising agencies at this stage for promoting their innovation.

While openness with regard to engagement with retail partners is the main focus at this stage of the innovation process, for feedback on their innovations' consumer acceptability and performance, firms also rely on market research agencies. Therefore, this stage presents evidences of open interactions primarily with retail partners in the

firms, focusing on launching the innovation in the market and getting feedback on its performance.

(f) Interactions are mainly for gathering market insights

This study shows that while firms interact with external parties during their innovation process, it finds that these interactions are primarily confined to gathering market insights. The firm's interactions with its consumers are to understand their requirements, their expectations and feedback about its products. Customers, suppliers and market research agencies are contacted largely to develop insights about the trends in the market so as to inform their idea generation process and innovative offerings.

However, the study also finds that these interactions are beginning to move beyond gathering market insights and towards co-creation. Firms are beginning to experiment the concept of co-creation with their consumers and customers for generating ideas for their innovative offerings.

(g) Managers regard external interactions for market orientation as synonymous with being open in the innovation process

The study finds that managers regard their firms as highly market oriented, devoting time and resources for gathering market insights for development of new innovations or for improving upon their offerings. The firm's external interactions are focused on developing an understanding about customers' requirements and preferences as well as on getting feedback on their products and services. The managers thus believe that because in doing so they interact with their customers, consumers, suppliers, manufacturers etc. who are people external to their firm they are practicing open innovation. They are also of the opinion that as these external interactions have always been a part of their regular functioning, open innovation practices in the firms, to the extent they practiced now, cannot be regarded as a major shift in strategy.

(h) Managerial perceptions shape the extent of openness in the innovation process

The study finds that relative low levels of 'openness' in the innovation process is reflective of managerial perceptions about the activity of open interactions with people outside of the firm for innovation purposes. Managers refrain from external interactions or practice them in a very limited manner because their belief is that the firms have the best of capabilities needed for the innovation and hence collaboration is not called for. Their perception is that collaborative research is difficult because of the time and compatibility for collaboration it requires. Managers also limit open interactions with

external parties owing to their belief that such interactions are risky as they can lead to the loss of the firm's competitive advantage in the market. Moreover they are also of the opinion that opening up to out of category people though risk averse but can be a distraction to the regular operations of the firm and might not add value enough to be practiced over and above the firm's regular operations, so are better avoided. Managers also believe that the firms have worked long and hard investing time, effort and resources developing their proficiencies and acquiring the position they are currently at and hence are reluctant to share or give away their expertise by way of open interactions and collaborations.

In summary, in terms of the interactions that take place during the course of the innovation from conceptualization to commercialization, the findings of the study highlight that firms are selectively open in their innovation activities. Following a similar pattern of innovation process, progressing through idea generation, development and launch stages they engage in external interactions at all stages but nature and extent of these interactions vary through the stages. The idea generation stage being the most interactive stage, the conversion stage being marked by internal interactions and at the diffusion stage open innovation practices being largely limited to collaborations with retail partners. While the external interactions are mainly for gathering market insights, managers regard these market orientation external interactions as being open in their innovation processes. The study also reveals that the relative low level of openness in the innovation process is reflective of managerial perceptions about the activity of open interactions for innovation activities. The extent of openness in the innovation process across the medium (Figure 6.9) and large (Figure 6.10) firms studied is summarized below.

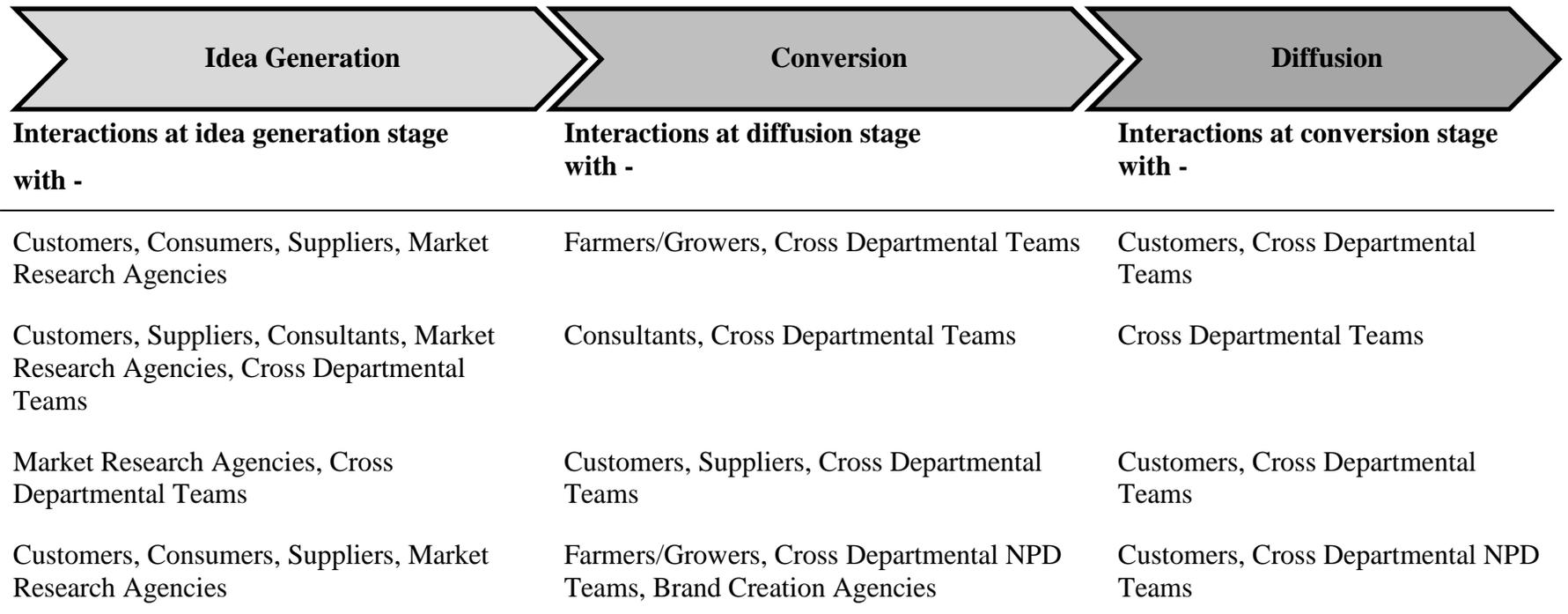


Figure 6.9: Interactions across the innovation value chain in medium size Irish food firms

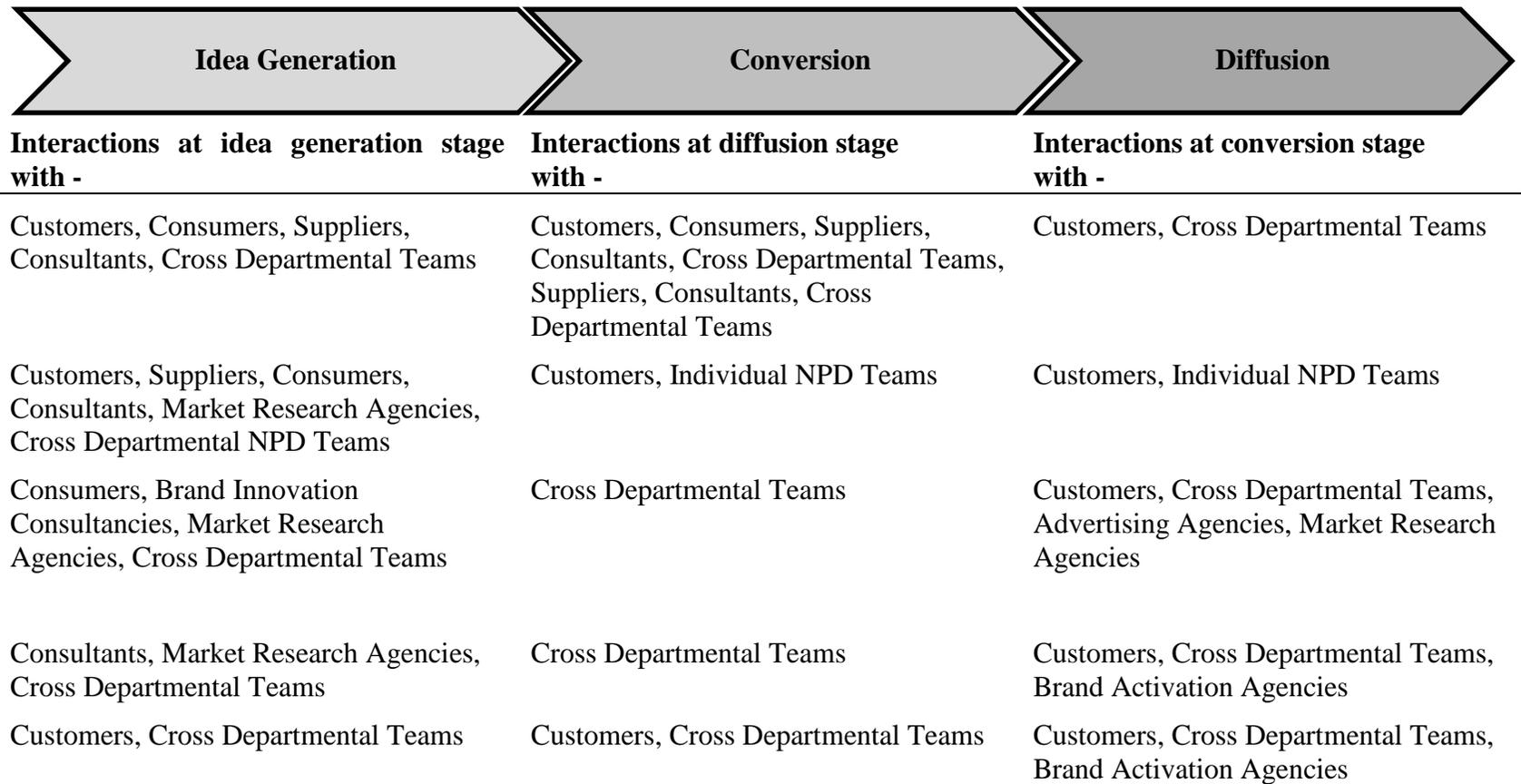


Figure 6.10: Interactions across the innovation value chain in medium size Irish food firms

6.9.1 Researcher's Reflection

The cross firm analysis outlines the way innovation is practiced and managed across the Irish food firms. While it presents the details about the practice, many insights were developed about the practice and management of the concept that built my theoretical understanding of open innovation and its dimensions. Collating them with quotes from the interviewees themselves, these are detailed below:

6.9.1.1 *We are a closed shop. No inbound. No outbound.*

Open innovation as understood and practiced by the Irish food firms is a much narrower concept than Chesbrough's (2006) definition. While Chesbrough asserts that

'Open innovation is the use of purposive inflows and outflows of knowledge to accelerate internal innovation, and expand the markets for external use of innovation, respectively'

Irish food firms are not very open and resist opening up based upon manager's perceptions, mainly of competitive threats. Innovation manager at one of the firms outlined that –

"Innovation is very much by ourselves, the door is only slightly open but it is almost closed as such"

The innovation manager from another firm emphasised –

"We are open but it just doesn't happen and where is the time"

"We are very proud of being the number one coffee company in Ireland and we position ourselves as the experts so we just don't want to share. If the word goes out that we couldn't get an idea to market, our credibility is gone"

The cross case analysis informs that this is the scenario with all the firms and firms are reluctant to open up their innovation process owing to managerial perceptions of external competitive threats.

