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# **Safe Food Safe People Management System Enhancing Compliance with Safety Legislation in Irish Food and Drink Manufacturing SMEs**

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Submitted for the degree of Doctor of Philosophy

To the

National University of Ireland, Galway

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## **Declaration**

I hereby declare that, except where duly acknowledged, the work presented in this thesis is my own, and that it has not been submitted in full or partial fulfilment of the requirement for any other award in the National University of Ireland or any other University.

\_\_\_\_\_ Date: \_\_\_\_\_

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## **Abstract**

Whilst the growth of many industry sectors has declined following the deepest global financial recession in decades, the food and drink sector, in particular food and drink manufacturing, has continued to grow. The sector is one of the largest and most important manufacturing sectors in Europe and Ireland. Small and Medium-sized Enterprises (SMEs) and craft enterprises account for the majority of enterprises in the sector and are a very important part of the European economy. Their central role has been recognised by the European Commission and the Member States through various policy declarations, including the Small Business Act (2008) and its Review in 2011, which promote the ‘think small first’ principle in policy making. In the Irish context the continued growth of the food and drink manufacturing industry and the many small businesses on which it depends has been identified as a the route to economic recovery and advancement (Central Statistics Office, 2012a).

Characteristically small businesses differ from their larger counterparts having fewer resources, informal management systems, a higher risk of workplace injury and illness, a higher turnover of staff etc., however, the same regulatory requirements apply. It is generally accepted that there are costs associated with regulation such as compliance, costs. These costs are higher for an SME than for a large enterprise (Enterprise and Industry, 2007). This results in a disproportionate burden of regulation for SMEs, which is amplified in food and drink SMEs due to the additional burden of food safety regulations.

This disproportionate burden in turn results in insufficient compliance with safety regulations, in particular with occupational health & safety (OHS) regulations in the food & drink sector. The sector has a plethora of food safety regulations to contend with and according to the results of a survey conducted by the Food Safety Authority of Ireland (FSAI), these are described by the SMEs as challenging, costly and time consuming, thus OHS requirements can be left to the side and food safety prioritised (Food Safety Authority of Ireland, 2011). A lack of safety compliance intensifies the instability of small business and hence the economy by adding a cost in the form of accidents, incidents, claims, lost time, loss of professional reputation etc. Although, compliance is influenced and challenged by many factors such as; the size of the

business, business characteristics, the level of enforcement, the supply chain, the perception of risk etc. small business owners cite the costs and the burden of complex regulations as the main barrier to regulatory compliance. The cost associated with non-compliance in the form of incidents, accidents and possible prosecution, non-compliant businesses will not survive.

Due to the diversity of industries in the food and drink manufacturing sector, the final product intended for human consumption, the processing equipment used and the number of manual job tasks, the sector presents as a high risk industry and is therefore highly regulated. Unsatisfactory OHS compliance in Irish food and drink manufacturing SMEs has a negative impact on workers and their families, the enterprises themselves, the Irish food and drink manufacturing sector, the Irish economy and in turn the European economy. As the majority of Irish SMEs are micro-sized enterprises financial penalties and/or prosecutions can lead to closure. However, small business owners believe that the work involved to meet with requirements would outweigh the benefits of regulatory compliance (Haslam *et al.*, 2010).

Many interventions to assist SME regulatory compliance have been introduced over the past number of years at a national and European level, with The European Commission in line with Member states has introduced a total of 660 initiatives since 2005 aimed at reducing the complexity of and the number of European Directives (European Commission Project Consortium, 2013). Despite these interventions small businesses continue to struggle with compliance and hence for economic survival, with many closing down (Vetter and Köhler, 2014). Based on this, the importance of SMEs, the moral and legal obligation to protect workers, the value of the food and drink manufacturing industry, the unsatisfactory level of OHS compliance and the perception of compliance as a regulatory burden, a requirement for a suitable system to assist small businesses with regulatory compliance exists.

This thesis details the design and the development of such a system, in the form of an aligned safety management system for food and drink manufacturing SMEs in Ireland which will enhance compliance with OHS and in turn protect the worker. As a food and drink manufacturing enterprise cannot begin to trade without the implementation and approval of a food safety management system by the food safety authorities. The food & drink SMEs therefore manage food safety using HACCP as a matter of course. The proposed safety system aligns OHS with these existing food safety management systems, and by doing so, it is anticipated that OHS will receive the same standing as

food safety within the industry. As SMEs have difficulty in securing the resources required to comply with regulation and/or standards in their current format the safety system considers the special characteristics of small businesses and their needs in its design. It is designed in line with the ‘think small first’ principle from the Small Business Act (SBA) of 2008 (reviewed in 2011), as well as the ISO Guidance ‘Guidance for writing standards taking into account micro, small and medium-sized enterprises (SMEs) needs’ to ensure an intervention fitting with OHS compliance problems. It aligns OHS regulatory requirements with existing food safety management systems in a language understood by the food & drink businesses allowing the SME to comply with both safety requirements using one management system.

The system design provides a sustainable solution to the problem of poor OHS compliance by reducing the cost of compliance and the complexity of regulatory requirements, hence reducing the perceived ‘regulatory burden’ for SMEs. It is anticipated that such a system will be effective in enhancing the level of compliance in the SMEs and by doing so it will also enhance worker safety. Enhanced worker safety will result in reduced costs and an enhanced professional business reputation for Irish food and drink manufacture in international marketfor business. The resultant safety system was tested in industry to validate the effectiveness and suitability for SMEs, and was also validated by expert reviewers including regulatory authorities and end users.

## **Published Work Associated with this Thesis**

### **Conference Papers**

Jordan, Catherine & Kelly, Martina, 2014. The Food & Drink Manufacturing Industry: A Diverse Collective of Businesses. Irish Ergonomics Society Annual Conference. National University of Ireland, Galway: Irish Ergonomics Society.

Jordan, Catherine, & Kelly, Martina, 2013. 'Standardisation as a Strategy for Economic Growth in Europe, a Literature Review'. Understanding Small Enterprises (USE 2013) Conference Proceedings, Nelson, New Zealand, 19-22 February 2013.

Jordan, Catherine & Kelly, Martina, 2013. Occupational Health & Safety Compliance in the Irish Food & Drink Manufacturing Industry - Past, Present and Future (eds.) Occupational Health & Safety: A Pioneering Past and A Bright Future, Conference proceedings, National University of Ireland, Galway, 14<sup>th</sup> - 15<sup>th</sup> of June 2013.

Jordan, Catherine, & Kelly, Martina, 2011. 'How are productivity, performance and OHS managed and achieved in culturally diverse small Irish meat industry workplaces?' Managing OHS in small, Culturally Diverse Workplaces: Issues and Solutions Conference Proceedings, Mines ParisTech, Sophia Antipolis, France, 12-13 September 2011.

### **Poster Sessions**

Jordan, C. & Kelly, M., 2015. Analysis of Occupational Health & Safety (OHS) Compliance in Irish Food & Drink Manufacturing SMEs. National University of Ireland, Galway: NUI Galway and University of Limerick Alliance 5<sup>th</sup> Postgraduate Research Day, April 2015.

Jordan, C. & Kelly, M., 2014. Small and Medium Enterprises (SMEs) Continue to Report Legislation as a Burden. National University of Ireland, Galway: – UL – NUI Galway Alliance 4<sup>th</sup> Postgraduate Research Day, April 2014.

Jordan, C. & Kelly, M., 2013. The Communication of International and National Initiatives to Irish Small and medium Enterprises (SMEs) a Literature Review. In M.G.

Madden & C.Ó. Brádaigh (eds.) NUI Galway – UL Alliance Engineering, Informatics & Science Research Day, National University of Ireland Galway, April 2013.

Jordan, C. & Kelly, M., 2011. A Comparative Study on the Evaluation of OHS in SME Meat Plants. National University of Ireland, Galway: NUI Galway – UL Alliance Postgraduate Day, April 2011.

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# **Dedication**

Columba and Elizabeth Jordan

Without you I could not have realised my academic aspirations! I am eternally grateful.

## **Chapter 1: Introduction**

### **1.1 Thesis Background**

#### **1.1.1 The research Problem**

The food and drink sector is Ireland's most important indigenous industry, with a key role to play in export-led economic recovery. The industry represents one of the most important industrial sectors in the Irish economy in which small and medium-sized enterprises dominate. It is argued that small and medium-sized enterprises are essential to economic development (Muller *et al.*, 2014). Small food businesses are therefore considered to be one of the main ways of achieving sustainable economic growth in local economies. One of the main difficulties within the Irish food and drink manufacturing SMEs is insufficient compliance with regulation generally and occupational health and safety legislation specifically.

This study evolved from the authors experience working in the food and drink manufacturing industry in Ireland, primarily in SMEs for a period of over 17 years. The number of accidents within the industry SMEs was disproportionately high with little or no training provided. Compliance with regulation, in particular with OHS legislation, is insufficient in food and drink manufacturing SMEs. Employers have a legal and moral obligation to manage OHS, and workers have a right to be safe while at work. The World Congress on Safety and Health at Work, explicitly state the requirement for "a basic right for workers to work in a safe and healthful working environment..." (XVIII World Congress on Safety and Health at Work, 2008) cited in (International Labour Organization, 2012a). To achieve compliance with OHS requirements safety management systems are most often employed.

Although this thesis is primarily concerned with worker safety, insufficient compliance with safety in the sector also impacts negatively on the consumer due to the risk of a contaminated food product being sold for human consumption. Hence, the study in effect is concerned with the safety of people (worker and consumer) as a result of poor safety practices in Irish food and drink manufacturing SMEs. The focus of the study is predominantly on the problem of unsatisfactory OHS compliance and the

resultant impact on workers, the economic viability of the enterprises and the growth of the economy generally. Enhanced levels of compliance in SMEs, which account for more than 98% of the food and drink manufacturing enterprises, will reduce the number of incidents and accidents in the sector. The cost of accidents and incidents are evident both in monetary and social terms. Hence, there are two main themes running through this thesis, the safety of people (primarily from an occupational view point but inclusive of food consumer safety) and the economic benefits of same.

Regulations play an essential role for OHS management in SMEs. It is a key instrument used by governments to protect and provide many benefits to companies and to citizens. Regulation is imposed by law and compliance is mandatory. Compliance with regulation in small businesses is challenged by a number of factors, which according to Masi and Cagno (2015) fall into three areas, regulation, resources and information:

- Resources, their very size and nature which can act as an obstacle to regulatory compliance due to a lack of resources, time and a limited capacity to manage OHS.
- Regulations, policy and intervention not fitting with OHS problems.
- Information: a lack of or ineffective communication from the authorities and a lack of awareness on OHS matters in SMEs.

Although regulation has clear benefits for industry and there are many factors which influence compliance with safety regulations, the main issue reported as the cause for unsatisfactory safety compliance in SMEs is the cost and the complexity of regulation. The cost and complexity associated with regulation is perceived by the SMEs as a regulatory burden. This is reflected by the number of initiatives introduced at a European level to 'lighten the burden of regulation' for SMEs with the introduction of the Small Business Act for Europe 2008 to include the 'Think Small First Principle' and with publications such as; 'Minimizing Regulatory Burden for SMEs: Adapting EU regulation to the needs of micro-enterprises' and 'Regulatory Fitness and Performance programme' to name but few (Commission of the European Communities, 2008, European Commission, 2011, European Commission, 2014c).

As SMEs are regarded as having a higher risk of incidents than larger enterprises (Sørensen *et al.*, 2007) and as affording less priority to OHS (Hasle and Jensen, 2006, Hasle and Limborg, 2006), a system or a method of enhancing compliance with OHS requirements is vital for worker safety. Health & safety failures in the form of incidents, injuries and illness result in both a human cost and a financial cost. The problem within in the food and drink industry SMEs is that there is even less priority afforded to OHS as there are competing influences on compliance such as food safety regulations. As a food business cannot trade without an approved food safety management system, food safety is prioritised, to the detriment of OHS and worker safety.