The firms believe in only the inflow of knowledge; outflow is seen as competitive weakness and generally not considered as way of opening the innovation process. Moreover the knowledge inflows are limited to customer and market information only

that informs the innovations being undertaken at firms. As the marketing director of one of the firms exclaimed that –

“Yes we are open to inbound open innovation, but if we lose competitive advantage in the Irish market we will not”

Nonetheless, one of the eight firms indicated that they were open to competitors and were willing to look beyond inbound open innovation. Its CEO highlighted –

“Yes we are open innovative. Our sources of open innovation would be our customers, our suppliers and competitors. With competitors it happens like with customers. For example we have two-third of the sandwich business of one of our customers and another firm has the other one-third. So it is the three of us who sit together and construct an agenda around Christmas range or health range or summer range. The idea being that we will respectively focus on different parts of the range under a common banner.”

6.9.1.2 *Our customers drive our innovations*

Open innovation though discussed in the literature as a new innovation management paradigm, insights gained through this study develop the theoretical understanding that open innovation is not perceived as a new way of doing innovation in practice. Firms consider it mainly as interactions with suppliers and customers. The commercial manager of one of the firms assert –

“We are open with customers, we are open with suppliers, we demand a lot from them and they demand a lot from us.”

While innovation manager of another firm highlights –

“We are paranoid about commercial secrecy, so we typically collaborate only with our known customers and suppliers.”

Because firms have always gathered market and customer information from their suppliers and customers, this being referred to as inflow of knowledge from external players or opening up of the innovation process is not seen as a change in strategy by the firms.

Beyond the open innovation funnel, a new line of thought is recently emerging in the literature. It argues that external interactions should not be the only indicators of

open innovation rather open innovation should be about incorporating the concept into the strategy of the firm. Development of this argument can help expand the current understanding of firms on the concept and practice of open innovation. Insights presented in the cross firm analysis highlight that firms regard interactions for market orientation as synonymous with being open in the innovation process. The firm's external interactions are focused on developing an understanding about customers' requirements and preferences as well as on getting feedback on their products and services. As the marketing manager and commercial manager of two of the studied firms indicate –

“We open more in the early stages; we do a lot of consumer research.”

“If you know what the trade wants, what the consumers want it is more important than any research you could do. We are very market oriented, the consumer is our big priority, and without the consumer you haven't got a product”

The managers thus believe that because in doing so they interact with their customers, consumers, suppliers, manufacturers etc. who are people external to their firm they are practicing open innovation. If arguments about incorporating open innovation into the strategy of the firm beyond external interactions are developed further, firms may understand and practice the activity with a perspective different from just being market oriented. Also, market orientation may be regarded as an indicator of open innovation.

6.9.1.3 We have a formalized innovation process

The common themes that emerged across the firms as detailed in the cross firm analysis above, highlight that the pattern of innovation across firms remains the same. While firms vary in their understanding of innovation and open innovation, have different objectives for carrying out innovation, the manner in which the innovation progresses largely remains the same. Detailing the sequential steps one of the firm undertook for the pear cider innovation and which was reflective of the firm's process in general the commercial manager of the firm said –

“We bring our research information and look at what the product should be what it should look like, taste like and feel like. Then we start making and trying some liquids. Internally what we do is, between teams we try liquids and see which

works and tastes best before we bring it to research. Then the selected liquid would go into research to see if it's the right liquid for the market. Once the liquid is selected and agreed then begins the brand identity. So from there we start looking at what the brand would look like, what the packaging would look like, the label of the bottle etc., what the marketing would look like, what the above the line, below the line activities would look like and all this would be happening while the liquid is being developed in the background. So then you get to a point where the two meet, production and marketing. The commercial team then comes into work on how to sell the product. We have our team of sales guys and then we also team up with wholesalers. We pick up top 5 wholesalers and we incentivise the team to get the product to market. Once we get the finished product to market we try and build some distribution and when we reach 40% of our distribution target we start some above the line and below the line advertising. It is at this stage that we begin sampling at pubs etc.”

As detailed in the cross firm analysis, innovations in all the studied firms follow the sequential steps of gathering and exploring innovative ideas, developing and testing the innovation prototype followed by refining and scaling up the innovation and finally execution of the innovation or introducing it in the market. Moreover the extent of openness as examined in the study also varies at these discrete stages, highlighting that innovation advances in this sequential manner. Reflecting on the observed pattern it can be argued that the concept of innovation can be studied by exploring the idea generation, development and dissemination activities at firms.

In summary, reflecting upon the insights developed through the study, my own theoretical understanding of the concept of open innovation and its dimensions have expanded. Beyond the knowledge gained through the literature, the study has enabled me to recognize and learn the variations between the details of the concept in literature and its understanding in practice.

Chapter 7

Discussion

7 DISCUSSION

7.1 Introduction

Open innovation is referred to as the use of purposive inflows and outflows of knowledge to accelerate internal innovation, and expand the markets for external use of innovation, respectively (Chesbrough 2003). As an emerging innovation management paradigm, open innovation is regarded as a way to enhance the innovation capabilities of firms. While the positive outcomes of practicing open innovation are widely acknowledged, research on the adoption of open innovation is still emerging (Enkel et al. 2009, Van de Vrande et al. 2009), but to date the scope of this research has been limited. Deeper understanding of the process of innovation is required to better understand the ‘why’ and the ‘how’ of open innovation practices.

Enkel et al. (2009) argue that although the concept of open innovation is becoming increasingly popular, a clear understanding of the concept in terms of the mechanisms inside and outside of the firms is missing. A great deal of research is still required to be conducted to create a ‘consistent open innovation theory’ (Galbraith and McAdam 2011). To address this issue, it is important to know what firms understand by being open, how they manage the innovation process (Dahlander and Gann 2010, Gassman et al. 2010) and the extent to which the innovation processes in firms are open. Thus, this research explores the innovation process in firms, with a focus on the extent to which these processes are open. Specifically, the research objective of this study was explored by examining (a) the organization and management of the innovation process in Irish food firms and (b) the extent to which innovation processes are open in firms.

This chapter is structured as follows: Section 7.2 discusses how open the innovation process in firms is. Section 7.3 discusses how the firms organise and manage the innovation process while Section 7.4 explains the management and extent of openness of the innovation processes in Irish food firms. Section 7.5 concludes the chapter.

7.2 Openness of the Innovation Process

Innovation in Ireland (CIS data analysis)

Chesbrough argued that open innovation is about the inside-out or outside-in flow of ideas, technology and skills across a firm's boundaries. Extant literature has outlined different organisational modes through which inbound and outbound open innovation can be put into practice (Grandstrand 2004). While the dimensions of inbound versus outbound open innovation against pecuniary versus non-pecuniary interactions for practice of open innovation have been suggested by Dahlander and Gann (2010), Huizingh (2011) argues that both the process and the outcome of innovation can also be categorised as closed or open, thus, open innovation practices can also be grouped by distinguishing between the process and outcome of the innovation as closed or open.

With regard to the interactions associated with innovation, Van de Ven (1986) highlights that while the genesis of innovative ideas may be an individual activity, implementing new ideas is a collective process. Innovation requires multiple functions, resources, and disciplines to work in tandem to transform an innovative idea into a tangible reality. The interactive character of the innovation process, outlining that innovators engage in interaction with their users, suppliers, and with a range of institutions inside the innovation system has also been suggested by previous studies (Lundvall 1992, Brown and Eisenhardt 1995, Szulanski 1996).

Research on open innovation has increasingly utilized the innovation survey datasets. Using CIS data researchers have explored the following: impact of search depth and width on innovation performance (Laursen and Salter 2006); open innovation culture and importing mechanisms (Van der Meer 2007); internal innovatory impediments leading to the practice open innovation (Keupp and Gassmann 2009); impact of alliance portfolio diversity on innovation performance (Faems et al. 2010); and impact of information sources on the degree of novelty of the innovation (Mention 2011). In the Irish context, using the innovation panel data for Irish manufacturing firms, Roper et al. (2008) have measured open innovation as links with external organizations and showed that small Irish firms have significantly lower levels of open innovation than larger ones. Using the Irish CIS data Doran et al. (2012) analysed the importance of national and international interactions for product and process innovation. Love et al. (2014) also used the innovation panel data for Irish manufacturing firms and found that moves by individual plants towards a more open innovation approach is accompanied by increased innovation outputs.

In line with the prior research, this study used the CIS data finding that as measured by the level of interactions with external parties, firms in Ireland have a very low level of openness. However, relative to other sectors the level of openness is highest for the food sector. This study shows that firms generally collaborate with 1-3 external partners for innovation. The most common collaboration partner is suppliers followed by customers while competitors are the least preferred co-operation partner. This study shows that firms practice inbound open innovation more than outbound open innovation, that firms collaborate with few external parties, and the most common collaboration partners are suppliers and customers. This study suggests that the extent of openness of Irish firms has a positive relationship with the product innovation outputs.

This study finds that Irish food firms engage in more process innovation than product innovation. Firms practice more inbound innovation activities than outbound innovation and the focus of these external interactions is mainly to gather market insights. These trends are underlined by the firms' focus on generating revenues and translating innovation back to the established business model over and above investing time, money and resources in new and different innovation activities.

Indicators of openness in the innovation process

Vahter et al. (2012) suggests that the number of external collaborations is an indicator and measure of the degree of open innovation practiced by a firm. While measures like permeability of a firm's boundaries, characteristics of collaboration partner, and extent of usage of external sources of knowledge including the extent to which external sources are exploited by way of acquisitions and internal technology licensing (Gianiodis et al. 2010) are common indicators of openness of firms in the current literature, some studies use the partner variety, being the number and type of partners and innovation phase variety which is the number and different phases of the innovation process open to external interactions for demonstrating the degree of openness (Lazzarotti et al. 2010). An additional measure used by Laursen and Salter (2006) for indicating the openness of firms is the intensity of collaboration. Intensity of collaboration is defined as the extent to which external knowledge sources are used by the firm and is measured with regard to the contributions provided by the external parties. They measure the 'breadth' and 'depth' of the external collaboration of the firms.

Notwithstanding the low levels of openness in the innovation process, as highlighted by the CIS data analysis above, the interview data analysis shows that Irish food firms tie their innovation vision to market realities and with an orientation towards the market they interact with few external parties to gather market insights to inform their innovations. Kohli and Jaworski (1990) had established that market orientation is the process by which firms generate market intelligence regarding the current and future needs of the customers, their capacity to disseminate the gathered information within the firm and to rapidly respond to the needs of the market. To this effect, firms need to engage in interactions with external parties, like their customers, consumers and suppliers etc. and thus be open.

However, practicing open innovation spans beyond just customer involvement for gathering market information, Vanhaverbeke (2013) argues that open innovation must be embedded into a firm's innovation strategy. He asserts that the introduction and practice of open innovation may be meaningless for a firm if it is not guided by and embedded in its strategy. Integrating open innovation into the firm's strategy and segregating its innovation projects as per the strategy is an underlying requirement when adopting open innovation. It involves the firm to use external knowledge for improving its own, internal innovation process. More specifically, open innovation is 'the proportion of innovations generated in cooperation / collaboration with universities, research organisations, customers and/or suppliers, other companies, venture capitalists and industry / cluster associations or business assistance centres as opposed to innovations that are entirely generated within the company' (Chesbrough 2006). Mattes (2012) emphasises that open innovation strategy is about taking external impulses to convert upcoming important trends into blueprints and guides for product pipelines; it is about deciding what exactly to focus on in the light of the measures of the firm's current and future core competences and that not all smart people work for the firm; it is about analysing technologies, business models and processes to identify where closed innovations are needed and where an open approach is required.

This conceptual ambiguity about being open arises because not all firms have the concept of being open in their innovation embedded in their strategy. Consequently their interpretation about being open varies, while some firms in this study see that by being market oriented they are being open in their innovation others despite interactions with customers, suppliers and consumers some firms do not consider themselves as

being really open. This suggests that market orientation can be regarded as an indicator of openness in the innovation process.

7.3 The Management of Innovation

Innovation is practiced as a structured activity

Management plays a pivotal role in the process of innovation. In other words to render the desired outcome, innovation needs to be methodical and organized (Oana-Maria 2012). Extant literature outlines that managing innovation includes managing networks, organizational structures, evaluation process and knowledge management systems. In examining the organization and management of the innovation process this study highlights that innovation in the Irish food firms is practiced as a structured activity. Operating like an innovation funnel, the firms dedicate time and effort to accessing the risks involved and to deciding if they should pursue the innovation activities at the costs involved. Innovation forms an integral part of firms' functions and firms are dedicating increasing efforts at managing it. Innovation is advancing from being an activity that generated little or no revenue, to a structured process that has a defined budget and people dedicated to delivering it. Prior studies have also detailed that management of innovation at firms involves comprehensive planning, organising, leading and controlling of its innovation activities (Meffert 1998).

Hauschildt and Salomo (2011) suggest that innovation management involves the processes, planning and functions necessary in innovation oriented organisations especially defining the goals, strategies and decision making. It also comprises of the formation of social relations or networks that include internal and external interactions and the conception and encouragement of information flow. This study suggests that to manage innovative ideas Irish food firms define specific innovation objectives to guide the process. These objectives range from increasing their current market share, improving the quality of their products and services, reducing costs to entering new markets for expanding their portfolios and to stay ahead of competition. The firms constantly engage in short term innovations rolling out an increasing number of incremental innovations. Typically the main objective the firms focus on is expanding the growth of its categories, while long term objectives of entering new markets are pursued by firms to expand their consumer base by innovating for new products or product lines.

Some of the firms allocate defined innovation budgets for their activities at separate innovation stages or as a whole, while most firms use their marketing budget for innovation purposes. Measuring the effectiveness of their innovation activities, so as to gauge how well they conduct their innovation transactions and how can they be better managed, is another technique the Irish food firms employ for managing and creating conducive infrastructure for innovations. The key matrices firms use for measuring the effectiveness of their innovations include revenue or sales generated, household penetration, consumer consumption of the product and the market impact the brand creates. The analysis of the study however also identified that though the range of objectives that firms have for achieving through their innovations is wide, the manner in which they gauge their innovations' value is predominantly in terms of sales achieved or revenue generated.

Organizing for innovation

When looking at the literature on the management of innovation it can be observed that over the years the way innovation is managed has changed significantly (Batterink 2009). With the innovation process increasingly including external parties, such as customers (Baker and Sinkula 2005, Gassmann et al. 2006), suppliers (Ragatz et al. 1997, Petersen et al. 2005), competitors (Hamel et al. 1989) or research organizations like universities (Mora-Valentin et al. 2004, Fontana et al. 2006) the building of linkages and management of interactions in the innovation process has become even more important. Chesbrough (2004) also outlines that in managing the social dynamics of innovation it is important to ensure that these interactions not only fit the current business of the firm but also with the roadmap of future projects.

A stream of research has focused on the role and importance of marketing in innovation. While Erdil et al. (2004) explored the interrelationships between market orientation, firm innovativeness and innovation performance, Liu et al. (2002) and Webster (1992) also suggest that marketing is one of the core aspects in strategizing firm innovativeness. Connection of market orientation with innovation, its management (Vasquéz et al. 2001, Faleiro 2001) and with performance (Agarwal et al. 2003) has also been explored by previous studies.

This study shows that looking at innovation in a structured manner and focusing on understanding the emerging trends in the market and the requirements of consumers, Irish food firms design short term and long term plans for their innovation activities. They keep a record of the emerging trends in the market and analyse how these trends

could affect their businesses. Some firms are beginning to utilize these trends to advance the efficiency of their innovative activity. Not only do they pay attention to the upcoming trends and changing aspects in the food sector, the firms also track any relevant technologies and practices that might have some impact in the future. Devising the firms' strategies and action plans accordingly they focus on maintaining a balance between short term deliverables and long term sustainable innovation pipelines along with retaining equilibrium between expanding their portfolios and maintaining their brand visibility.

However, the study also suggests that even as setting up innovation teams and allocating innovation budgets has become commonplace in the Irish food firms for managing innovation and interactions, the onus of pursuing and managing the innovation transactions of the firms largely depends upon the marketing department. The department not just contributes by way of its budget for innovation at the firm, but is also seen as the department to spearhead innovation and is accountable for the innovation activities the firm engages in.

7.4 Factors Impacting the Openness and Management of the Innovation Process

Stage of the innovation process

While Chesbrough et al. (2006) outlined in bound and out bound open innovation, as the two conceptually separate dimensions of the open innovation process, other studies have categorised the various stages in the open innovation process. Chiaroni et al. (2011) posit that the process of opening up the innovation process follows three stages of unfreezing, moving and institutionalizing. As outlined in the literature review, other five stage models of the open innovation process have been put forward by Fetterhoff and Voelkel (2006) and by Wallin and von Krogh (2010). Bahemia and Squire (2010) argue that being open is not solely a binary choice of whether to adopt open innovation at a firm or not (Chesbrough 2006, Lichtenthaler and Ernst 2009), being open is also about the extent of interactions with external parties for innovations that firms engage in.

Dahlander and Gann (2010) argue that for progressing open innovation research it is necessary to explore innovation as it evolves through its different phases. Advancing this argument, findings of this study using the IVC framework, show that the extent of

openness in innovation process in Irish food firms varies within a firm at the different stages of the innovation process as the innovation progresses.

By examining the internal and external interactions Irish food firms engage in as their innovation evolves through the different phases of the IVC this study found that the first stage of the IVC is the most interactive or open stage of the innovation process, with firms engaging with external parties ranging from their customers, suppliers, consumers, to market research agencies and consultancies; while at the same time conducting brain storming sessions across departments internally for generating ideas for innovation purposes. This stage is also marked by developing the innovation based on the brief received from the retailers and then working collaboratively with them henceforth for the innovation. While in terms of internal interactions, it is about cross functional team meetings and brain storming sessions held for exploring concepts and pulling out ideas from the gathered information. Kline and Rosenberg (1986) also emphasize the importance of sourcing of knowledge inside the business through the performance of R&D that comprises of solving problems all along the process of innovation. Other studies have also emphasised the use of different knowledge sources for innovation (Veugelers and Cassiman 1999, Roper and Love 2005) and suggest the potential complementarities between them. Joshi and Sharma (2004) emphasise the importance of knowledge of customers' preferences in shaping firms' innovation success, similarly Roper et al. (2006) suggest that backward and horizontal knowledge linkages have great value for innovation.

The second phase of the IVC involves converting knowledge or ideas into innovation output. Crepon et al. (1998), Loof and Heshmati (2001) suggest that when firms have strong internal resources, it positively impacts the efficiency with which firms develop new innovations but discourages external knowledge sourcing in firms. This study also suggests that the conversion phase can be regarded as more or less an in-house development stage marked mostly by internal interactions and very limited external exchanges taking place as the innovation progresses. It is focused on the collaborative functioning of the cross departmental teams within the firms for converting the gathered knowledge into an innovation output. Vanhaverbeke et al. (2008) also suggests that firms require developing capabilities to successfully utilize external technological information and market knowledge. They need to build flexible and smooth internal interactions for efficient knowledge distribution and effective integration within, so as to draw benefits for their innovation activities. This study

shows that cross departmental teams comprising of senior managers, sales managers, innovation managers, finance managers, procurement or supply chain managers, marketing managers, new product development managers and managers from the quality control department, commercial managers and brand managers, work together to develop the innovation in-house utilizing primarily the firms' available resources. Exploring this development phase of innovation, Griliches (1992), Love and Roper (1999) also outlined that the effectiveness of a firm's knowledge conversion activities are influenced by the firm's characteristics, the strength of its resource-base, and the firm's managerial and organisational capabilities.

Another aspect identified by this study underlining these detailed internal interactions and very limited external interactions during the conversion phase is that external interactions at this stage in the firms apart from being limited are also very carefully managed. The firms refrain from engaging in external interactions when developing their innovations for fear of giving away information to their competitors even through their suppliers or manufactures who may also cater to their competitors. Roper (2001) suggests that external interactions assist firms in overcoming the initial hurdles encountered in the innovation process, but that once this threshold has been crossed these interactions are less practiced. This study also shows that external interactions the firms engage in are least adopted by the firms at the conversion stage of the IVC and finds that it is the fear of competition that limits the extent of openness in their interactions is at this stage.

The final stage in the IVC is the diffusion of the innovation. Geroski et al. (1993) suggest that this is the phase of the innovation process that influences the firms' performance. In context of this phase of the innovation process Roper et al. (2008) also argue that innovations cannot be exploited until they are introduced. This study details that this stage of the firms' IVC though not as interactive as the idea generation stage is not as closed as the conversion stage either. Although this phase is about the firms' internal teams working towards bringing the innovation to the market, the firms do interact with customers or retail partners for launching the same. The firms open up their innovation activity by collaborating with these external parties to diffuse their innovation into the market. Additionally firms also engage with brand activation agencies and advertising agencies at this stage for promoting their innovation. However, Marino and De Noble (1997), Narver et al. (2004) posit that increasing dependence on a

small number of customers or retail partners leads to loss of bargaining power and thus negatively effects a firm's performance.

While openness with regard to engagement with retail partners is the main focus at this stage of the value chain, for feedback on their innovations' consumer acceptability and performance the firms also rely on market research agencies. Therefore this stage of the value chain also presents evidences of internal interactions as well as open interactions with external parties primarily retail partners in all the firms studied with the focus of launching the innovation in the market and getting feedback on its performance. Doran and O'Leary (2011) explored the potential feedback effects on firms' performance and innovation output and detailed that along with productivity being affected by innovation output, feedback from market and other sources also influence the innovation output of firms. Roper et al. (2008) also find that a firm's performance is positively impacted by innovation output.

Prior studies have highlighted the importance of interactions for innovation (Kline and Rosenberg 1986, Lundvall 1988). Audretsch et al. (1996) suggest that internal and external sources of knowledge may act as complements or substitutes. Researching in an Irish context, Love and Roper (2001), Jordan and O'Leary (2008) and Roper et al. (2008) outline complementarity between the types of interactions. Chiaroni et al. (2011) explored the transition in Italian firms from practicing only internal interactions to external interaction for innovation or in other words their journey from closed to open innovation. Dahlander and Gann (2010) emphasised that it is necessary to elaborate the different combinations of openness. Thus in examining the interactions firms engage in when innovating to explore the extent to which innovation processes are open in firms, the analysis of the cases identified that the interactions both internal and external for innovation take place during each phase of the innovation process in the Irish food firms. However, the findings of this study emphasise that firms are selectively open as the nature and extent of these interaction varies across the different phases of the IVC.

Managerial perceptions

In exploring the innovation process for the extent to which the innovation processes are open, this study also suggests that perceptions managers have with regard to innovation and its openness, impact the stage at which and the extent to which the innovation processes in firms are open.