OHS performance is unsatisfactory in SMEs, compliance is problematic and there is a limited capacity to manage it resulting in accidents, injury and illness at a cost to the worker and the business (Hasle and Limborg, 2006, James *et al.*, 2015). In addition to this health & safety regulations are reported as challenging for the SMEs further impacting on the low level of compliance (Walters, 2004, Legg *et al.*, 2015). The cost of non-compliance with regulation, to workers, businesses, and the EU Member States, 'is one that we cannot afford' (European Agency for Health and Safety at Work, 2013). The issue of poor regulatory compliance in SMEs is a major problem for the workforce globally and for global economies as small businesses dominate more so than large.

This study aims to protect worker safety in the food and drink manufacturing SMEs thereby reducing the human cost and hence the financial cost incurred due to incidents and injuries by enhancing compliance with OHS regulation. In order to achieve this, a system suited to the characteristic nature of SMEs which considers their limited resources, their limited capacity to manage OHS and the challenge of regulations is required. As mentioned previously a food business cannot trade without an approved food safety management system and thus food safety is often prioritised. At present this can have a detrimental impact of OHS compliance. However, by taking advantage of this focus on food safety and aligning OHS requirements with the existing food safety system HACCP, health & safety would receive a greater standing in the sector without the introduction of further cost to the enterprises. It is anticipated that by aligning OHS requirements with existing food safety management systems a greater

level of OHS compliance can be attained within the food & drink manufacturing SMEs in Ireland. By ‘piggy backing’ OHS on an existing management system, in a language understood by the SMEs, health & safety compliance can become less of a challenge for these enterprises.

### 1.1.2 Deficiencies in Current Research

A literature review search returned few studies on OHS regulatory compliance in the food and drink sector and nothing on OHS regulatory compliance in the Irish food and drink manufacturing sector or in SMEs. The problem of unsatisfactory OHS compliance and regulatory compliance generally has been addressed by many authors. There are numerous peer reviewed studies and many European Commission interventions and reviews some of which are detailed in this study. However, the research for these studies is spread over a number of different manufacturing sectors and other sector types. The available literature identifies:

- The absence of and deficiencies in compliance with OHS in small business
- The explanations and causes reported by small businesses for this lack of OHS regulatory compliance.
- Many tools and interventions developed specifically for small businesses to assist and enhance OHS regulatory compliance.

Despite these efforts small businesses continue to report issues and challenges with OHS compliance and the level of compliance remains problematic.

There are two main reasons for the failure of the European initiatives documented in the literature; the time taken by some Member States to implement the tools, and the subsequent dissemination to the enterprises concerned. In Ireland an analysis of the effectiveness of regulatory management found that Ireland was slow to conform to EU guidelines and policies for ‘Better Regulation’, ‘Ireland like other countries is confronted with the classic difficulty of converting principles and strategy to reality’ (The Organisation for Economic Co-operation and Development, 2010). A review of the implementation by Member states of the 10 principles outlined by the Small Business Act for Europe 2008 conducted in 2013 revealed that ‘the positive impact of the newly implemented measures has not yet been observed by SMEs due to the lead-

time effect or due to the lack of communication between policy makers and SMEs' (European Commission Project Consortium, 2013). More recently in a fact sheet report published in 2015, the area of better legislation for SMEs was one of 'the areas in which Ireland has made the least policy progress'. SME stakeholders interviewed in the process of preparing the fact sheet said that they are 'keen to see this area receive much more attention from the government' (European Commission, 2015a).

In addition to this the Irish Government and associated authorities disseminate much of the regulatory requirements and guidance over the international web, despite a number of issues highlighted over the past number of years with regard to insufficient communication and a lack of awareness in Irish SMEs. The results of a survey carried out by the Economic and Social Research Institute (ESRI) on behalf of the Irish Government in 2007 demonstrated insufficient communication and consultation between the Government and the businesses on the ground. In addition Ireland's policy advisory board for enterprise, trade, science, technology and innovation Forfás reported that the cost of technology can be insurmountable for SMEs, it was reported that many SMEs are not able to afford the cost of connecting and Enterprise Ireland noted in the same report, 'that SMEs outside the main urban centres have significantly less choice and less access to good quality services' and (Forfás, 2011).

The literature has established that SMEs have special characteristics, OHS regulation is challenging with compliance as burdensome. The current solutions do not fit with small business requirements, SMEs want practically oriented, low cost tools. The knowledge gap or what must be established are cost effective workable methods with large scale implementation and evidence of OHS improvement in these enterprises (Hasle, 2015).

### 1.1.3 The significance and the Purpose of the study

An international review conducted by Croucher *et al.* (2013) which posed the question 'can better working conditions improve the performance of SMEs?' found considerable evidence confirming a link between the provision of OHS and positive firm outcomes to include reduced employee turnover, higher discretionary contributions by employees to enterprise capacities, improved productivity and profitability. They conclude that 'OHS should be treated as an essential aspect of good business practice and quality management' and confirm a 'common lack of awareness

of the cost implications of accidents or work-related ill health among SME owners/managers' (Croucher *et al.*, 2013). Therefore the development of interventions in collaboration with the SME owners to enhance OHS practices within Irish food and drink manufacturing SMEs should be considered. A system designed for SMEs; with the SMEs; and tested in practice, is essential to ensure further positive outcomes in the form of reduced injury, incident & illness and increased profitability and value. A number of studies have identified the requirement for more comprehensive research in order to investigate the complete OHS intervention. Hasle and Limborg (2006) in a review of the literature on OHS preventive activities concluded that it was necessary to improve the quality of the research on OHS preventive interventions for SMEs. The authors found that many of the OHS studies lacked evaluation of the practical applicability of the intervention in SMEs. 'There is a lack of comprehensive and sustainable research, hence the entire OHS intervention from dissemination through to the measurement of the effects in practice with SMEs must be studied in order for an intervention to be applied on a larger scale' (Hasle and Limborg, 2006). The authors propose that an OHS preventive system or tool must be evaluated in practice to achieve an effective solution. 'It is important to develop future intervention strategies which study the complete intervention system: from the intermediaries through dissemination methods to the resulting preventive activities of the small enterprises' (Hasle and Limborg, 2006). The research presented here is significant as it studies the complete intervention through to measuring the practical applicability, the effect on OHS compliance and the cost effectiveness of a safety management solution for small food and drink manufacturing business. It studies context, as suggested by Hasle and Limborg (2006), this research considers the special nature of small enterprises and the issues they face in the development of a low cost solution to enhance OHS compliance in food and drink manufacturing SMEs. The research design also considers the findings of Farina *et al.* (2015) who in an investigation on the impact of an intervention in metal working SMEs concluded that few studies measured the effectiveness of an intervention quantitatively. They found that evaluation of preventive activities and interventions in the literature are primarily based on employer, owner and employee perception of effectiveness. Hence, the effectiveness of the proposed safety management solution is measured both quantitatively and qualitatively in the SMEs to demonstrate the suitability and ability of the system in assisting the SMEs to meet their legal and moral requirements and also to demonstrate the financial benefits of worker

protection through enhanced OHS compliance. Quantifying the economic value of an aligned system to small business may enhance the uptake by SMEs. Currently, despite the many interventions and the guidance available, they continue to struggle financially and thereby struggle with regulatory compliance to the detriment of worker safety.

The purpose of this study is to promote compliance with OHS requirements to enhance worker protection in the Irish food & drink manufacturing SMEs. OHS however does not receive the same level of attention in the industry and the value of OHS management is questioned regularly. It is anticipated that aligning OHS safety management requirements with existing food safety management systems based on HACCP will ensure it gets considered. As reported by Griffith and Jackson (2013) ‘commercial realities and profitability are closely linked to the people working in the industry’, therefore by enhancing safety compliance the worker will be offered greater protection and the food and drink manufacturing SMEs can realise heightened profitability. In addition to improving the consideration given to OHS compliance, aligning the systems reduces the administrative burden which results in a significant reduction in the time and resources required for OHS and food safety regulatory compliance. These resources can then be invested in the continuous improvement of health & safety in SMEs. Poor health and safety costs individuals, enterprises and the State a great deal. According to Central Statistics Office (CSO) data, over 1 million work days were lost due to work related injury and illness in 2010 and the total cost of poor health and safety in Ireland was estimated to be €3.2 billion for 2010 (Health and Safety Authority, 2013a). Enhanced OHS and food safety compliance has the potential to save the SME and the wider economy millions of Euro in the form of reduced incidents, absenteeism, injury claims etc. and to enhance the viability of small businesses and the Irish food and drink manufacturing sector leading to economic advancement. Such a system could also facilitate the inspection of both OHS and food safety concurrently in the future which would reduce costs for inspectors and business alike.

With economic uncertainty, a more competitive market, and globalisation in trade and culture, it is imperative to improve the working environment and safety performance in food and drink manufacturing SMEs. Enhancing safety will maximise productivity

and economic progression of the sector and hence the Irish economy. This aligned safety system, named Safe Food Safe People (SFSP) aims to address the human cost as well as the business cost of health and safety failures. This is in line with suggestions by Haslam *et al.* (2010), who found that ‘focusing on human costs as well as financial costs may be beneficial in promoting awareness of the importance of health and safety within organizations’. Reducing the human cost inevitably reduces the financial cost. The overall research aim is to enhance compliance with occupational health & safety regulatory requirements in food and drink manufacturing SMEs for the protection of workers and a reduction in the financial cost of incidents, accidents, injuries etc. To reduce the human and financial cost of unsatisfactory OHS compliance this research aims to;

- Gain an understanding of the nature and the scale of the problem with regard to OHS compliance
- To develop performance specifications for a system that better achieves compliance without introducing further issues and costs for small businesses.
- To test a solution based on the performance specifications developed.

This will be achieved by meeting the following objectives:

1. To identify the regulatory requirements governing safety in food and drink SMEs.
2. To determine the current level of compliance with OHS and safety in food and drink SMEs.
3. To determine small business influences and issues with OHS and regulatory compliance in food and drink SMEs.
4. To identify and evaluate current interventions, preventive activities, tools and solutions for the enhancement of OHS and safety in food and drink SMEs.

5. Informed by the findings from 1 to 5 above, to design a cost effective safety management system specifically for food and drink manufacturing SMEs to assist them with OHS and safety compliance generally.

## **1.2 Scope of the Study**

The main focus of the research is on the enhancement of worker safety through the design and evaluation of an aligned safety management system to assist the food and drink manufacturing SMEs with OHS regulatory compliance in a cost effective manner. It will concentrate on the alignment of OHS regulatory requirements with food safety requirements using existing HACCP based food safety management systems in the sector. The study will also give consideration to the reduction of the perceived regulatory burden for SMEs as a method of freeing resources for continuous improvement and enhanced compliance. Finally the effectiveness of the aligned safety system as a method of enhancing OHS compliance at no added cost to the SMEs will be measured. For the purposes of this study, the focus is on the food and drink manufacturing sector and the business owner-managers only.

## **1.3 Expected Contribution to Knowledge**

This dissertation aims to demonstrate whether or not the alignment of two safety systems can assist food and drink manufacturing SMEs to achieve enhanced OHS compliance while at the same time reduce the perceived issues associated with regulatory compliance in SMEs. Rather than having competing influences on compliance, align these requirements. With almost a culture of food safety compliance in the sector due to the requirement of an approved system in order to trade, it is expected that by 'piggy backing' on this system OHS compliance can be improved.

## **1.4 Thesis Structure**

This thesis is structured as follows:

This introductory chapter outlines the rationale for the study and the aim and the objectives.

Chapters two and three contain reviews of the relevant literature.

Chapter two presents an overview of the key areas related to the research, introducing and defining the industry sector and the small and medium-sized enterprises (SMEs) central to the study. Chapter three examines the importance of occupational health & safety compliance for the worker, for industry and for the broader economy. SMEs and OHS compliance and the factors which influence small business compliance from a positive and a negative view point are presented. These chapters achieve the aim of obtaining a better understanding of the nature and the scale of the problem regarding OHS compliance and regulatory compliance in SMEs. The chapters assist in the identification of the challenges for SME regulatory compliance and the factors which can enhance the level of compliance. These findings are used to determine performance specifications for a possible ‘right-sized’ solution for SMEs informed by the literature.