Although the perception construct has been widely recognized by other fields to affect individual behaviour like those in the psychology and information systems

domains, its significance has not received equal attention in organizational studies (Ong 2004). While prior open innovation studies outline challenges related to organizational and cultural issues as a result of dealing with increased external contacts (Van de Vrande et al. 2009, Savitskaya et al. 2010), Ong (2004) argues that perception affects adoption behaviour, and this study presents an example of how managerial perceptions influence the extent to which innovation processes are open in the Irish food firms.

Firms consider innovation a challenge and engage in elaborate thinking and strategizing when practicing it. Although regarding innovation as a vital activity, firms often limit innovation activity due to financial constraints, as any new innovation requires development time and financial investment which could instead be channelled to the regular products to generate revenues. Therefore there is always a tension within the firm to prioritize between innovation and short term deliverables.

This study suggests that because innovation is not an easy activity to pursue and because it calls for investment both in terms of time and money firms find it challenging to keep innovating given the increasingly competitive market place and economic scenario. As innovations take time to mature and develop, and the resources invested in the same could be used for short term deliverables. This study therefore highlights that management of innovation at the firm isn't only about managing the innovation as such, rather initially and more importantly it is about managing the decisions around being innovative and practicing the innovation activities at the costs involved.

This study suggests that managers believe that although challenging, innovation is an important activity. Furthermore, the analysis suggests that managers perceive innovation as an activity that is in addition to their 'regular' work. Their perception is that new to world innovations are difficult, expensive and need lot of capabilities and resources alongside the day to day work the firm does. Therefore managers are faced with a tension prioritizing between innovation and short term deliverable and so engage in elaborate thinking and strategizing when considering the activity.

Other aspects that managers feel add to the complexities of managing innovation at the firms include, firstly, senior management's ambition of being quite entrepreneurial in the firms' innovations which they consider to be quite difficult at operational level. Secondly the perception of managers is that often there is a mismatch between what consumers need and what they think they need so they have to be very careful in the manner in which they interpret consumer insights and be judicious about managing their innovation spending. Managers feel their interpretation of the

consumer's requirement could be very different from what the consumers actually need, so they have to be completely sure about understanding the consumer insights before engaging in any development.

Similarly perceptions that firms have about external interactions go a long way in explaining openness in the innovation processes. Mattes (2012) suggests that cultural embeddedness of open innovation calls for an open and opportunity based mind-set and it being part of the corporate culture and embraced in all formal and informal cultural activities. This study also identifies perceptions managers have about openness in their innovation practices. Managers believe that their firms have the best of capabilities needed for innovation and hence avoid engaging in external interactions or practice them in a very limited manner. A typical perception is that being the experts or one of the biggest players in the market, others would have very little or nothing to offer to the firm either in terms of knowledge or resources, in an open interactive scenario. If however a firm lacks any capabilities needed for an innovation they did not attempt doing that innovation because managers believe that opening up is a difficult process. Managers believe that collaborative research is difficult owing to the time required and compatibility for collaboration it calls for. Finding the time and a partner who is on the same page, having similar resources and insights about the products, consumers and markets are the most critical factors limiting any such interactions in the manager's opinion.

Open interactions with external parties are also limited as managers believe that such interactions are risky and can lead to the loss of the firm's competitive advantage in the market. The perception is that such interactions may cause the firm to lose its credibility, market image and share in the market because these interaction and collaboration thereafter may project the firm as incapable of doing the innovation on its own. Moreover, their perception is that though such risks could be avoided by opening up to out of category people but these might not add value enough to be practiced over and above the firm's regular operations and would only lead to distractions to the regular operations of the firm.

This study highlights that all the firms studied were completely averse to the idea of open interactions or collaboration with competitors owing to apprehensions around confidentiality issues and because of the increasing competition in the market place. Overall, the perception of the managers of the studied firms with regard to open interactions was that they can only selectively gain from these and the exercise can be

more beneficial for players in the market whose own capabilities are limited, sensitivities less and who can be more adaptable.

This study thus indicates how managerial perceptions of external competitive threats shape the extent of 'openness' in the innovation process. It highlights that the relative low levels of 'openness' in the innovation process is reflective of managerial perceptions about the activity of open interactions with people outside of the firm for innovation purposes.

Firm size

Advancing the understanding of the openness in innovation in food firms in Ireland, this study also observed that the practice of open innovation is influenced by the size of the practicing firms. Van de Vrande et al. (2009) argues that larger firms are more involved in open innovation activities than their smaller counterparts. Other studies also highlight that there are many difference in the innovation strategies of small and large firms (Acs and Audretsch 1990, Vossen 1998). Innovation processes are characteristically more planned, controlled and professionalized in larger firms. In the case of SMEs, formal structures increasingly come in place as they grow and develop. As they grow SMEs are characterised by establishment of specific teams with specialized workers, and introduction of managerial layers, measures and procedures (Greiner 1972). Once a firm reaches a critical size it is capable of formalizing its innovation practices and developing procedures for external interactions, licensing, and collaboration activities. These firms can maintain large and diversified innovation portfolios and thereby have better financial resources. This has significant implications on the practices of open innovation by the firms (Van de Vrande et al. 2009).

Mortara and Minshall (2011) categorize firms on the basis of their approach to open innovation practices as: open innovation conscious adopters, open innovation ad-hoc adopters, open innovation precursors and open innovation communities of practice. Open innovation conscious adopters are the firms that view open innovation as an opportunity to access wide range of innovation possibilities, capabilities and resources to feed the key innovation pipelines. They regard open innovation not just as an opportunity to expand their innovation activities but also as a way to reduce costs and investments. These firms mainly focus on inbound open innovation activities and seldom practice outbound. This group of firms generally have an innovation team or task force implementing external interactions. Firms labelled as open innovation ad-hoc adopters are firms that adopt open innovation only for certain innovation activities or in

specific parts of the firm only. While these firms also focus only on inbound open innovation they do not have specific structures in place for open innovation adoption and implementation. Open innovation precursors are firms that do not formally recognize practicing open innovation but do it. These firms have a history of integrating internal and external resources for innovation and engage in both inbound and outbound open interactions. Finally, open innovation communities of practice are firms that engage in R&D and procurement in partnership that directs them towards initial open innovation thinking

In line with extant research this study outlines that size influences the practices of open innovation at firms. While the smaller Irish food firms studied tended to have limited and more circumstantial interactions with external parties for their innovation activities, the larger firms in the sample engaged in such interactions regularly and more holistically. Also, larger firms in the sample had their innovation activities and interactions more organized with required systems in place as against the smaller firms. Therefore, in terms of Mortara and Minshall's (2011) classification of firms based on open innovation practice, this study suggests that the large Irish food firms of the study can be regarded as conscious open innovation adopters while the practice is more spontaneous in case of the smaller firms.

7.5 Conclusion

In conclusion, the research objective of the study, exploration of firm level innovation processes, with a specific focus on the extent to which these processes are open shows, that Irish food firms are selectively open, with the extent of openness within a firm varying by stage of the innovation process and that managerial perceptions impact the stage, and the extent to which, the innovation process is open.

The contingency approach to management assumes that there is no one best way to organise, and that any one way of organising is not equally effective under all conditions. The right thing to do depends on a complex variety of critical environmental and internal contingencies (Galbraith 1973). The findings of this study also emphasise that although all firms are innovative, they differ in the innovations and interactions in the innovation process due to the perceptions managers have. Similarly while these interactions with external parties are practiced throughout the innovation process the stage of the IVC as the innovation develops again influences the nature and extent of openness in the innovation process. Thus broadly speaking, the extent of openness in

the innovation process in the Irish food firms is contingent on managerial perceptions of competitive threats and the stage of the innovation on the IVC.

Chapter 8

Conclusions

8 CONCLUSIONS

8.1 Introduction

This chapter draws together the conclusions of the thesis, outlining the findings of the study in terms of the research objective (Section 8.2 and 8.3) and the contributions the study makes to the field of innovation (Section 8.4). The limitations of the study are then discussed (Section 8.5) followed by suggestions about avenues for future research (Section 8.6). Finally, implications of the study to practice and policy are outlined (Section 8.7).

8.2 Research Objective

The objective of this study was to explore the innovation process in Irish food firms with a specific focus on the extent to which these processes are open. Despite an increased academic interest in the emerging innovation management paradigm, research on open innovation has primarily been focused on the positive outcomes of practicing open innovation (Van de Vrande et al. 2009). The conceptual ambiguity of the concept remains (Dahlander and Gann 2010) and the question of how firms practice open innovation and the extent to which their innovation processes are open remains largely unanswered.

Gassmann et al. (2010) acknowledge that the practice of open innovation phenomenon is no longer confined to only innovation practitioners mostly active in high-tech industries, but it is getting increasingly widespread, yet a clearer understanding of its mechanisms inside and outside of the firms to benefit from it is missing. Huzingh (2011) argues that an exploration of the process of innovation for external interactions is fundamental to understanding the 'how' and 'why' of open innovation practices.

To address this issue, this study explored: (a) the process of innovation in Irish food for its organization and management; and (b) the extent to which the innovation process is open. The innovation process was explored for setting up of innovation objectives, formation of innovation teams, involvement of senior managers, resource allocation, etc. In order to explore the extent to which the innovation is open in Irish food firms, the IVC framework was employed to examine the interactions at each stage of the innovation process.

8.3 Findings

Exploring the innovation process with a specific focus on the extent to which these processes are open in Irish food firms, the study presents the following findings.

Management of Innovation

Innovation is practiced as a structured activity in the Irish food firms and is organised and managed by way of setting objectives, allocation of budgets, formation of designated innovation teams or task forces and by regular cross departmental meetings for smooth exchanges of information.

While the objectives firms have for carrying out innovation vary across firms in Ireland, the study finds that improving the quality of their goods and services is their key objective. However, in the food sector the key objective for carrying out innovation is increasing market share.

To manage innovation activities firms also measure the effectiveness of their innovations through defined matrices, these though vary across firms, the study finds that they are predominantly in terms of sales achieved.

While the management of innovation at the Irish food firms happens through the range of activities as outlined above, this study finds that it is mostly the responsibility of the marketing department to drive and lead the activity.

Extent of Openness

Identifying that more firms practice internal R&D than external R&D or purchase or licence external knowledge; this study highlights that the food sector firms are the most active in this regard across sectors in Ireland. Moreover, this study also finds that with regard to the external collaborations, the co-operation breadth of firms is generally low, collaborating with 1-3 external partners. Suppliers are the most common collaboration partners followed by customers while the least preferred partners are competitors.

Firms with greater extent of openness could be expected to have high product innovation output, reveals the study and also finds that the extent of openness, measured by level of interactions with external parties, is highest for the food sector firms across sectors in Ireland.

Mapping the firms' significant innovations on the IVC, this study finds that Irish food firms are selectively open as both internal and external interactions take place

during each phase of their innovation process but the nature and extent of these interactions vary at the different stages of the innovation process within the firm. While the first stage, or the idea generation stage is the most interactive or open stage of the innovation process with interactions ranging from their customers, suppliers, consumers, to market research agencies and consultancies. The second stage or the conversion phase is more or less an in-house development stage with mostly internal interactions and very limited external exchanges. The external interactions at the final diffusion stage are largely limited to collaborations with retail partners.

The study finds that while the internal and external interactions complement each other at the idea generation and diffusion phase to different extents, the conversion phase is primarily marked by internal interactions. Moreover, the study finds that it is the competitive threat that limits the openness at the conversion stage of the innovation process. At the diffusion stage interactions are primarily limited to engagements with customers.

These interactions though vary at the different stages of the innovation process. This study finds that the main purpose for these interactions is to gather market insights. Whether to develop understanding about consumers' requirements, their expectations or feedback about the innovations or to develop insights about the trends in the market to inform their innovative offerings, firms engage in external interactions for gathering market insight and therefore managers regard market orientated external interactions as synonymous with being open in the innovation processes.

In exploring the extent of external interactions firms engage in for their innovation activities, this study finds that the relative low levels of 'openness' in the innovation process is reflective of managerial perceptions about the activity of open interactions with people outside of the firm for innovation purposes.

Extant literature outlines that firms' motivation of practicing innovation ranges widely from surviving competition to becoming the market leaders; from entering new markets to ensuring long term growth (Brown and Eisenhardt 1995). This study finds that firms have different notions about being open in their innovation. While some firms see that by being market oriented they are interacting with customers, suppliers and consumers and these are parties outside of their firms so they are open in their innovation. Others, despite interactions with these external parties, do not consider themselves as open because being open is not embedded in their innovation strategy.

With regard to the process of adoption, identifying that inbound open innovation is more common in firms than outbound open innovation, the study also shows that smaller firms practice open innovation on an ad hoc basis while large firms practice it more consciously.

In conclusion, the findings of the study indicate that Irish food firms are selectively open in their innovation activities. The interview data shows that the activity is driven by the marketing department and managed by setting objectives, by formation of teams, allocating budgets and measuring of innovation effectiveness. They follow a similar pattern of innovation process, progressing through idea generation, development and launch stages and engage in external interactions at all stages but nature and extent of these interactions vary through the stages.

The extent to which the innovation processes are open in the Irish food firms is contingent on the perceptions managers have about being open and the stage of the innovation process as the innovation progresses in the firm.

The contingency approach to management assumes that management effectiveness is contingent, or dependent, upon the interplay between the application of management behaviours and specific situations. The complex environmental conditions and internal contingencies define the correct way to function (Burns and Stalker 1961). The findings of this study also outline that while firms are innovative and engage in external interactions with parties outside of the firm, their perceptions about practicing open innovation differ and this influences the extent to which they interact with the external parties. Similarly, the findings also emphasise that innovations though progresses as an integrated value chain in all firms, the stage of the innovation impacts the extent and nature of the interactions the firms engage in.

Thus, this study finds that the extent to which the innovation processes are open in the Irish food firms is contingent on managerial perceptions of open innovation and the stage of the innovation process as the innovation develops.

8.4 Contributions

The study explored the extent to which innovation processes are open in Irish food firms by examining the innovation process in terms of its management, and analysing the interactions that take place during the innovation process as it advances along the IVC. The contributions of this study therefore advance the understanding of open innovation for the extent to which interactions are practiced during the innovation process.

Campbell (1990) defined theory as a collection of assertions or proposals that recognise the important variables and the reason for their importance. It identifies the inter relation between these variables and conditions under which they are or are not related. Christensen and Sundahl (2001, p2) asserted that ‘a theory specifies what causes what, and why, and under what circumstances.’ However Whetten (1989) suggested that scholars generally do not develop new theory, they rather make additions to theories that are already established. He further outlined that the three building blocks for this include exploring the What, How and Why.

This study’s, ‘what’, ‘how’, and ‘why’ includes developing a comprehensive understanding of ‘how’ the innovation process unfolds in firms; ‘how’ is it organised and managed in terms of innovation teams, involvement of senior managers, resource allocation, etc.; ‘what’ firms mean by being open; their understanding of the concept of open innovation and ‘how’ it is practiced in the firms? ‘What’ are the interactions that firms engage in during each stage of the innovation process from conceptualization to commercialization as they develop their innovation; ‘how’ do these interactions take place and finally elucidating the why behind the nature and extent of these interactions.

The contributions this research makes are as follows. The study contributes to existing research that has sought to measure the extent of open innovation in Irish firms (Roper et al. 2008), by showing that firms in Ireland have a very low extent of openness as measured by the level of interactions with external parties. However, relative to other sectors it is highest for the food sector, where firms practice inbound more than outbound open innovation and collaborate mostly with their suppliers and customers. Also, the extent of openness has a positive relationship with the product innovation output.

Prior studies discuss innovation processes as being open or closed; and detail the practice of open innovation in the innovation process by strategies like pooled R&D or

technology transfer (Lichtenthaler and Lichtenthaler 2009, Dahlander and Gann 2010). While some studies equate openness with the number of external sources of innovation used (Laursen and Salter 2006) others consider openness as revealing ideas previously hidden inside a firm (Henkel 2006). However, a binary representation of firms' openness misses the extent to which firms collaborate with external parties. This study contributes an analysis of the innovation process for the extent to which the innovation process is open at the different stages, as interactions with external parties can vary within a firm at different stages of innovation. By using the IVC, this study shows that within an organization, there are different levels of external engagements or openness at the various stages of the IVC; that is the nature and extent to which innovation processes are open in firms differ by the stage of the innovation process. This has implications for how organisations implement open innovation and for how open innovation is researched. For example, managers may need to vary how they seek to open the innovation process by stage of the innovation value chain.

This study contributes to research that seeks to explain why firms may not engage in open innovation practices or are slow in adoption and barriers to open innovation adoption (Van de Vrande et al. 2009, Savitskaya et al. 2010) by showing that managerial perceptions of external competitive threats limit the practice of open innovation, mostly at the conversion stage and with competitors in this industry context. The perception aspect has been widely recognized as affecting individual behaviour in fields like psychology and information systems domains, however in organizational studies it has received limited attention (Ong 2004). This study presents an example of how managerial perceptions impact and limit firms from being open in their innovation processes. This finding may extend the existing explanation of why firms may not engage in some open innovation practices.

Highlighting that firms are selectively open in their innovation activities as their innovations progress from conceptualization stage to commercialization stage, the study contributes to the innovation literature that the extent of external interactions in the innovation process in Irish food firms is contingent on the perceptions managers have about being open and the stage of the innovation process as the innovation progresses in the firm.

Marketing literature highlights that firms interact with their suppliers, manufacturers and customers for gathering market insights (Dyer and Singh 1998, Klein et al. 2007). With regard to the depth and breadth of open innovation, the open

innovation literature also outlines suppliers and customers as collaboration partners in practicing open innovation and asserts that the number of external collaborations is an indicator and measure of the degree of open innovation practiced by a firm (Laursen, and Salter 2006, Vahter et al. 2012). While the literature on open innovation has emerged largely independent of extant research in the marketing field, this study contributes to the research on open innovation by exploring how the concept of open innovation overlaps with the existing concept of market orientation in the marketing literature.

The study finds that being market driven, firms interact with parties outside of their organization owing to their orientation towards the market, for gathering market insights to inform their innovations and managers thus regard market orientated external interactions as synonymous with openness in their innovation process. But open innovation is not just gathering market insights, it is ‘the proportion of innovations generated in co-operation / collaboration with universities, research organisations, customers and/or suppliers, other companies, venture capitalists and industry / cluster associations or business assistance centres as opposed to innovations that are entirely generated within the company’ (Chesbrough 2006, p 1-12). Also recent studies argue that introduction and practice of open innovation may be meaningless for a firm unless it is embedded into a firm’s innovation strategy (Vanhaverbeke 2013). Thus by exploring how the concept of open innovation relates to the existing concept of market orientation, this study contributes an argument that external interactions for market orientation can be regarded as indicators of openness in the innovation process.

Finally, this research contributes to the development of an emerging work that extends the research on open innovation in non-‘high-tech’ contexts. The open innovation literature highlights that since the early work of Chesbrough, the development of the open innovation paradigm has drawn heavily on research done in specific contexts. The initial studies on the concept were descriptive and focused on successful early adopters (Chesbrough and Crowther 2006, Huston and Sakkab 2006). However, as Huizingh (2011) argues all lessons cannot be learnt from early adopters and what is learnt may not be applicable to firms that are followers therefore this study by developing an emerging work on open innovation in a new sector contributes to the open innovation literature.

8.5 Limitations of the Research

As this study focused research on the food sector only, a limitation of the study was that the cases are limited to only one industry sector and this restricts the generalizability of the findings. Moreover getting access for research in the food firms and getting time with the senior managers to interview them about the firms' innovation activities was very difficult and this resulted in limiting the number of interviewees in each firm. Less number of interviews in each firm also restricted a detailed analysis in the study.

Almost all firms that were interviewed detailed a product innovation as their significant innovation that was then studied for understanding their practice, management and extent of open innovation. Although the interviewees did mention that innovation in their businesses is much broader than only new product development yet the significant innovation outlined was a product innovation. This lack of variety of the type of innovation detailed by the firms limited exploring any variations that may occur in the practice of open innovation with regard to different types of innovation.

In analysing the community innovation survey data there was inconsistency of the data across European Union countries. This meant that it was difficult to analyse and compare innovation activities of food firms in Ireland against other European Union countries. Moreover, although CIS data 2002, 2004, 2006 and 2008 was sourced from Eurostat, only CIS 2008 could be used for the study as the food sector firms could not be identified in the pre-2008 CIS data. This limited the use of available data in conducting a detailed study.

More generally, given primarily the qualitative nature of the research the traditional, statistical measures of reliability cannot confirm the findings. The outcomes of qualitative research cannot be viewed as facts or objective truth given the nature of the research that's the result of interactions between the researcher and the researched (Silverman 2000). Thus it is not possible to broadly generalise the findings. The findings however, highlight issues of interest to the concerned community of academics and practitioners.

8.6 Suggestions for Future Research

This research explores the extent to which innovation processes are open in firms; however a more in depth study of opening up of the innovation process can detail how

firms open their innovation activities. Moreover the conceptual ambiguity of open innovation as outlined in this study, an instrument that measures openness of firms with regard to defined criteria can help establish a baseline of what being open is. Thus future research that seeks to develop a measurement instrument for open innovation can further clarify the ambiguity surrounding the concept.

While this research identifies few factors on which the openness of the innovation processes in firms is contingent on, there is limited understanding of the benefits versus the problems of practicing open innovation. Future research advancing the understanding about the contingencies under which practicing open innovation is a beneficial strategy would be worthwhile.

The unit of analysis of the study has been the firm, examining the practice of open innovation in firms as they develop their innovations. A detailed analysis of the open innovations the firms do can be conducted by studying all the stakeholders involved in the open innovation. For e.g. the suppliers, customers, retail partners or any other external parties firms interact with for their innovations can be studied to explore the open innovation from different perspectives.

While the study focuses only on firm-level understanding of the practice of open innovation, future research may look at exploring industry level dynamics of open innovation practices. Practicing open innovation could enhance knowledge sharing and efficient innovations can be developed by collective utilization of resources. How these learning effects of open innovation practices at firm level can impact the productivity of the industry can be explored by further research.

Methodologically speaking, this research examines the practice of open innovation in firms only in a single sector and this limits the generalizability of the results to other sectors/ industries with characteristics different from the studied food sector. Future research can therefore be aimed at investigating the practices of open innovation by firms across different sectors. A comparative multiple case study design may be helpful in exploring how open innovation practices across the IVC vary in different industries. Additionally, a longitudinal large scale research design may shed more light on the factors influencing the practice of open innovation along the IVC.

8.7 Implication for Practice and Policy

For Managers

This research is of value to managers who practice innovation and engage in the management of interactions both external and internal during the process of innovation, as it indicates the potential factors that may impact the practice and management of open innovation activities by firms. It identifies a few contingencies, which potentially have a bearing on the practice and management of the open innovation paradigm.