Chapter four examines standards and management system standards as a method of enhancing SME compliance with OHS. Existing food safety and HACCP management system standards are compared with OHS management system standards the replication in approach and content identified. The replication is considered in conjunction with the performance specifications for a tool to assist with compliance portrayed by the SMEs (less complex, right-sized, user-centric etc.) leading to a theoretical model for the design of a better solution. A solution in the form of an aligned safety system which can achieve the compliance goals without introducing other unacceptable problems. Effectively aligning OHS requirements with food safety requirements in one management system, using a small business standard design.

Chapter five details the fieldwork and the research methodologies employed. The selection, the application and the justification for each research method is presented.

Chapter six presents the existing situation with regard to OHS compliance in the Irish food and drink SMEs, identifying the current level of compliance and methods of enhancing compliance or easing the perceived burden of regulation for these businesses. The results from a broad based survey, along with more detailed industry assessments, and the preliminary results from four case studies are reported and

## Chapter 1

discussed. The key findings which identify the problems and offer ways to remedy these problems are presented with a view to the design and development of a possible solution. An aligned safety system to assist with OHS compliance in the food and drink manufacturing SMEs.

Chapter seven details the design of the aligned safety management system (Safe Food Safe People) as a possible for the food and drink manufacturing SMEs. The concept, framework and the underlying theory are detailed and presented.

Chapter eight presents the overall results: the results following intervention in the case study enterprises with the Safe Food Safe People safety system. Both qualitative measurements and quantitative measurements are presented to demonstrate the practicality of the tool for the SMEs and the effectiveness of the system in meeting the aim of enhancing OHS compliance, hence worker safety without adding further cost or complexity for the SMEs.

In Chapter nine a summary of the results is presented and the key findings are examined discussed.

Chapter ten offers a validation of the suitability of the proposed system for the SMEs, a validation of the application of the system in the SMEs and a validation of the system as a method of assisting SMEs with the problem of insufficient OHS compliance.

Finally, chapter 11 provides a conclusion to the research undertaken. The contribution to knowledge of the work and the possible limitations of both the research and the safety system developed are presented. Finally, recommendations and further research opportunities are discussed.



## **Chapter 2: SMEs and Food and Drink Manufacturing**

### **2.1 SMEs**

SMEs are the principal form of business organisation in Europe and Ireland and are now regarded as the key to economic recovery (Central Statistics Office, 2012a). They are the main providers of employment and are especially relevant to addressing a country's unemployment concerns. The Irish Government has clearly identified SMEs as the lifeblood of the Irish economy and recognise that they play a crucial role in economic and employment growth. It is widely recognised that competitive private enterprise is the principal source of economic growth and wealth globally. SMEs clearly have the potential to contribute to the social and economic progress for workers and their communities. However, with many SMEs their employment is in low-quality and low-skilled jobs that offer low wages under poor and unsafe working conditions (Croucher *et al.*, 2013). In 2008 the global economy entered a deep recession leading to a new focus on small business survival and growth. Economies globally recognise small business growth as the key to recovery and this is demonstrated by the number of strategies, plans, tools etc. introduced to lessen small business constraints and enhance growth.

A growing body of research on small businesses has identified many factors influencing the growth and survival of SMEs such as; the size and characteristics of SMEs, access to finance, regulation, access to information etc. From an SME view point, regulation is cited as the most influential factor on their growth and survival. For the most part SMEs believe that regulation impedes rather than assists their economic advancement. These influences on small business growth both positive and negative, and the competing influences on regulatory compliance are discussed in detail in Chapter 3.

Although, there are a number of factors which impact on SME growth and survival, the main focus of national Governments and the European Commission is on the suitability of regulation and the resultant negative influence on economic advancement of small business. At a European level, the European Commission worked with Member states and shareholders to devise a plan and methods to best secure the

survival of and boost growth of existing SMEs and also to encourage new business start-ups. One such intervention is the Small Business Act for Europe 2008 (Commission of the European Communities, 2008), which obligates all regulators to carry out an impact assessment on proposed regulation for small businesses prior to its introduction into law. The majority of SMEs in Europe are owner-operated and have 10 employees or less. These are defined as micro-sized enterprises. A European business demographics report states that ‘according to Eurostat, a micro enterprise employs merely two persons on average in the EU; over 30% do not have any other employees and roughly 70% have fewer than five (Vetter and Köhler, 2014).

### 2.1.1 Definitions of SMEs

SMEs play a dominant role in many EU countries, of which Ireland is one. To obtain a more detailed picture of small business compliance with OHS and the obstacles they face, the European definition of SMEs illustrated in Figure 2.1 is used. There are a number of definitions for SMEs and a variety of terms used in the literature to define and reference them, such as small business, small enterprises, SMEs etc. Globally the definitions are varied but there is considerable overlap.

The European definition is used by the authorities and governing bodies in the majority of EU countries and Ireland when reviewing and reporting on SMEs performance, regulatory compliance, accidents, cost etc., and also by the ‘European Central Bank (ECB) and most of the national central banks and statistical offices’ (Vetter and Köhler, 2014).

Size	Number of Employees	Annual Turnover or Annual Balance Sheet
Medium	<250	≤ €50 million or ≤ €43 million Annual Balance
Small	<50	≤ €10 million or ≤ €10 million Annual Balance
Micro	<10	≤ €2 million or ≤ €2 million Annual Balance

*Figure 2.1 European Definition of SMEs (European Commission, 2005)*

Laird *et al.* (2011) identified the most quoted qualitative definition in the small business literature as that proposed by the Report of the Committee of Inquiry on Small

Firms (Bolton, 1971 cited in Bacon et al., 1996). The Committee defined a small business using three distinctive features.

- Firstly, the business is owner-managed in a personalised way. The owner-manager plays an active role in the management and decision making, a business decision can be made immediately as there is no specialised management structure i.e. shareholding and management are separate.
- Secondly, the small business is independent. The owner-manager has the power to make decisions independently because the business is not a subsidiary of a larger organisation.
- Thirdly, the small business has a relatively small market share and consequently is likely to have reduced buying power and influence over prices.

### 2.1.2 SMEs and Europe

Small and medium-sized enterprises (SMEs) are the backbone of the European economy, now with more than 20 million firms that accounting for over 98% of all enterprises and 67% of total employment (BusinessEurope, 2015). Integral to economic revival SMEs generated 57.9% or €3,666 trillion of value added in 2013 in the EU28 (28% of EU28 GDP) (Muller *et al.*, 2014).

It is important to note that the overwhelming majority of SMEs are micro-enterprises at 92.4%, defined as those with fewer than ten employees. Five key economic sectors account for approximately 78% of all SMEs in the EU28 of which manufacturing is one. They also account for approximately 71% of the value added created by SMEs and for 79% of total EU28 SME employment (Muller *et al.*, 2014).

The importance of SMEs to the economy is and has been evident for decades. Wymenga *et al.* (2012) state that in sectors such as real estate, accommodation and food services, professional, technical and research activities and construction, the SME share of total employment is over 80% whilst in other sectors such as mining and quarrying, the SME share is well below 50% of total employment. 'Even though overall economic conditions improved marginally in 2013, the overall macro-economic environment continues to be very challenging for SMEs' (Muller *et al.*, 2014).

### 2.1.3 SMEs and Ireland

A Government of Ireland (2012) report found that there were three quarters of a million people employed in 199,241 Irish SMEs from a population of 4,585,400 million people at that time (Central Statistics Office Ireland, 2012). The turbulent economy, reduced customer demand, decreased access to finance and complex regulatory requirements impact negatively on SME growth and advancement. Hynes (2012) found that although SMEs account for the majority of enterprises they ‘make up only 52% of both turnover and gross value added in the economy’. Vetter and Köhler (2014) in their business demographics report, concluded that the impact of the economic crisis in Ireland resulted in ‘the number of firms from all categories starting to plunge as of 2007 and the hardest hit were the small and medium-sized enterprises’. However, currently the number of SMEs comes to about ‘80% of the 2006 level’. ‘These figures show just how important SMEs are to Irish economic life and to the very fabric of our society’ (Innovation., 2014).

As SMEs play a dominant role in Ireland, they are regarded as the backbone of the Irish economy and the key to economic survival; hence their growth and economic advancement is paramount. To this end Irish Government economic growth strategies and tools prioritise small business, with access to finance and job creation in SMEs the main focus. The ability of SMEs to succeed and grow underpins the future potential for jobs, growth and an increased gross value to the economy. Accelerating the growth of existing SMEs and encouraging start-ups is the way forward for Irish business.

## 2.2 The Food and Drink Sector

The food industry sector is the number one manufacturing industry sector in the EU and continues to be an engine for growth despite the current economic situation. The food supply chain, to include, agriculture, the food and drink industry and the distribution sector, encompasses approximately 310,000 companies, employs more than 4 million people and generates a value added of approximately €650 billion with the total turnover surpassing €3.5 trillion. The food and drink manufacturing sector of the food chain accounts for a value added of €206 billion surpassing €1 trillion and is a direct employer of 4.24 million people across the Member States and mostly in rural areas (FoodDrink Europe, 2014a). For the first time in a decade SMEs account for

more than 50% of the total EU food and drink manufacturing turnover of €524 billion and also accounts for 64.3% of food and drink manufacturing employment or 2.9 million people (FoodDrink Europe, 2014a).

In Ireland, the manufacturing sector is a fundamental driver of the economy with a total of 12,790 manufacturing enterprises, listed by the CSO Business Demography Stat bank in November 2012 and referenced in the Forfás report 'Future Skills Requirements of the Manufacturing Sector to 2020'. Most of the enterprises are small in scale, with 83 per cent employing less than 10 people (micro firms) and 95 per cent employing less than 50 people (Forfás Expert Group on Future Skills Needs, 2014).

Agri-food and fisheries is Ireland's largest indigenous industry, contributing €26 billion in turnover which is equal to one quarter of the total turnover for all manufacturing industries and generating 12.3% of merchandise exports. It collectively employs some 170,000 people the equating to 9% of total employment with a significant weighting of activity in rural and coastal communities. Food and drink exports increased to a record value of more than €10 billion in 2013 representing an increase of 9% on the previous year and a 40% increase since 2009 (Department of Agriculture Food and the Marine, 2015a). Food and drink manufacturing directly employs over 50,000 people, with an estimated further 85,800 in primary production, agriculture, forestry and fishing (Forfás Expert Group on Future Skills Needs, 2013). In Ireland, food and drink businesses 'account for the highest portion of manufacturing output and the sector is seen by the government as holding key opportunities for overall economic recovery and growth' (Griffith and Jackson, 2013). The Irish food and drink industry has built 'a multi-billion-export industry by engaging with the diverse demands of consumers and consistently meeting the exacting specifications of some of the world's most prestigious retailers and food service providers' (Department of Agriculture Fisheries and Food, 2010). With the world population expected to increase from 7.3 billion in 2015 to almost 8.1 billion by 2025, the opportunities for naturally produced Irish food and drink products are considerable (Central Statistics Office, 2015). The vision of the Irish Government in 2010 with the release of the 'Food Harvest 2020' strategy was to 'increase the export value to €12 billion by 2020' (Department of Agriculture Fisheries and Food, 2010). A review of the Food Harvest strategy in 2014 reports an increase in exports of 24% since 2010 with a value of more

than 10.3 billion in 2013. The review states that ‘if this progress continues, the Food Harvest export target of €12bn by 2020 is well within reach and could even be exceeded’ (Department of Agriculture Fisheries and Food, 2014). In June of 2015, the Government released a second and updated vision for the food and drink sector titled ‘Food Wise 2025’ with a growth projection for agri-food exports of 85% to a value of €19 billion by 2025 (Department of Agriculture Food and the Marine, 2015b).