The study recognizes the impact managerial perceptions have upon innovation activities and how interactions vary at different stages as the innovation progresses. Understanding managerial perceptions about innovation and interactions involved in innovation can enable unbiased assessment of the need, importance and practice of opening the innovation process by the firms.

Recognizing the variations in the interactions at the different phases of innovation can help tailoring management practices individually for each phase that can further facilitate a better understanding and flexible practice and management of open innovation.

For Policy Makers

Recognising research and innovation as the key to economic recovery the government has placed it at the centre of its 2020 strategy. Government reports like EU Framework Programme for Research and Innovation: Ireland's Strategy and Target for Participation (2014-2020) and Sharing our Future: Ireland 2025 (2009) and Strategy for Science, Technology and Innovation 2006-2013 (2006) increasingly outline Ireland's ambition to become a 'smart' economy and leader in innovation and that one of the central pillars of the government's current economic policy in Ireland is to develop the innovation capacity of Irish firms.

The government also recognizes that collaboration and co-operation between firms is a fertile source of innovation. To prosper and develop in the coming decade, the Irish food and drink industry must itself become 'smart' emphasises the Food Harvest 2020 report. This involves developing new working relationships in the food chain, channelling new product streams, directing its resources at new markets and augmenting levels of productivity and competitiveness. The report further suggests that strong, dynamic linkages with public research organisations and sophisticated technology transfer will be fundamental to continuing an innovative environment and improving the

competitiveness of the sector. The sector should therefore work towards getting ‘smart’ and must recognise new opportunities for collaboration across the food supply chain and with other competitors.

The insights presented in this study can help firms better understand the practice, management and extent of open innovation and can facilitate them to develop and benefit from collaborative innovation opportunities, possibly with a greater likelihood of success.

Since activities and initiatives of the private sector ultimately define innovation policies, it is vital that policy mirrors this evolution. While large companies have acted as the engines of innovation on which innovation policies have relied previously, this study shows that the innovation processes in firms involve contributors outside their organizations. Therefore, innovation policy also needs to look beyond single organizations, i.e. development of an innovation policy in the context of an increasingly open approach to innovation. Policies might include innovation policies that focus on education and human capital development by supporting enhanced mobility during graduate training; financing open innovation; supporting the formation of university spin-offs to commercialise research discoveries; increasing the pool of funds available for venture capital investment; and adoption of a balanced approach to intellectual property, by reducing transaction costs for intellectual property or by fostering the growth of IP intermediaries. Government can also support private commercialisation of government funded technologies and initiate the use of open innovation processes in government procurement.

Concluding Remark

Innovation is a subject of increasing importance at government level, at industry level, at company level and at project level. While decades of research has examined and discovered its varying aspects, innovation is still considered as a managerial black box, with much to be revealed. The findings of this study contribute to the exploration of the concept of innovation a bit further.

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Appendix

The Community Innovation Survey 2008 (CIS 2008)

THE HARMONISED SURVEY QUESTIONNAIRE

The Community Innovation Survey 2008

FINAL November 28, 2008

This survey collects information on your enterprise's innovations and innovation activities between 2006 and 2008 inclusive.

An innovation is the introduction of a new or significantly improved product, process, organisational method, or marketing method by your enterprise. The innovation must be new to your enterprise, although it could have been originally developed by other enterprises.

The questions on innovation activities only refer to product and process innovations.

Please complete **all** questions, unless otherwise instructed.

Person we should contact if there are any queries regarding the form:

Name: _____
Job title: _____
Organisation: _____
Phone: _____
Fax: _____
E-mail: _____

1. General information about the enterprise

Name of enterprise _____ ID
 Address¹ _____ NUTS
 Postal code _____ Main activity² _____ NACE

1.1 In 2008, was your enterprise part of an enterprise group? (A group consists of two or more legally defined enterprises under common ownership. Each enterprise in the group can serve different markets, as with national or regional subsidiaries, or serve different product markets. The head office is also part of an enterprise group.) GP

Yes In which country is the head office of your group located?³ _____ HO
 No

If your enterprise is part of an enterprise group: Please answer all further questions only for the enterprise for which you are responsible in [your country]. Exclude all subsidiaries or parent enterprises.

1.2 In which geographic markets did your enterprise sell goods and/or services during the three years 2006 to 2008?

	Yes	No	
A. Local / regional within [your country]	<input type="checkbox"/>	<input type="checkbox"/>	MARLOC
B. National (other regions of [your country])	<input type="checkbox"/>	<input type="checkbox"/>	MARNAT
C. Other European Union (EU), EFTA, or EU candidate countries*	<input type="checkbox"/>	<input type="checkbox"/>	MAREUR
D. All other countries	<input type="checkbox"/>	<input type="checkbox"/>	MAROTH

Which of these geographic areas was your largest market in terms of turnover between 2006 and 2008? (Give corresponding letter) _____ LARMAR

*: Include the following countries: Austria, Belgium, Bulgaria, Croatia, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Italy, Ireland, Latvia, Liechtenstein, Lithuania, Luxembourg, Macedonia, Malta, Netherlands, Norway, Poland, Portugal, Romania, Slovenia, Slovakia, Switzerland, Turkey, Spain, Sweden and the United Kingdom.

¹ NUTS 2 code

² NACE Rev.2 (4 digit code)

³Country code according to ISO standard

2. Product (good or service) innovation

A product innovation is the market introduction of a **new** or **significantly** improved good or service with respect to its capabilities, user friendliness, components or sub-systems.

- Product innovations (new or improved) must be new to your enterprise, but they do not need to be new to your market.
- Product innovations could have been originally developed by your enterprise or by other enterprises.

2.1 During the three years 2006 to 2008, did your enterprise introduce:

	Yes	No	
New or significantly improved goods. (Exclude the simple resale of new goods purchased from other enterprises and changes of a solely aesthetic nature.)	<input type="checkbox"/>	<input type="checkbox"/>	INPDGD
New or significantly improved services.	<input type="checkbox"/>	<input type="checkbox"/>	INPDSV

If no to both options, go to section 3, otherwise:

2.2 Who developed these product innovations?

<i>Select the most appropriate option only</i>	INPDTW
Mainly your enterprise or enterprise group	<input type="checkbox"/>
Mainly your enterprise together with other enterprises or institutions	<input type="checkbox"/>
Mainly other enterprises or institutions	<input type="checkbox"/>

2.3 Were any of your product innovations during the three years 2006 to 2008:

	Yes	No	
New to your market? Your enterprise introduced a new or significantly improved good or service onto your market before your competitors (it may have already been available in other markets)	<input type="checkbox"/>	<input type="checkbox"/>	NEWMKT
Only new to your firm? Your enterprise introduced a new or significantly improved good or service that was already available from your competitors in your market	<input type="checkbox"/>	<input type="checkbox"/>	NEWFRM

Using the definitions above, please give the percentage of your total turnover⁴ in 2008 from:

New or significantly improved goods and services introduced during 2006 to 2008 that were new to your market	TURNMAR <table border="1" style="display: inline-table; vertical-align: middle;"> <tr> <td style="width: 20px; height: 20px;"></td> <td style="width: 20px; height: 20px;"></td> <td style="width: 20px; height: 20px;"></td> </tr> </table> %			
New or significantly improved goods and services introduced during 2006 to 2008 that were only new to your firm	TURNIN <table border="1" style="display: inline-table; vertical-align: middle;"> <tr> <td style="width: 20px; height: 20px;"></td> <td style="width: 20px; height: 20px;"></td> <td style="width: 20px; height: 20px;"></td> </tr> </table> %			
Goods and services that were unchanged or only marginally modified during 2006 to 2008 (include the resale of new goods or services purchased from other enterprises)	TURNUNG <table border="1" style="display: inline-table; vertical-align: middle;"> <tr> <td style="width: 20px; height: 20px;"></td> <td style="width: 20px; height: 20px;"></td> <td style="width: 20px; height: 20px;"></td> </tr> </table> %			
Total turnover in 2008	<table border="1" style="display: inline-table; vertical-align: middle;"> <tr> <td style="width: 20px; height: 20px; text-align: center;">1</td> <td style="width: 20px; height: 20px; text-align: center;">0</td> <td style="width: 20px; height: 20px; text-align: center;">0</td> </tr> </table> %	1	0	0
1	0	0		

⁴ For Credit institutions: Interests receivable and similar income, for insurance services: Gross premiums written

3. Process innovation

A process innovation is the implementation of a **new** or **significantly** improved production process, distribution method, or support activity for your goods or services.

- Process innovations must be new to your enterprise, but they do not need to be new to your market.
- The innovation could have been originally developed by your enterprise or by other enterprises.
- Exclude purely organisational innovations – these are covered in section 8.

3.1 During the three years 2006 to 2008, did your enterprise introduce:

	Yes	No	
New or significantly improved methods of manufacturing or producing goods or services	<input type="checkbox"/>	<input type="checkbox"/>	<i>INPSPD</i>
New or significantly improved logistics, delivery or distribution methods for your inputs, goods or services	<input type="checkbox"/>	<input type="checkbox"/>	<i>INPSLG</i>
New or significantly improved supporting activities for your processes, such as maintenance systems or operations for purchasing, accounting, or computing	<input type="checkbox"/>	<input type="checkbox"/>	<i>INPSSU</i>

If no to all options, go to section 4, otherwise:

3.2 Who developed these process innovations?

<i>Select the most appropriate option only</i>	<i>INPCSW</i>
Mainly your enterprise or enterprise group	<input type="checkbox"/>
Mainly your enterprise together with other enterprises or institutions	<input type="checkbox"/>
Mainly other enterprises or institutions	<input type="checkbox"/>

3.3 Were any of your process innovations introduced between 2006 and 2008 new to your market?

	<i>INPSNM</i>
Yes	<input type="checkbox"/>
No	<input type="checkbox"/>
Do not know	<input type="checkbox"/>

4. Ongoing or abandoned innovation activities for process and product innovations

Innovation activities include the acquisition of machinery, equipment, software, and licenses; engineering and development work, industrial design, training, marketing and R&D when they are *specifically* undertaken to develop and/or implement a product or process innovation. Also include basic R&D as an innovation activity even when not related to a product and/or process innovation.

4.1 During 2006 to 2008, did your enterprise have any innovation activities that did not result in a product or process innovation because the activities were:

	Yes	No	
Abandoned or suspended before completion	<input type="checkbox"/>	<input type="checkbox"/>	<i>INABA</i>
Still ongoing at the end of the 2008	<input type="checkbox"/>	<input type="checkbox"/>	<i>INONG</i>

If your enterprise had no product or process innovations or innovation activity during 2006 to 2008 (no to all options in questions 2.1, 3.1, and 4.1), go to section 8.

Otherwise, go to section 5

5. Innovation activities and expenditures for process and product innovations

5.1 During the three years 2006 to 2008, did your enterprise engage in the following innovation activities:

		Yes	No	
In-house R&D	Creative work undertaken within your enterprise to increase the stock of knowledge for developing new and improved products and processes (include software development in-house that meets this requirement)	<input type="checkbox"/>	<input type="checkbox"/>	<i>RRDIN</i>
	If yes, did your enterprise perform R&D during 2006 to 2008: Continuously (your enterprise has permanent R&D staff in-house)	<input type="checkbox"/>		<i>RDENG</i>
External R&D	Same activities as above, but performed by other enterprises (including other enterprises or subsidiaries within your group) or by public or private research organisations and purchased by your enterprise	<input type="checkbox"/>	<input type="checkbox"/>	<i>RRDEX</i>
Acquisition of machinery, equipment and software	Acquisition of advanced machinery, equipment and computer hardware or software to produce new or significantly improved products and processes	<input type="checkbox"/>	<input type="checkbox"/>	<i>RMAC</i>
Acquisition of external knowledge	Purchase or licensing of patents and non-patented inventions, know-how, and other types of knowledge from other enterprises or organisations for the development of new or significantly improved products and processes	<input type="checkbox"/>	<input type="checkbox"/>	<i>ROEK</i>
Training for innovative activities	Internal or external training for your personnel specifically for the development and/or introduction of new or significantly improved products and processes	<input type="checkbox"/>	<input type="checkbox"/>	<i>RTR</i>
Market introduction of innovations	Activities for the market introduction of your new or significantly improved goods and services, including market research and launch advertising	<input type="checkbox"/>	<input type="checkbox"/>	<i>RMAR</i>
Other	Other activities to implement new or significantly improved products and processes such as feasibility studies, testing, routine software development, tooling up, industrial engineering, etc.	<input type="checkbox"/>	<input type="checkbox"/>	<i>RPRE</i>

5.2 Please estimate the amount of expenditure for each of the following four innovation activities in 2008 only. (Include personnel and related costs)⁵

If your enterprise had no expenditures in 2008, please

fill in '0'

In-house R&D (Include capital expenditures on buildings and equipment specifically for R&D) *RRDINX*

Purchase of external R&D *RRDEXX*

Acquisition of machinery, equipment and software (Exclude expenditures on equipment for R&D) *RMACX*

Acquisition of external knowledge *ROEKX*

Total of these four innovation expenditure categories *RTOT*

5.3 During the three years 2006 to 2008, did your enterprise receive any public financial support for innovation activities from the following levels of government? Include financial support via tax credits or deductions, grants, subsidised loans, and loan guarantees. Exclude research and other innovation activities conducted entirely for the public sector under contract.

1	Yes	No	
Local or regional authorities	<input type="checkbox"/>	<input type="checkbox"/>	<i>FUNLOC</i>
Central government (including central government agencies or ministries)	<input type="checkbox"/>	<input type="checkbox"/>	<i>FUNGMT</i>
The European Union (EU)	<input type="checkbox"/>	<input type="checkbox"/>	<i>FUNEU</i>
If yes, did your enterprise participate in the EU 6 th or 7 th Framework Programme for Research and Technical Development?	<input type="checkbox"/>	<input type="checkbox"/>	<i>FUNRTD</i>

6. Sources of information and co-operation for innovation activities

6.1 During the three years 2006 to 2008, how important to your enterprise's innovation activities were each of the following information sources? Please identify information sources that provided information for new innovation projects or contributed to the completion of existing innovation projects.

2	Information source	Degree of importance				
		High	Medium	Low	Not used	
		<i>Tick 'not used' if no information was obtained from a source.</i>				
Internal	Within your enterprise or enterprise group	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<i>SENTG</i>
Market sources	Suppliers of equipment, materials, components, or software	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<i>SSUP</i>

⁵ Give expenditure data in 000's of national currency units to eight digits.

Appendix 1: Community Innovation Survey Questionnaire

	Clients or customers	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	SCLI
	Competitors or other enterprises in your sector	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	SCOM
	Consultants, commercial labs, or private R&D institutes	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	SINS
Institutional sources	Universities or other higher education institutions	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	SUNI
	Government or public research institutes	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	SGMT
Other sources	Conferences, trade fairs, exhibitions	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	SCON
	Scientific journals and trade/technical publications	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	SJOU
	Professional and industry associations	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	SPRO

6.2 During the three years 2006 to 2008, did your enterprise co-operate on any of your innovation activities with other enterprises or institutions? Innovation co-operation is active participation with other enterprises or non-commercial institutions on innovation activities. Both partners do not need to commercially benefit. Exclude pure contracting out of work with no active co-operation.

- Yes
 No **(Please go to question 7.1)** CO

6.3 Please indicate the type of innovation co-operation partner by location

(Tick all that apply)

Type of co-operation partner	[Your country]	Other Europe*	United States	China or India	All other countries
A. Other enterprises within your enterprise group	<input type="checkbox"/> Co11	<input type="checkbox"/> Co12	<input type="checkbox"/> Co13	<input type="checkbox"/> Co14	<input type="checkbox"/> Co15
B. Suppliers of equipment, materials, components, or software	<input type="checkbox"/> Co21	<input type="checkbox"/> Co22	<input type="checkbox"/> Co23	<input type="checkbox"/> Co24	<input type="checkbox"/> Co25
C. Clients or customers	<input type="checkbox"/> Co31	<input type="checkbox"/> Co32	<input type="checkbox"/> Co33	<input type="checkbox"/> Co34	<input type="checkbox"/> Co35
D. Competitors or other enterprises in your sector	<input type="checkbox"/> Co41	<input type="checkbox"/> Co42	<input type="checkbox"/> Co43	<input type="checkbox"/> Co44	<input type="checkbox"/> Co45
E. Consultants, commercial labs, or private R&D institutes	<input type="checkbox"/> Co51	<input type="checkbox"/> Co52	<input type="checkbox"/> Co53	<input type="checkbox"/> Co54	<input type="checkbox"/> Co55
F. Universities or other higher education institutions	<input type="checkbox"/> Co61	<input type="checkbox"/> Co62	<input type="checkbox"/> Co63	<input type="checkbox"/> Co64	<input type="checkbox"/> Co65
G. Government or public research institutes	<input type="checkbox"/> Co71	<input type="checkbox"/> Co72	<input type="checkbox"/> Co73	<input type="checkbox"/> Co74	<input type="checkbox"/> Co75

*: Include the following European Union (EU) countries, EFTA, or EU candidate countries: Austria, Belgium, Bulgaria, Croatia, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Italy, Ireland, Latvia, Liechtenstein, Lithuania, Luxembourg, Macedonia, Malta, Netherlands, Norway, Poland, Portugal, Romania, Slovakia, Slovenia, Switzerland, Turkey, Spain, Sweden and the United Kingdom.

6.4 Which type of co-operation partner did you find the most valuable for your enterprise's innovation activities? (Give corresponding letter) _____ PMOS

7. Innovation objectives during 2006-2008

7.1 How important were each of the following objectives for your activities to develop product (good or service) or process innovations between 2006 and 2008?

If your enterprise had several projects for product and process innovations, make an overall evaluation

	High	Medium	Low	Not relevant	
Increase range of goods or services	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	ORANGE
Replace outdated products or processes	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	OREPL
Enter new markets	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	OENMK
Increase market share	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	OIMKS
Improve quality of goods or services	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	OQUA
Improve <i>flexibility</i> for producing goods or services	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	OFLEX
Increase <i>capacity</i> for producing goods or services	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	OCAP
Improve health and safety	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	OHES
Reduce labour costs per unit output	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	OLBR

8. Organisational innovation

An organisational innovation is a new organisational method in your enterprise's business practices (including knowledge management), workplace organisation or external relations that has not been previously used by your enterprise.

- It must be the result of strategic decisions taken by management.
- Exclude mergers or acquisitions, even if for the first time.

8.1 During the three years 2006 to 2008, did your enterprise introduce:

	Yes	No	
New business practices for organising procedures (i.e. supply chain management, business re-engineering, knowledge management, lean production, quality management, etc)	<input type="checkbox"/>	<input type="checkbox"/>	ORGBUP
New methods of organising work responsibilities and decision making (i.e. first use of a new system of employee responsibilities, team work, decentralisation, integration or de-integration of departments, education/training systems, etc)	<input type="checkbox"/>	<input type="checkbox"/>	ORGWKP
New methods of organising external relations with other firms or public institutions (i.e. first use of alliances, partnerships, outsourcing or sub-contracting, etc)	<input type="checkbox"/>	<input type="checkbox"/>	ORGEXR

If no to all options, go to section 9.

Otherwise, go to question 8.2

8.2 How important were each of the following objectives for your enterprise's organisational innovations introduced between 2006 and 2008 inclusive?

If your enterprise introduced several organisational innovations, make an overall evaluation

1	High	Medium	Low	Not relevant	
Reduce time to respond to customer or supplier needs	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	ORORED
Improve ability to develop new products or processes	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	OROABL
Improve quality of your goods or services	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	OROQUA
Reduce costs per unit output	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	ORORCO
Improve communication or information sharing within your enterprise or with other enterprises or institutions	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	OROCIN

9. Marketing innovation

A marketing innovation is the implementation of a new marketing concept or strategy that differs significantly from your enterprise's existing marketing methods and which has not been used before.

- It requires significant changes in product design or packaging, product placement, product promotion or pricing.
- Exclude seasonal, regular and other routine changes in marketing methods.

9.1 During the three years 2006 to 2008, did your enterprise introduce:

	Yes	No	
Significant changes to the aesthetic design or packaging of a good or service (exclude changes that alter the product's functional or user characteristics – these are product innovations)	<input type="checkbox"/>	<input type="checkbox"/>	MKTDGP
New media or techniques for product promotion (i.e. the first time use of a new advertising media, a new brand image, introduction of loyalty cards, etc)	<input type="checkbox"/>	<input type="checkbox"/>	MKTPDP
New methods for product placement or sales channels (i.e. first time use of franchising or distribution licenses, direct selling, exclusive retailing, new concepts for product presentation, etc)	<input type="checkbox"/>	<input type="checkbox"/>	MKTPDL
New methods of pricing goods or services (i.e. first time use of variable pricing by demand, discount systems, etc)	<input type="checkbox"/>	<input type="checkbox"/>	MKTPRI

If no to all options, go to section 10.

Otherwise, go to question 9.2

9.2 How important were each of the following objectives for your enterprise's marketing innovations introduced between 2006 and 2008 inclusive?

If your enterprise introduced several marketing innovations, make an overall evaluation

2	High	Medium	Low	Not relevant	
Increase or maintain market share	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	OMKTS
Introduce products to new customer groups	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	OMKTCG
Introduce products to new geographic markets	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	OMKTGM

10. Innovations with environmental benefits

An environmental innovation is a new or significantly improved product (good or service), process, organizational method or marketing method that creates environmental benefits compared to alternatives.

- The environmental benefits can be the primary objective of the innovation or the result of other innovation objectives.
- The environmental benefits of an innovation can occur during the production of a good or service, or during the after sales use of a good or service by the end user.

10.1 During the three years 2006 to 2008, did your enterprise introduce a product (good or service), process, organisational or marketing innovation with any of the following environmental benefits?