Small and medium- sized enterprises accounting for the majority of businesses are the focus for the successful expansion of the industry sector. The Department of Agriculture, Food and the Marine project that ‘accelerating the growth of an optimal number of SMEs to large company size and a greater focus on SMEs and on niche markets such as functional foods and organics will be highly significant in delivering regional growth and employment creation’. It is also expected that ‘the encouragement of growth in existing SMEs and an entrepreneurial approach for the development of high potential start-up food businesses will generate sustainable export led growth of the sector’ (Department of Agriculture Fisheries and Food, 2010).

The agri-food and fisheries sector encapsulates, agriculture, food & drink, forestry and fisheries. This study is concerned with the food and drink sector and while there are generally considered to be three stages in food and drink production this research focuses on the manufacturing stage. The three stages in the food and drink sector or food and drink production are: agriculture, manufacturing and retail/catering.

Agriculture refers to the production, processing, promotion and distribution of agricultural products, to include forestry, dairy, fruit, poultry, bee keeping etc., and the processing, marketing and distribution of crops and livestock. Agriculture or farming provides most of the world’s food and fabric. It involves the growing of crops and raising of livestock for the production of products for people such as cattle, cereals, milk, eggs, vegetables etc. ‘Research has shown that Ireland’s investment in agriculture produces a far bigger return than investment in other sectors. That is because agriculture sources 71% of raw materials and services from Irish suppliers. It includes approximately 600 food and drinks firms throughout the country that export 85% of our food and seafood to more than 160 countries worldwide’ (Agriculture and Food Development Authority, 2015). Manufacturing takes place in factories and

processes raw materials from agriculture to produce food products for human consumption such as the slaughter of cattle for beef, cereals to flour for bakery and confectionery etc. Manufactured products are sold to retailers and caterers nationally and internationally.

Retail and Catering; Retail involves the direct sale of the manufactured food products to the consumer in supermarkets, shops etc. Catering involves the preparation and cooking of manufactured food products for direct sale to the consumer in restaurants, coffee shops, canteens etc.

For the purposes of this research the manufacturing industry comprising a number of activities is studied as defined by NACE Rev 2, presented in Table 2.2. Food manufacturing is the process by which food is manufactured, the purchase of raw materials which are processed to produce a product for human consumption. The process can involve; preparation, combining, chopping, mixing, cooking, freezing, preserving etc. of ingredients or raw material to produce a food or drink. It involves the processing of raw material using physical, chemical or biological processing methods or formulation, to produce a food or drink on an industrial scale.

NACE is the European industrial activity classification of industry in the European Community, NACE (Nomenclature statistique des activités économiques dans la Communauté Européenne: Statistical Classification of Economic Activities in the European Community). The classification is adopted by the majority of authorities and agencies in Ireland and Europe such as the Central Statistics Office (CSO), the Health and Safety Authority (HSA), the European Food Safety authority (EFSA) etc. when reporting on industry sectors and it is maintained by Eurostat which is the Statistical Agency of the European Commission (Eurostat, 2008). The food and drink manufacturing sector is classified under the NACE letter 'C' and the NACE group number 10 demonstrated in Table 2.1.

*Table 2.1 NACE Definition for Food and Drink Manufacturing*

<b>NACE Group No.</b>	<b>NACE Activity</b>	<b>Industry Type</b>
10.1	Processing and preserving of meat and production of meat products	Meat and poultry
10.2	Processing and preserving of fish, crustaceans and molluscs	Fish, crustaceans and molluscs
10.3	Processing and preserving of fruit and vegetables	Potatoes, fruit & vegetables
10.4	Manufacture of vegetable and animal oils and fats	Oils, Fats, margarine & all edible fats.
10.5	Manufacture of dairy products	Dairies, cheese making and ice cream.
10.6	Manufacture of grain mill products, starches and starch products	Cereals, cereal starches, flour and meal.
10.7	Manufacture of bakery and farinaceous products	Bread, pastry goods, cakes, rusks, biscuits, preserved pastry goods, macaroni, noodles, couscous etc.
10.8	Manufacture of other food products	Sugar, cocoa, chocolate, confectionery, tea, coffee, condiments, prepared meals, food preparations, dietetic food, dried foods, broths etc.
10.9	Manufacture of prepared animal feeds	Farm animals and pet foods
11	Manufacture of beverages	Distilling, spirits, wine, cider, beer, malt, soft drinks, mineral waters and bottled waters.

However, the breakdown of the NACE Rev 2 Manufacturing category above is not used in Ireland by the authorities or the agencies when reporting and presenting statistics. Food and drink manufacturing is not identified as a separate entity; instead all forms of manufacturing are reported as a single group. Group ‘C’ Table 2.2. Therefore data and statistics specific to Irish food and drink manufacturing are not available.

*Table 2.2 NACE Rev 2 Classification of industry in the European Community*

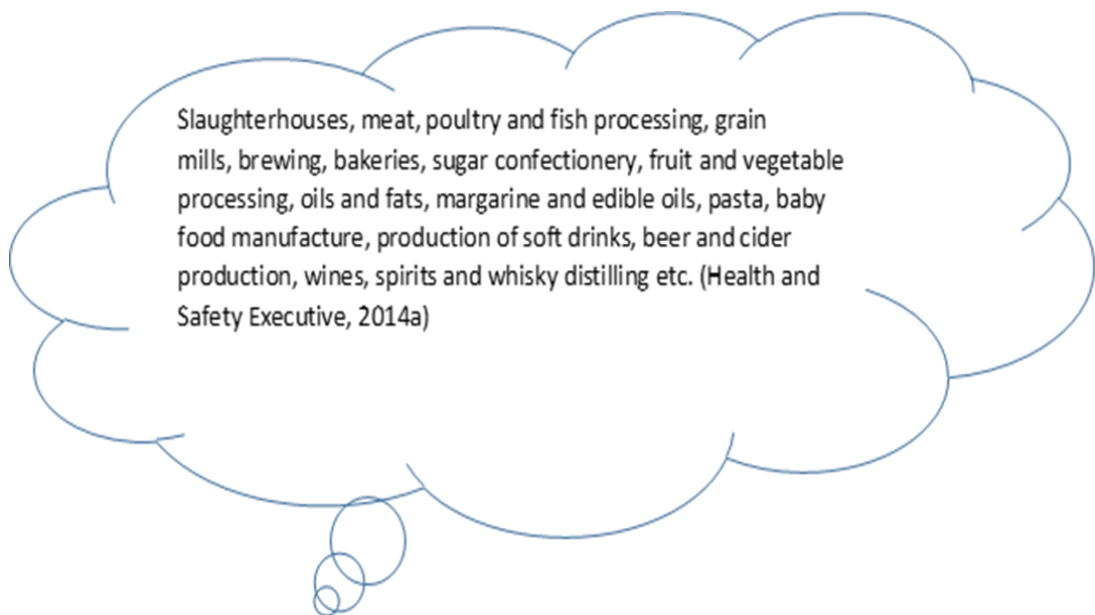
NACE Group Number	Industry Sector
A	Agriculture, Forestry and Fishing
B	Mining and Quarrying
C	Manufacturing
D	Electricity, Gas, Steam and Air Conditioning Supply
E	Water Supply; Sewerage, Waste Management and Remediation Activities
F	Construction
G	Wholesale and Retail Trade; Repair of Motor Vehicles and Motor Cycles
H	Transportation and Storage
I	Accommodation and Food Service Activities
J	Information and Communication
K	Financial and Insurance Activities
L	Real Estate Activities
M	Professional, Scientific and Technical Activities
N	Administrative and Support Service Activities
O	Public Administration and Defence: Compulsory Social Security
P	Education
Q	Human Health and Social Work Activities
R	Arts, Entertainment and Recreation
S	Other Service Activities
T	Activities of Households as Employers: Undifferentiated Goods and Services-Producing Activities of Households for own use
U	Activities of Extra Territorial Organisations and Bodies

### 2.2.1 Food & Drink Manufacture

The food and drink sector is very robust and as people need to eat, it has been

described by some as a ‘recession proof’ industry. Although people may change what they eat during turbulent economic times, they will still eat. During the recession in Ireland ‘it was clear that there was significant activity in the sector’ (Griffith and Jackson, 2013). Trends in Consumer food purchasing are analysed regularly and the industry constantly moves to predict new and emerging food choices. The retailer also drives food and drink manufacture based on consumer requirements. Large retailers are also influential as they require food to be delivered on time, in full and with a good shelf life. Each new major food incident most often results in an update of the food safety and quality management standards e.g. the ‘horse meat’ scandal exposed in 2012 by the Food safety Authority of Ireland (FSAI), where inspectors identified meat products labelled as beef, actually contained meat from mixed species, primarily from horses. The retailer also drives the standards for food production; recalls, accidents and incidents reflect badly on the retailer and for that reason they demand more from the manufacturer with regard to safe food production and quality.

Food and drink manufacture comprises over 30 different sectors such as;



*Figure 2.2 Food and Drink Manufacture Industries*

The food and drink manufacturing industry in Europe is categorized by FoodDrinkEurope in terms of size, number of employees, turnover etc. as per Table 2.3. FoodDrinkEurope originally the Confederation of Food and Drink Industries of

the EEC work with European and international institutions on issues impacting on the food and drink industry and represent both the industry's traditions and potential (FoodDrink Europe, 2014b).

*Table 2.3 Distribution of SMEs in the EU Food and Drink Industry (FoodDrink Europe, 2014b).*

	<b>Micro-companies (% in total)</b>	<b>Small companies (10-19) (% in total)</b>	<b>Small companies (20-49) (% in total)</b>	<b>Medium-sized companies (% in total)</b>	<b>Total SMEs (% in total)</b>
Turnover	8.2	5.2	9.7	28.5	51.6
Added value	8.9	6.1	9.2	24.6	48.8
Number of employees	16.9	9.6	11.7	26	64.3
Number of companies	17.8	10.8	5.8	3.8	99.1

The Irish food and drink manufacturing industry is unique in that 'its reach is into every corner of Ireland and, because the sector spends such a high proportion of its revenues locally (74% vs 40% for all manufacturing), its value to Ireland is measurably higher than all other industries - every €100 in exports from the bio-sector (agriculture, forestry, fisheries, food and drink industries) contributes around €52 to GNP while the 'non bio-sector' equivalent contribution is of the order of €19' (Enterprise Ireland, 2014). Food and Drink Industry Ireland (FDII) is a trade association which represents the interests of the food, drink and non-food grocery manufacturers and suppliers. The association works closely with the government and the industry. They present a profile of the Irish food and drink industry as detailed in Table 2.4.

*Table 2.4 Ireland Food and Drink Industry Key Statistics and Key Facts (Food and Drink Industry Ireland, 2015).*

<p><b>Key Statistics</b></p> <ul style="list-style-type: none"> <li>-230,000 jobs linked to the agri-food sector</li> <li>-€26bn turnover in the sector</li> <li>- €10.5bn worth of exports in 2014 to 120 countries</li> <li>-Half of exports by indigenous Irish companies</li> <li>-Destinations – UK 40%, rest of Europe 31%, international markets 29%</li> <li>-Total payroll in the sector is €1.8bn – more than any other manufacturing sector</li> <li>-€9.6bn worth of materials purchased - 76% are sourced in Ireland</li> <li>-€3bn worth of services purchased - 55% are sourced in Ireland</li> </ul>
<p><b>Key Facts</b></p> <ul style="list-style-type: none"> <li>-Supplies the majority of produce to Ireland’s €14bn domestic grocery and food service sector</li> <li>-Ireland is the largest net exporter of dairy ingredients, beef and lamb in Europe</li> <li>-Ireland is the largest exporter in Europe of powdered infant formula</li> <li>-Ireland exports over 80% of its dairy and beef production</li> <li>-Ireland is the UK’s largest supplier of food and drink</li> <li>-Irish beef is listed by more than 82 retail chains across Europe</li> <li>-Ireland exports over half the pig meat it produces – to over 60 countries around the world</li> </ul>

The EU food and drink industry is a pillar of the EU economy and Ireland with Irish SMEs playing a significant role in the continued growth of the sector. Although the number of Irish SMEs in manufacturing is ‘only 3%’ and they account only for 52% of both turnover and gross value added in the economy data published last June by the Central Statistics Office (CSO) showed that of 12,551 enterprise births in 2012, only 674 were in manufacturing their value to the industry is significant (Hynes, 2012, Michael Hennigan, 2015). In addition, despite the number of food businesses registered under official agency supervision dropping to 49,877 from 50,853 in 2011, the industry sector is one of the leading manufacturing sectors in Ireland (Food Safety Authority of Ireland, 2013b).

The sector outperforms a large number of other EU manufacturing sectors, however, it continues to lag behind its main trading partners on R&D investment and export

market share (FoodDrink Europe, 2014a). For this reason new methods and tools to support and enhance Irish food and drink manufacturing SMEs and their growth are required. The industry has the ability to add value, develop new export markets and create employment, making an increasingly significant contribution to the Irish economy (Food and Drink Industry Ireland, 2009). In order for this to remain the case, SMEs must be encouraged by the policy makers, the enforcement agencies and researchers. An increase in the number of SMEs in food and drink manufacturing would enhance the sectors competitiveness. ‘The role of SMEs is crucial for the European economic recovery, providing the right conditions in which SMEs can flourish is paramount for ensuring a sustained recovery and achieving prosperity for all EU citizens’ (European Regional Development Fund, 2014).

### **2.3 Governance of Irish Food & Drink Manufacturing**

In Ireland the food and drink industry is closely linked with agriculture in all regions of the country, and this accounts for most of its output. With the majority of raw material produced, processed and distributed in Ireland, and the headquarters and intellectual property of the industry in Ireland, food and drink is affected more than any other industry by the business, regulatory and policy framework (Food and Drink Industry Ireland, 2009). Food and drink are manufactured by people (the workers) for people (consumer), therefore much of the regulation is concerned with safety. Based on the fact that the final product from manufacturing enterprises in the food and drink industry is for human consumption, the regulators attempt to secure the safety of food with the implementation and monitoring of a body of food safety regulations. The safety of those working to produce the food in the workplace is protected using health and safety regulations. Governing food safety and occupational health & safety regulations relevant to the industry are of both European and Irish origin. The diversity and the large numbers of people involved in the process (the worker) and those who would be negatively affected should unsafe food be presented for sale (the consumer) results in a highly regulated industry.

The safety of the workers and the consumer must be protected and the method adopted to do this with OHS and food safety regulations. The food business owner is responsible for the production of safe food by safe people and is accountable in the

event of an incident. OHS regulation applies to all food and drink manufacturing industry types. A baseline of food safety regulation applies to all food and drink businesses, with additional regulations and requirements applying to some industry types depending on the nature of the food produced or the processes used to produce it. For example there are specific regulations and requirements for the production of products from animal origin.

### 2.3.1 Governing Bodies

The food and drink industry is governed by a number of bodies, more so than any other industry sector for a number of reasons such as;

1. It encapsulates Agriculture, Manufacturing and Retail & Catering.
2. The final product is for human consumption.
3. In addition to the general legislation governing businesses, food and drink manufacture has an additional plethora of food safety legislation to contend with.
4. The industry sector is hazardous from an occupational safety perspective and a food safety perspective. As a large industry sector with more than 30 different industry types and as a large employer the number of people who can be negatively affected by poor safety practices is great.
5. A number of industry types within the food and drink manufacturing sector pose a greater risk to the consumer should the food produced be unsafe.

The main governing bodies and authorities for the food and drink sector in Ireland are listed in Table 2.5.

*Table 2.5 Governing Bodies & Authorities for Food and Drink Manufacturing Ireland*

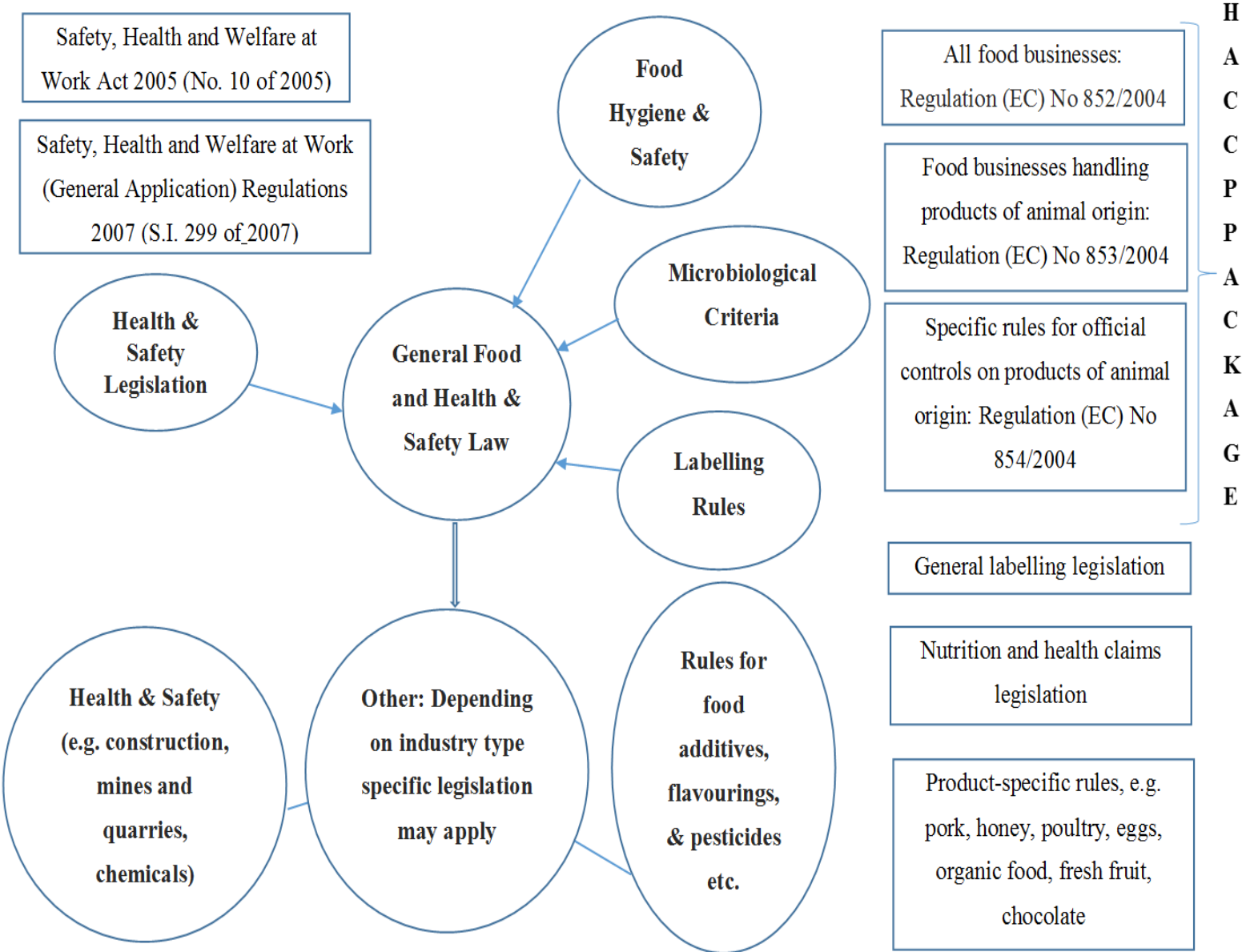
European Food Safety Authority (EFSA)	Advise on risks to food safety and implement directives, regulations and decisions.
Food Safety Authority of Ireland (FSAI)	Food Safety Enforcement and Advice in Ireland
European Agency for Health & Safety at Work (EU-OSHA)	Advise on, Promote and Enforce OHS
Health & Safety Authority of Ireland (HSA)	OHS Enforcement and Advice in Ireland
Department of Finance Ireland	Irish Company Law and Tax Requirements
Revenue Irish Tax and Customs	Income Tax, Corporation Tax, VAT and Customs regulations
National Standards Authority of Ireland (NSAI)	Promote, Develop, Audit and Advise on Standards for Irish Businesses.
Employment Appeals Tribunal, the Labour Court, the Equality Tribunal and the Labour Relations Commission.	Employment Law
Environmental Protection Agency	Environmental Protection

This list is not exhaustive.

As the focus of this study is OHS compliance within Irish food and drink manufacturing SMEs, the areas of health & safety and food safety and subsequent governing bodies at a European and national level are investigated and discussed in chapter 2 in more detail. As Ireland is a member of the European Union (EU), European legislation and Irish legislation apply to businesses. ‘There are three basic types of EU legislation: regulations, directives and decisions. A regulation is similar to a national law with the difference that it is applicable in all EU countries. Directives set out general rules to be transferred into national law by each country or Member state as they deem appropriate. A decision only deals with a particular issue and specifically mentioned persons or organisations’ (European Commission, 2014b).

A summary of main or core legislation is presented in Figure 2.3.



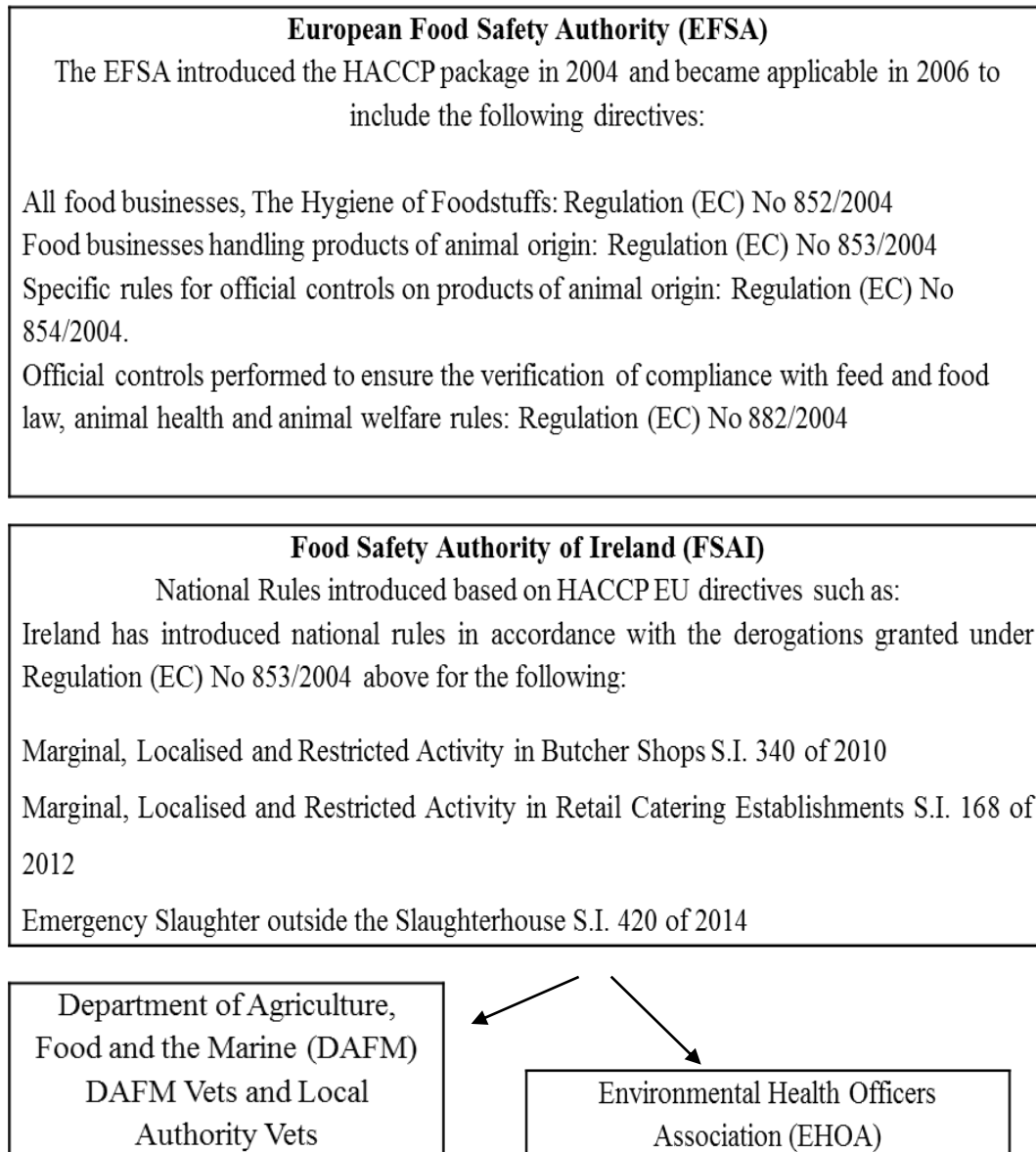


### 2.3.2 Food Safety

Food safety is the safe production of food and the practices undertaken to ensure that food is handled, stored, prepared & served/dispatched/sold so as to prevent so far as possible the contamination of the food. The production process is analysed for microbiological, chemical and physical hazards to ensure the end product is safe for human consumption. Food safety regulation is concerned with the safety of the consumer.