	Yes	No	
<i>Environmental benefits from the production of goods or services within your enterprise</i>			
Reduced material use per unit of output	<input type="checkbox"/>	<input type="checkbox"/>	ECOMAT
Reduced energy use per unit of output	<input type="checkbox"/>	<input type="checkbox"/>	ECOEN
Reduced CO ₂ 'footprint' (total CO ₂ production) by your enterprise	<input type="checkbox"/>	<input type="checkbox"/>	ECOCO
Replaced materials with less polluting or hazardous substitutes	<input type="checkbox"/>	<input type="checkbox"/>	ECOSUB
Reduced soil, water, noise, or air pollution	<input type="checkbox"/>	<input type="checkbox"/>	ECOPOL
Recycled waste, water, or materials	<input type="checkbox"/>	<input type="checkbox"/>	ECOREC
<i>Environmental benefits from the after sales use of a good or service by the end user</i>			
Reduced energy use	<input type="checkbox"/>	<input type="checkbox"/>	ECOENU
Reduced air, water, soil or noise pollution	<input type="checkbox"/>	<input type="checkbox"/>	ECOPOS
Improved recycling of product after use	<input type="checkbox"/>	<input type="checkbox"/>	ECOREA

Appendix 1: Community Innovation Survey Questionnaire

10.2 During 2006 to 2008, did your enterprise introduce an environmental innovation in response to:

	Yes	No	
Existing environmental regulations or taxes on pollution	<input type="checkbox"/>	<input type="checkbox"/>	ENREG
Environmental regulations or taxes that you expected to be introduced in the future	<input type="checkbox"/>	<input type="checkbox"/>	ENREGF
Availability of government grants, subsidies or other financial incentives for environmental innovation	<input type="checkbox"/>	<input type="checkbox"/>	ENGRA
Current or expected market demand from your customers for environmental innovations	<input type="checkbox"/>	<input type="checkbox"/>	ENDEM
Voluntary codes or agreements for environmental good practice within your sector	<input type="checkbox"/>	<input type="checkbox"/>	ENAGR

10.3 Does your enterprise have procedures in place to regularly identify and reduce your enterprise's environmental impacts? (For example preparing environmental audits, setting environmental performance goals, ISO 14001 certification, etc).

ENVID

- Yes: implemented before January 2006
- Yes: Implemented or significantly improved after January 2006
- No

11. Basic economic information on your enterprise

11.1 What was your enterprise's total turnover for 2006 and 2008?⁶ Turnover is defined as the market sales of goods and services (Include all taxes except VAT⁷).

<p>2006</p> <div style="border: 1px solid black; width: 100%; height: 20px; display: flex; justify-content: space-between;"> </div> <p style="text-align: center;">TURN06</p>	<p>2008</p> <div style="border: 1px solid black; width: 100%; height: 20px; display: flex; justify-content: space-between;"> </div> <p style="text-align: center;">TURN08</p>
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11.2 What was your enterprise's total number of employees in 2006 and 2008?⁸

<p>2006</p> <div style="border: 1px solid black; width: 100%; height: 20px; display: flex; justify-content: space-between;"> </div> <p style="text-align: center;">EMP06</p>	<p>2008</p> <div style="border: 1px solid black; width: 100%; height: 20px; display: flex; justify-content: space-between;"> </div> <p style="text-align: center;">EMP08</p>
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⁶ Give turnover in '000 of national currency units to nine digits.

⁷ For Credit institutions: Interests receivable and similar income; for Insurance services: Gross premiums written

⁸ Annual average. If not available, give the number of employees at the end of each year. Give figures to six digits.

Appendix 2: Interview Guide

Interview guide

Date:

Firm:

Number of employees in the organization:

Participant/ Title:

Duration:

Most Significant Innovation

By innovation I mean any change associated with the creation and adoption of ideas that are new-to-world, new-to-nation/region, new-to-industry or new-to-firm. It could be any new or significantly improved product or service, or any manufacturing or marketing process or perhaps introduction of any new managerial/organizational method (Nesta, UK).

1. Would you like to tell me about the most significant innovation in your firm/ business unit? Be it a product/process/organizational innovation. Its complete story, of how it came about, who was involved, how it evolved and got implemented?
(*Purpose of metrics: Checklist (with dates)*)-

Innovation description

Origins/Idea

Were there other competing ideas?

Why and how was this chosen?

How it developed?

How was it implemented?

How long did it take to develop and implement?

How was it organized?

Who was involved?

-Internal

-External

Who championed? Were there designated task forces?

Are senior managers involved?

Are there rewards for employees/customers/suppliers for innovative suggestions?

How are decisions related to opening up the innovation process taken? (Budgets, Limits)

Appendix 2: Interview Guide

Any organisational or industry or market resistance or barriers

Costs of doing it

Did the innovation meet its objectives? (What objectives do you generally aim to achieve through your innovation activities?)

Prompt list-

Focus on radical or incremental innovation

Increasing the range of goods or services

Replacing outdated processes or products

Entering new market

Increasing market share

Improving quality of good / services / practices

Improving health and safety

Reducing costs

How did you measure its effectiveness? (How do you generally measure the effectiveness of your innovation activities?)

Prompt list-

Innovation outcomes (new products, processes etc)

On-going and abandoned innovation activities

Costs involved

Risks involved

Time to market

Diversity of partners

Diversity of collaboration forms

Extent of management's involvement

Extent of knowledge exchange

Extent of employees' abilities to start, execute and close collaborative interactions)

I am interested in the role of external people and/or organizations in this innovation

2. Is innovation changing in your firm? I mean are there more interactions and greater role of outsiders in the innovation process?
Would you like to tell me if resources from outside of your organization like inputs from customers, suppliers; other organizations for technical expertise/consultancy/scale up facility etc. significantly influenced this innovation in any way? Please elaborate (who, when)

Appendix 2: Interview Guide

OR If you would like to tell me about any open innovation that your firm has done? Its complete story like your previous description (By open innovation I mean creation of any knowledge, products or services by interaction with parties outside of your organization)

Interaction when innovating may be with -

Suppliers of equipment, materials or components

Clients or customers

Competitors or other enterprises in your sector

Consultants,

Commercial labs or private R&D institutions

Government or public research institutes

Universities/labs

(Purpose of metrics: how open is the innovation process)

3. What knowledge / information do you share with these parties? While what knowledge / information do you not share and why?
(Purpose of metrics: Reasons for limits to opening up or not opening up their innovation process)
4. How does exchange of knowledge / interactions takes place within departments in your organization? Does that impact the exchange of knowledge with outsiders?
(Is there facilitation for interdepartmental and or inter-organizational interactions for knowledge/ information exchange?)
(Purpose of metrics: does market orientation impacts open innovation)

Specifically one source of knowledge is customers, so

5. Do you get / how often do you get feedback from your customers about your products and services? Has the feedback ever necessitated you to interact with outsiders to meet customers' demands? *(Prompts - like outsourcing, collaborating etc.)*
(Purpose of metrics: does market orientation impacts open innovation)



Date

Dear Mr/Ms ABC,

We would like to invite you to participate in a research project that is examining the successful management of innovation in Irish firms. At *DCU Business School* we are studying ***how firms manage for product, process and organisational innovation***; *how innovations get identified, selected, developed and commercialized*; and *the extent to which firms collaborate in their innovation activities*.

We are seeking your participation in this research because of the reputation your firm has for innovation and because of the importance of your firm to the food and drinks sector in Ireland.

The main advantages for *XYZ* in joining the research project are as follows:

- You will be invited to a workshop on the *Management of Innovation* at *DCU Business School*. At the workshop you will hear from leading international academics who have studied the management of innovation. It will also be an opportunity for you to meet with other managers and to share your experiences of managing innovation. This workshop will take place when we have completed the study of significant innovations in Irish firms (autumn, 2013).
- You are supporting academic research at *DCU Business School*.

Participation in the project involves:

- Facilitating DCU researchers to study a significant innovation in *XYZ*. Our researcher would interview those involved in managing the innovation.

We would welcome the opportunity for a member of our research team, Ms Anushree Priyadarshini, a *DCU O'Hare PhD Scholar*, to meet with you to discuss this project in more detail. Anushree will follow-up with a phone call in the next week in order to arrange an appointment.

Yours sincerely,

Professor Colm O’Gorman
Associate Dean for Research

Dr Yuhui Gao
Lecturer in Marketing

Ms Anushree Priyadarshini
O’Hare PhD Scholar

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**DUBLIN CITY UNIVERSITY
Informed Consent Form**

Research Study – Understanding how firms practice open innovation.

Investigators

Ms. Anushree Priyadarshini, Business School, Dublin City University

Dr. Yuhui Gao, Business School, Dublin City University

Prof. Colm O’Gorman, Business School, Dublin City University

I agree to participate in the research study that is exploring the process of open innovation in Irish food and beverage firms. This research aims to enhance the understanding of how firms practice open innovation. The way firms manage for the open innovation process and how does market orientation plays a role in it. I understand the purpose and nature of this study and I am participating voluntarily.

I give my permission for the data to be used in the process of completing a Doctorate Degree, including a dissertation and any other future publications that may arise from this research.

I also grant permission for the interview to be taped. I understand that the tapes will be transcribed for the purpose of ensuring that all of my answers are recorded accurately and eliminating any ambiguities in data collection. All information will be treated with strict confidentiality. Data identifying the subjects shall be removed and replaced by code identifier that will help to further process the data. The transcripts as well as the recordings shall be destroyed once the study is completed.

I have understood the information about this study. My questions and concerns have been answered by the researchers, and I have a copy of this consent form. Therefore, I consent to take part in this research project

Participants Signature: _____

Name in Block Capitals: _____

Date: _____

Appendix 4: Interview Consent Form

DUBLIN CITY UNIVERSITY Plain Language Statement

I. Research Study

Understanding how firms practice open innovation.

Investigators

Ms. Anushree Priyadarshini, Business School, Dublin City University

Dr. Yuhui Gao, Business School, Dublin City University

Prof. Colm O’Gorman, Business School, Dublin City University

Introduction

You have been invited to participate in a research project. The study is part of the research conducted at Dublin City University Business School, funded by the Daniel O’Hara PhD scholarship fund under the NDP programme. Your participation and time is highly regarded by the researchers. To guarantee you a good experience during the study, and before you decide to participate, in order to familiarize yourself as to why the study is being undertaken, how is it structured and what are you expected to do while taking part please read the following information.

The aim of this research is to enhance the understanding of how firms practice open innovation. The way firms manage for the open innovation process and how does market orientation plays a role in it.

II. Details of what involvement in the research study will require

Interviews of the participants shall be taken and tape recorded at their respective offices, and the duration of the interviews shall be approximately 60 minutes.

During this interview I will ask the participant to identify a specific important innovation that has occurred in their firm. I will then ask some general questions about innovation in their firm.

III. Potential risks to participants from involvement in the research study (if greater than that encountered in everyday life)

There is no risk forecasted during the study. However, if you feel any inconvenience, please notify it to the researcher at any stage of the study.

IV. Benefits (direct or indirect) to participants from involvement in the research study

There are no benefits expected.

V. Advice as to arrangements to be made to protect confidentiality of data, including that confidentiality of information provided is subject to legal limitations

If you decide to take part of this study, all information will be treated with strict confidentiality. In order to reduce the risk of any person being identified during the research, the person would be anonymised prior to the interview. A unique identifier for each person prior to the interview would be allocated and only the identifier will be used to further process the data. Data will be stored in the DCUBS building kept with confidentiality and only granting access to the research team identified above. At every stage of the process, data will be treated with confidentiality (subject to legal limitations) and the anonymity of participants will be ensured.

VI. Advice as to whether or not data is to be destroyed after a minimum period

The materials and data collected will be stored in the DCUBS facilities for 3 years. However, any contact details will be removed. Only the research team members identified above will have access to the data. The transcripts as well as the recordings shall be destroyed once the study is completed. Data will be disposed off only by the researchers identified above after the completion of the study.

VII. Statement that involvement in the research study is voluntary

Subjects have the right to participate or not in the study, and will have the right to withdraw from the study at any stage.

VIII. Any other relevant information

If you have any concerns about this study please contact Anushree Priyadarshini (anushree.priyadarshini2@mail.dcu.ie), or Dr. Yuhui Gao or Prof. Colm O’Gorman.