At a European level the European Food Safety Authority (EFSA) is the official body regarding risk assessment in 'food and feed safety, animal health and welfare, nutrition, plant protection and plant health in the EU.' The EFSA operates in a legal framework where risk assessment is carried out separately from risk management. The authority advise the risk managers on risk assessment. The EFSA's job is to provide impartial advice to risk managers - the European Commission, Member States and the European Parliament - while at the same time communicating its findings to all interested parties. The EFSA has an advisory forum and this forum connects the EFSA with the national Food Safety Authorities of all member states. The forum provides a network between each of the Food Safety Authorities and provides a platform through which the national authorities and the EFSA can collaborate on risks and risk assessment.

The European Union regulates on food safety in conjunction with the European Parliament the EFSA and the European Council. The directives, regulations and decisions are implemented by the EFSA, the Food Safety Authorities or bodies within each member state and other regulated bodies. The main body of legislation governing food safety in Europe and Ireland is the HACCP package. The package includes a number of directives from which many more EU regulations and national regulations in Ireland have stemmed. The list of regulations is far too detailed and there are far too many to list, therefore, the main directives and regulations are detailed. The European governing body for food safety and the main European directives, the governing bodies for food safety in Ireland, the main directives and the more recent regulations stemming from the EU HACCP directives are presented in Figure 2.4.



*Figure 2.4 Flowchart of the Main Governing Bodies & Main Regulations for Food Safety in the EU and Ireland*

The Food Safety Authority of Ireland (FSAI) represents Ireland on food safety issues in Europe, consulting on and assisting in the development of ‘well founded and effective European food law’(Food Safety Authority of Ireland, 2013a). The Authority has regular contact with the European Commission, the European Parliament and the European Food Safety Authority (EFSA). The authority liaise with the Department of Agriculture, Food and the Marine (DAFM), Local Authorities and the Environmental Health Officers Association (EHOA) all of whom carry out inspections of food premises. It should be noted that the DAFM veterinary officers and the local authority veterinary officers enforce food safety in manufacturing sites.

The Environmental Health Officers Association (EHOA) enforce food safety in the retail and catering stages of the food industry chain. The frequency of inspections is based on risk assessment. The FSAI aims to ensure that food placed for sale complies with legal requirements, or where appropriate with the recognised codes of good practice. Although the FSAI delegates some of its functions to other bodies such as the EHOA and the DAFM, the authority itself remains responsible for the safety of food and it retains final responsibility.

### 2.4 Risk Categorisation Food and Drink Manufacturing

According to the Health and Safety Executive (2005), in the U.K., it would be wrong to perceive food and drink manufacturing industries as ‘low risk’ in terms of the safety and health of employees based on the premise that food and drink is processed in a strictly controlled environment to be safe and wholesome to eat. ‘Food processing operations, by their very nature, can be hazardous’. In addition to this SMEs account for the majority of enterprises in food and drink manufacturing which adds to the hazardous nature of the sector as SMEs are known to struggle with OHS compliance (Baldock *et al.*, 2006, Legg *et al.*, 2015). The literature describes SMEs as high risk industries and as having a special risk (Sørensen *et al.*, 2007, Hasle *et al.*, 2011). Workers in small business therefore are said to be at a higher risk of injury.

As food and drink manufacturing produces food and drink for human consumption there is an additional risk to people i.e. the consumer. The literature reports on the burden of OHS compliance for SMEs and also on the burden of compliance with food safety regulation in SMEs (Aterido *et al.*, 2011, Fielding *et al.*, 2011). Although the level of risk in each workplace type for workers with respect to occupational health and safety is not categorised across the different food and drink industry operations, the nature of the work predisposes both the worker and the consumer to hazards and risk.

Food and drink manufacture is complex and diverse in a number of ways such as;

- diversity of industries within the sector,
- diversity of products,
- diversity of customers (high care),

## Chapter 2

- diversity of governing regulations,
- diversity of work environment, seasonality etc.
- diversity of operatives/workers.

The diversity surrounding the industry sector impacts on the occupational health & safety (OHS) of all involved in the manufacture of food and drink, with varying hazards and levels of risk associated with each food and drink manufacturing type. In addition to hazards and risks common to all enterprises in the food and drink manufacture sector, the many different industries within the sector and the varied industry environments presents hazards and risk specific to each industry type. Some of those hazards common to all food and drink manufacturing industries are as follows:

- The working environment can range from extreme heat to extreme cold, dry to damp, dusty, etc.
- The product list is ever growing, leading to more and more diverse and hazardous manufacturing processes.
- Although automated systems are used, much of the work is manual and can be repetitive.
- A culturally diverse work force is evident in the industry mostly due to the requirement primarily for skilled workers but also unskilled workers for contract work, globalisation and free movement of people, global trade, and also the seasonality and/or fluctuating consumer demand e.g. demand for some products at a certain time of the year such as Turkeys for Christmas in Ireland. An expert group on skills needs in Irish manufacturing report that there are skills shortages currently within manufacturing (all manufacturing types), though not of significant scale. Nonetheless, many of these shortages are critical at an operational level to manufacturing firms' (Forfás Expert Group on Future Skills Needs, 2013). These shortages have led to the employment of non-nationals in the food and drink sector. The cultural diversity and the contract workers employed, introduce further costs and risks. These are costs associated with training, and new risks such as possible misinterpretation of instruction due to the language barrier (Lamm and Pio., 2008).
- The food and drink manufacturing workforce typically have a lower level of

education and have a reduced ability to participate in and learn from training courses, than other industry sectors. According to Forfás Expert Group on Future Skills Needs (2013), 'There are very significant proportions (20 per cent plus) of those with lower secondary education and below'. This group of worker are highly skilled in their job tasks but find training courses such as OHS and food safety training difficult.

The industry brings products to market which cater for both the dietary and ever-changing daily nutritional needs of Europe's 500 million consumers and increasingly puts environmental considerations at the heart of its business practices (FoodDrink Europe, 2012). Food and drink manufacture is characteristically diverse and hence poses many OHS and food safety hazards and risk at every stage of the manufacturing process. From a food safety view point the people at risk are the consumers.

To date little attention has been given to the hazardous nature of the food and drink manufacturing stage of the food and drink sector in the literature or by the Irish authorities and regulators. Considering the economic value of both the food and drink manufacturing sector and SMEs to the economy, the number of people employed and served by the industry and the hazardous nature the industry sector, this must change.

A comprehensive search of the literature returned 5 studies relating to the industry of which only one paper had studied small businesses. OHS was not mentioned or referenced in any of the five papers published. Also, the Health & Safety Authority (HSA) follow the European NACE Rev. 2 categorisation of industry sectors when reporting, and therefore the food and drink sector and the related statistics are typically included under the general classification of 'Manufacturing'. 'Manufacturing' is inclusive of all types of manufacturing, including food, drink, textiles, leather etc. The grouped classification of manufacturing types means that there are no definite accident statistics available solely for food and drink manufacturing.

Although automated systems exist for a number of the tasks in the industry, much of the work must be carried out manually. Also, small businesses do not have resources to purchase automated equipment or indeed to update existing equipment. Thereby, SME workers are at a greater risk of injury. In Ireland, the largest occupational group

within manufacturing is Process, Plant and Machine operatives, accounting for 55,100 (27 per cent) of total employment in the sector followed closely by those in skilled trade occupations (44,800, 22 per cent of total). Within this group there are significant numbers of food and drink process operatives (13,600), assemblers and routine operatives (16,500) (Forfás Expert Group on Future Skills Needs, 2013).

The increasing pace of work in food and drink manufacture and incentives such as piece work adopted by many companies further amplifies the risk of injury and illness for workers, 'piece rates often have a negative effect on health and safety' (Johansson *et al.*, 2010). As customer demand can vary one example some is the seasonal demand for products such as turkeys at Christmas in Ireland, food manufacturers employ more casual labour and non-nationals. The major concern with casual labour is the level of training received by the workers and the number of hours worked daily. As casual labourers, these workers may be working more than one job with the risk of fatigue and may or may not receive training (Papadopoulos *et al.*, 2010). The increased employment of non-nationals in the industry sector brings with it many advantages but also carries a risk. The associated risks such as misunderstanding training and /or work instructions due to a language barrier (Health and Safety Executive, 2011, European Agency for Health and Safety at Work, 2013, Department for Business Innovation and Skills, 2015). These risks can lead to accidents and incidents in the industry (European Agency for Safety and Health at Work, 2009). A number of businesses could have a number of nationalities employed with a translator(s) required to ensure the workers understand the work and safety instructions relevant to their job task(s). This makes OHS and training very expensive for companies, in particular small businesses (Lamm and Pio., 2008, European Agency for Safety and Health at Work, 2009, Starren *et al.*, 2013).

In Ireland the hazardous nature of the food and drink manufacturing industry and the lack of OHS compliance in this sector receives little attention. The diverse nature of the industry sector i.e. comprising of more than 30 different industry types, predominantly made up of SMEs, the breadth of products manufactured, the employment of casual labourers and non-nationals etc., makes food and drink manufacture unique but also extremely hazardous. Insufficient health and safety costs individuals, enterprises and the State a great deal. According to CSO data, over 1 million work days were lost due to work related injury and illness in 2010 and the total cost of poor health and safety in Ireland this cost was estimated to be €3.2 billion for

2010 (Health and Safety Authority, 2013a). According to Croucher *et al.* (2013), the International Labour Organisation (ILO) has long been convinced that, by improving working conditions, safety and skills in SMES, productivity and profitability can also be improved: a win-win scenario that is good for workers, enterprise owner, communities and economies.

### 2.5 Summary

The food and drink sector is Ireland's most important indigenous industry, with a key role to play in export-led economic recovery. Currently food and drink manufacturing represents 60% of manufacturing exports by indigenous firms of which 71% of its raw materials are sourced domestically (Department of Agriculture Fisheries and Food, 2010). Growth of existing Irish SMEs and the encouragement of start-up enterprises has been identified as the way forward for the industry sector. The plans to achieve this, for the most part focus on sustainability of production and the growth of the export market. But this is not without its challenges, such as fierce international competition, international retail consolidation and changing consumer demands (Department of Agriculture Fisheries and Food, 2010).

While much focus is placed on food safety compliance and consumer safety, unsatisfactory compliance with OHS safety impacts negatively on the safety, health and welfare of the worker. Food and drink manufacturing requires a skilled workforce and the worker therefore becomes the most valuable asset. In Ireland OHS regulatory requirements for the food and drink sector are addressed by governing authorities at the farming, retail and catering stages of food and drink production, with research, statistics, guidance documents and tools available to aid understanding and compliance. Little attention in the literature has been given to OHS compliance at the hazardous manufacturing stage of food and drink production. It has not been identified as a separate entity by the Irish Health and Safety Authority, within the NACE rev 2 classification system. In addition to the lack of guidance specific to food and drink manufacture, statistics report on the Irish manufacturing industry as a whole, making it difficult to report specifically on OHS in food and drink manufacturing. For legal, moral and for business reasons this must change (Griffith and Jackson, 2013).

The following chapter investigates the value of OHS regulatory compliance for SMEs, and the perceived drivers and challenges for improved OHS compliance.

## **Chapter 3: SMEs and Occupational Health and Safety**

### **3.1 Introduction**

This chapter discusses Small & Medium Enterprises (SMEs) and the value of compliance with occupational health & safety (OHS) requirements from a moral and a financial view point. The chapter builds upon a review of international literature to present the perceived barriers and drivers of OHS regulatory compliance and highlights the links between working conditions, health & safety, productivity and profitability. There are many influences on compliance in SMEs which broadly come under the headings of drivers and barriers. An analysis of both the drivers and the barriers is crucial for understanding SMEs and compliance and also for understanding intervention effectiveness in order to improve the design, implementation and evaluation of future interventions (Masi and Cagno, 2015). With little research concerning occupational health and safety in food and drink manufacturing small businesses available, this chapter reviews SMEs in general at both a European and National level making reference to OHS in food and drink manufacturing throughout. As the world of work is constantly changing with regard to globalisation of trade and the free movement of people, new risks are emerging. Hence, in addition to the current or characteristic challenges and risks for small business, emerging risks for the industry are also discussed.

### **3.2 Occupational Health & Safety Regulations EU and Ireland**

Occupational Health and Safety (OHS) regulations detail statutory obligations regarding the safety health and welfare of workers, with the business owner or employer responsible for the protection of the worker, contractors and/or visitors. OHS obligations apply to all workplaces. European Union (EU) directives on safety and health at work have their 'legal foundation in the Treaty on the Functioning of the European Union'. This gives the EU the authority to adopt directives in the area of OHS and hence a number of EU directives setting out minimum health and safety

requirements for the protection of workers exist. Member States must transpose the directives into National law but are free to adopt stricter rules for the protection of workers and therefore legislative requirements in the field of safety and health at work can vary across EU Member States (European Agency for Health and Safety at Work, 2015).

At a European level there is no official enforcement agency for OHS with the European Commission devising and introducing OHS directives. The European Agency for Safety & Health at Work (EU-OSHA) works in conjunction with the Commission raising OHS awareness, conducting OHS research and designing OHS assessment tools for SMEs. The agency contributes to the European Commission's Strategic Framework for Safety and Health at work 2014-2020 and other relevant EU strategies and programmes. The governing Authority for OHS in Ireland and the main directives as they apply to businesses are detailed in Figure 3.1. At present there are no health & safety regulations specific to the Irish food and drink manufacturing industry. Only the main and more recent directives and regulations are noted as the full list of regulations is far too detailed.

<p style="text-align: center;"><b>Health &amp; Safety Authority (HSA)</b></p> <p style="text-align: center;">National Acts and Regulations introduced based on European Directives:</p> <p>Main OHS Acts &amp; Regulations:</p> <p>Safety, Health and Welfare at Work Act 1989 and 2005</p> <p>European Communities Act 1972</p> <p>Dangerous Substances 1979 and 1972</p> <p>Chemicals Act 2008, 2010</p> <p>Safety, Health and Welfare at Work (General Application) Regulations 2007 (S.I. 299 of 2007)</p> <p>New Regulations:</p> <p>Safety, Health and Welfare at Work (Biological Agents) Regulations 2013</p>
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Figure 3.1 *Governing Body, Acts and Regulations governing Occupational Health & Safety in Ireland*

Irish occupational health and safety legislation includes a baseline of OHS regulations applicable to all industry sectors and types, such as the Acts listed above, in addition to a number of regulations designed specifically for certain industry types such as construction, mining etc. With regard to the food and drink sector specific regulation and guidance exists for the agriculture stage and for the retail/catering stage of food production, it does not exist for manufacturing.

OHS regulation in Ireland was introduced following the OHS ‘Framework Directive’ of 12 June 1989. The framework introduced measures to encourage improvements in the safety and health of people at work. The Framework Directive had to be transposed into national law by the end of 1992 by all Member states. A series of directives focusing on specific aspects of safety and health at work stemmed from the Framework Directive. The European Commission propose that health and safety at work is now one of the most important and most highly developed aspects of EU policy on employment and social affairs. The Commission reported that due to the adoption and application of a large body of laws, ‘it has been possible to improve working conditions in the EU Member States and make considerable progress in reducing the incidence of work-related accidents and illnesses’.

The Commission re-launched the policy or ‘framework’ on health and safety at work, through the introduction of a new strategy titled, ‘Improving quality and productivity at work: Community strategy 2007-2012 on health and safety at work’ in 2007. Following the findings of a review of the 2007- 2012 strategy it was followed by an updated strategy and the most recent framework introduced by the European Commission titled, EU Occupational Safety and Health (OSH) Strategic Framework 2014-2020. The framework aims to ‘protect the more than 217 million workers in the EU from work-related accidents and diseases’ and has identified three main challenges one of which relates to the problem of OHS compliance in small businesses, ‘to improve implementation of existing health and safety rules, in particular by enhancing the capacity of micro and small enterprises to put in place effective and efficient risk prevention strategies’ (European Commission, 2015b).

The Commission aims to overcome or address these challenges through the realisation of seven objectives. Two of these objectives aim to address the issues of unsatisfactory compliance and the regulatory burden reported by SMEs:

- ‘Providing practical support to small and micro enterprises to help them to better comply with health and safety rules. Businesses would benefit from technical assistance and practical tools, such as the Online Interactive Risk Assessment (OIRA) a web platform providing sectoral risk assessment tools.
- Simplifying existing legislation where appropriate to eliminate unnecessary administrative burdens, while preserving a high level of protection for workers’ health and safety’ (European commission, 2014a, European Commission, 2015b).

In Ireland the Health & Safety Authority (HSA) enforce occupational health & safety law. The HSA are the national statutory body with responsibility for ensuring that approximately 1.8 million workers and those affected by work activity are protected from work related injury and ill-health. In addition the HSA have the responsibility for the protection of human health from dangerous substances and unsafe products and protection of the environment from dangerous substances. The authority develop new laws and standards on health and safety at work, monitor compliance with legislation at the workplace and can take enforcement action (Health and Safety Authority, 2015). The first occupational health and safety Act in Ireland was the ‘Safety, Health and Welfare at Work Act of 1989. HSA inspections are unannounced and are focused on areas of known highest risk and concern.

The purpose of OHS legislation is to protect people in the workplace. Employers have a legal and a moral obligation to do everything in their power to ensure the safety of all people entering their place of work. Employees too have a moral and legal obligation not to endanger themselves or their work colleague’s safety in anyway. Everyone has a right to be safe when at work. In addition to the moral and legal obligation, poor OHS is an economic burden for individual businesses, and the economy generally. Insufficient OHS management in businesses negatively impacts people and the overall economy due to accidents, incidents and illnesses and the associated costs in the form of medical bills, lost production, insurance claims, increased insurance costs and damaged reputation.

According to the European Agency for Health and Safety at Work (2013), in the EU-27 (the 27 Member States of Europe at that time), ‘8.6 per cent of workers experienced a work-related health problem in the past 12 months – this corresponds to 20 million people. A further 3.2 per cent of workers in the EU-27 reported having an accident at

work during a one year period – the equivalent of almost 7 million workers, with as many as 167,000 fatalities attributable to work-related accidents and diseases in the EU each year’.

In Ireland the HSA, the statutory Authority for health and safety, report that each day an estimated 150 people suffer a significant injury or illness caused by their work. This equates to approximately 1% of the working population (Central Statistics Office, 2012b). In addition to the suffering of the people involved, ‘conservative estimates put the cost to the economy of these episodes as €3.48 billion annually’ (Health and Safety Authority, 2011).

Health and safety compliance in businesses is inextricably linked with profitability. Good OHS practice enhances worker safety and results in fewer incidents, accidents and costs. However, many SMEs do not recognise the business case for health & safety reporting compliance in the current climate as a ‘burden’ for business. According to an economic evaluation of OHS conducted by Cagno *et al.* (2013), ‘large corporate groups are already persuaded that “safety pays and rewards” and are engaging in systematic evaluation attempts; by contrast, much more needs to be done to make the case with the smaller enterprises’.

### 3.3 SMEs and OHS Compliance

Compliance with health & safety rules in SMEs is of great importance as they account for the majority of enterprises in Ireland and globally thereby employing the majority of workers, they characteristically have few resources (technical & financial) to invest in safety compliance and they are also associated with higher safety risks. ‘Small businesses play an important role in global economies, employ half of all workers, and pose distinct workplace health problems’ (MacEachen *et al.*, 2010). Previous studies suggest that small workplaces have a higher number of accidents than their larger counterparts (Fabiano *et al.*, 2004) and are described as high risk industries (Gardner *et al.*, 1999, Sørensen *et al.*, 2007, Hasle *et al.*, 2009, Hasle *et al.*, 2011, Holizki *et al.*, 2015). SMEs are regarded as the key to economic recovery and advancement and employ the majority of workers, however, they are associated with higher OHS risks to workers and are known to have low levels of OHS management resulting in a human cost and a financial cost. ‘For independent enterprises, the ergonomic, physical and

chemical work environment is more hazardous in small enterprises than in large ones' (Sørensen *et al.*, 2007). Working in SMEs is viewed globally as more hazardous than in larger enterprises and compliance with OHS regulation is viewed as unsatisfactory. There are many reasons for this documented in the literature such as; small business size & characteristics, access to finance, governing regulation, access to information etc. (MacEachen *et al.*, 2010, Bloor *et al.*, 2013, Croucher *et al.*, 2013, Hasle, 2015). The issues small businesses have with regard to OHS regulatory compliance have long been recognised. Regulatory bodies and enforcement agencies such as the European Commission and local authorities in Member states regularly introduce new initiatives and strategies to help SMEs to better comply with health and safety rules. With small business owners responsible for regulatory compliance and also having to manage all aspects of the business, OHS can be very far down in the agenda (Hasle and Limborg, 2006). For example a comment from a small business owner, recorded by the ESRI Business Regulation Survey of 2008 states that, 'Health and safety is not a priority [as it is] already well set up. You know what you need to do and if audited are told what you need to do to pass' (The Economic and Social Research Institute, 2007). Hasle and Jensen (2006) in their study on changing the health & safety organisation within companies concluded that 'health and safety is not generally given high priority in companies' decision making processes. Priorities are first given to issues with direct relation to the central tasks of production'. Hence, there is an increased risk of injury for workers in small businesses and the injury risk has been found to increase as firm size decreases (McVittie *et al.*, 1997, Gardner *et al.*, 1999, Fabiano *et al.*, 2004, Lentz and Wenzl, 2006, Holte *et al.*, 2015). The unsatisfactory level of regulatory compliance in particular compliance with OHS requirements impacts negatively on the workers, the businesses themselves and on the economy in general in the form of accidents and associated costs.

Although there is much discussion and evidence in the literature regarding the 'burden' of regulation for SMEs as a reason for the unsatisfactory level of compliance, it is important to remember that there are other factors and competitive influences on regulatory compliance and in particular OHS compliance in the food and drink manufacturing sector. The problem of unsatisfactory safety compliance is an on-going issue for many decades and continues to be a challenge for SMEs, who have difficulty in complying with the many regulatory requirements imposed on them. The fact that

industrial practices and the world of work are changing, there are new safety risks emerging, resulting in new challenges to safety compliance. Hence, regulations and requirements are always changing adding to the problem of insufficient compliance. Therefore, when reviewing SMEs and OHS compliance we must take account of the drivers and the interventions which have had a successful positive impact on safety compliance as well as the many barriers preventing and deterring small businesses from complying.

### **3.4 Factors Influencing Regulatory Compliance in SMEs**

Although it has been demonstrated that improved safety practices contribute to a safe work environment and hence productivity and profitability, SMEs continue to report unsatisfactory compliance with OHS requirements. This may be because it is difficult to quantify the business benefits to be gained from reduced incidents and injuries despite evidence of occupational injuries and illnesses having negative impacts on productivity (Massey *et al.*, 2006, Haslam *et al.*, 2010, Croucher *et al.*, 2013). A number of factors have been identified as contributing to poorer OHS performance in small and medium-sized enterprises. Although not homogeneous SMEs have several challenging business characteristics in common and have a poor record of health & safety performance. OHS regulatory compliance in small business is influenced by many factors and there are many reasons why businesses implement OHS management systems including:

- Business characteristics and size
- Legal obligations, industrial relations concerns, ethical & moral considerations and to improve the financial performance by reducing workplace illness and injury & thereby reducing the associated costs.
- The business environment
- Supply chain
- Access to information on regulatory requirements
- Perception of risk within SMEs
- Intermediaries and enforcement
- The legislation and regulation itself.
- Access to finance

These factors have negative and positive impacts on the level of compliance, however, the barriers or the issues for compliance dominate the discussion as the level of OHS management remains unsatisfactory in SMEs. Many of the influences and factors impacting on OHS performance in small businesses are inextricably linked. According to Masi and Cagno (2015) who recently conducted a review of the barriers to OHS interventions in SMEs, the barriers to OHS compliance fall under three main headings; resources, regulation and information. When compared with their large counterparts, small businesses do not have the same resources but are required to meet the same regulatory requirements. The very characteristics and size of an SME can act as a barrier to satisfactory OHS management (Vickers *et al.*, 2005, Lepoutre and Heene, 2006, Legg *et al.*, 2015).

OHS performance in SMEs globally is influenced negatively by a number of these characteristics such as; a lack of technical and financial resources (Micheli and Cagno, 2010), commercial pressures, and high work demands (Andersen *et al.*, 2007), when compared with the larger enterprises. These characteristics impact negatively on many business areas to include regulatory compliance within small business and put SMEs at a major disadvantage economically. Furthermore, SMEs have a poor awareness of the economic benefits of health & safety and a poor understanding of safe working practices (Walters, 1998, Barrett *et al.*, 2014).

SMEs have a number of defining characteristics which can make it difficult for them to achieve regulatory compliance. The size of these enterprises has been related to OHS performance, with OHS performance in larger enterprises more satisfactory than in small enterprises. Studies report a lower occupational health & safety compliance rate in SMEs when compared with larger enterprises. The size and the limited resources of small business characteristically results in informal management systems, inadequate training and information arrangements, high work demands with operatives responsible for completing more than one job task, longer working hours, fatigue, higher staff turnover, etc. (Lamm, 2014, Holizki *et al.*, 2015, Holte *et al.*, 2015, Legg *et al.*, 2015). The impact of these characteristics on OHS and safety management generally are numerous and are most often negative.

However, a number of authors have recognised the special nature of SMEs as something which can be utilised in a positive manor. The influence of the owner-manager and the short time involved in decision making should not be under estimated

and could be used to the advantage of worker safety. Laird *et al.* (2011) identified studies which have shown that ‘there are certain characteristics of small business that potentially provide positive opportunities for the implementation of preventive interventions’. The owner-manager plays an active role in the management and decision making, due to the informal management structure ‘a business decision can be made immediately as there is no specialised management structure i.e. shareholding and management are separate’. The small business owner-manager directly influences decision making and the attitude towards safety practices. They are the leaders and their values determine the business approach to health & safety (Baldock *et al.*, 2006, Hasle and Limborg, 2006).

The nature of the business can also influence OHS and can be the deciding factor with regard to the level of compliance with OHS requirements. Corneliussen (2005) found that smaller firms carrying out hazardous processes have more motivation when making improvements to and maintaining health and safety standards, suggesting that the nature of the business or product risk leads to this motivation. The business environment on the other hand can exacerbate health & safety performance. Companies who pay employees based on piece work have a negative impact on worker safety as it encourages risk taking behaviour. The more work or pieces completed the higher the rate of payment (Johansson *et al.*, 2010).

Hasle *et al.* (2009) found that small businesses for the most part ‘considered accidents as unforeseeable and therefore in most cases the owners refrained from initiating any accident prevention measures’. There are varying perceptions of health & safety within different enterprises. Vassie *et al.* (2000) in a comparative study of OHS management systems in Spanish and UK SMEs found that Spanish SMEs viewed OHS management as beneficial, regarding it as ‘a good idea’. While the UK SMEs regarded OHS regulations as important but too complex and described OHS management systems as ‘costly’ and a ‘sales gimmick’. Fielding *et al.* (2011) who designed and tested a sector specific information resource to aid food safety compliance in food & drink SMEs found that the SMEs believed that they were already compliant as they had systems in place. However, a questionnaire assessment conducted in the enterprises to measure this compliance did not support this. The literature reports that accidents are more frequent in small enterprises, there is a lack of OHS expertise, unsatisfactory environmental conditions and safety intervention is often limited (Fabiano *et al.*, 2004,

Cagno *et al.*, 2013). There is a misconception that equates small size with low risk. In reality, accident rates in small businesses can be higher than in larger operations with the level of work related injuries, fatalities and ill health in small business described as unacceptably high (Walters, 2004). The fatality rate in SME manufacturers in England was found to be twice that of larger ones (Fairman and Yapp, 2005). While in a European study, incident rates for non-fatal accidents in the period 2000 to 2005 were highest in units with 50-249 employees (Commission of the European Communities, 2008).

There is a higher risk of accidents in small business due to their size, but it has been established that a higher rate of accidents is not always related to size alone, the type of ownership and work environment can also be a major contributing factor (Sørensen *et al.*, 2007, Bjerkan, 2010). Many employees and the owner and or manager ‘wear a number of hats’, and are often responsible for more than one job task (Andersen *et al.*, 2007, Hasle *et al.*, 2009). In some firms ‘the owner must take on the role of the production worker, as well as owner, for the firm to remain viable’ (Patton, 2002). Pressures on time, resources and profit lead to many operatives multi-tasking, working very long hours, often without sufficient breaks. The consequences of these practices are fatigue, stress and an inevitable higher accident rate (Masi and Cagno, 2015). In the ten year period April 2000 to March 2010 almost 77,000 workers in the food and drink industries suffered an injury reportable to HSE and there were 36 fatal injuries (excluding contractors) (Health and Safety Executive, 2014). In Ireland the HSA reports 150 injuries daily, 1% of the working population are injured every day (Health and Safety Authority, 2014b). In addition to this employees in Irish SMEs were less likely to have received training (Dorothy Watson *et al.*, 2011).

Furthermore the under-reporting of accidents and incidences has been identified in small businesses. Legg *et al.* (2015) in a review of previous research on OHS in small business state that ‘there is probably a high level of underreporting for small businesses’. Hence the actual level of compliance with health & safety in SMEs is difficult to ascertain. Under-reporting was found to be higher in working environments with poorer organisational safety culture or where supervisor safety enforcement was inconsistent (Probst and Estrada, 2010). Vassie *et al.* (2000) highlighted a reluctance of small enterprises to approach the health and safety authorities because of fear that it might stimulate a visit. Diugwu (2011) concluded ‘that although there are many

avenues through which organizations can access information on health and safety, there was however a reluctance by organizations (especially SMEs) to approach health and safety regulators and government agencies for help, out of a fear of being punished for poor health and safety performance'. An International Labour Organisation (ILO) report 2012 also expressed concerns over the under-reporting of near misses and work-related health problems. Statistics on occupational accidents and diseases are often very incomplete because under-reporting is common and official reporting requirements frequently do not cover all categories of workers – those in the informal economy, for example' (International Labour Organization, 2012b). An international review of SME working conditions found that the 'vast majority of financial costs are borne by workers and the community rather than employers. The review also concluded that financial incentives aimed at reducing the number of accidents can be misused by employers and can encourage under-reporting and cost shifting by the employer rather than a reduction in the incidence of injury and disease' (Croucher *et al.*, 2013). More recently the European commission estimated that 82% of occupational injuries and 90% of fatal accidents happened in SMEs however, 'establishing the national injury/illness burden contributed by SMEs is difficult', this is likely due to more under reporting from SMEs than larger enterprises (Targoutzidis *et al.*, 2014). Health and safety regulatory compliance is viewed as, complex, expensive and time consuming and is often left to the side resulting in accidents, injuries and illness. The business case for health and safety is not yet recognised to the detriment of worker safety and economic advancement.

Although regulation is described by SMEs time and again as a 'burden' and as the main factor negatively influencing compliance with regulation. It is important to note the purpose of, the requirement for and the benefits of regulation.

Regulation is a reality from the beginning of a firm's life to the end. Working to comply with it can be complex and costly. It is a key instrument used by governments to protect and provide many benefits to companies and to citizens. Regulation is imposed by law and compliance is mandatory. Legislation promotes order, a positive business environment, employment and the health & safety of people and the environment internationally, hence providing societal benefits.

Irish food and drink manufacturing SMEs are governed by both Irish and European legislation. The majority of regulations emanate from the EU and are cross-sectoral in

nature with some exceptions such as food safety. OHS and FS legislation is in place with the aim of protecting the worker in the workplace and the consumer of manufactured food products. Compliance with regulation must be demonstrated using a documented system and can be assessed in the form of an inspection from the governing authorities.

The European safety legislation is written in a manner in which the requirements and the method of complying with the requirements is open to interpretation by each Member state. In Ireland, interpretation of the legislation by enforcement officers and inspectors within each governing body and authority can often vary also. Compliance with Irish and European safety legislation is the responsibility of the ‘food business owner’ (FBO) as described in food law and the ‘employer’ as described in OHS law.

Despite being a requirement, compliance with OHS regulation in SMEs is unsatisfactory resulting in both a human and an economical cost. Small businesses have a limited capacity to manage OHS, reporting compliance as problematic (Hasle and Limborg, 2006, James *et al.*, 2015). Health & safety regulations are described as challenging and complex (Walters, 2004, Legg *et al.*, 2015). Almost 30% of Irish firms ‘express negative views of the ease with which regulations can be understood and with the extent to which regulations are consistent with one another’ (The Economic and Social Research Institute, 2007). With the result that a percentage of small businesses only implement OHS management systems and quality management systems at the request of customers or due to enforcement measures. Policy, legislation and interventions not fitting with OHS problems and there are few interventions studies with evidence of improved OHS (Eakin *et al.*, 2010, Cunningham and Sinclair, 2015).

The reported burden of regulatory compliance for SMEs is acknowledged by the European Commission and governments nationally who have introduced many initiatives to reduce this ‘burden’. Since 2005, 660 EU initiatives have been introduced to cut red tape and reduce the burden for SMEs (European Commission, 2013). When referring to a regulatory burden small business for the most part are referring to the total cost incurred by a business that is created by a regulation. Including all costs that result from mandatory obligations placed on businesses by enforcement agencies and regulatory authorities on the basis of legislation. Costs created due to the complexity of regulation, the amount of regulation, the inflexibility of regulation, the compliance

costs and the administrative burden etc. The cost of legislation is a significant issue, with the regulatory burden imposed by health and safety regulation for small businesses costing €243m a year (Health and Safety Review, 2010).

Another impact that the burden of regulation can have on the growth of small business is the decision by the owner not to expand above a certain level, for example, not to source customers who may have additional regulatory requirements or who may require them to comply with standards. Aterido *et al.* (2011) refer to this as a 'growth bottleneck', they found that small businesses had a fear of expansion as it may lead to exposure to further red tape/regulation. Fear of business expansion within an economy primarily composed of small businesses will certainly impact negatively on economic growth and advancement. Data from a survey of 56,000 enterprises in 90 countries found that business regulations, 'measured as the percentage of management time spent dealing with regulations, have a negative effect on the growth of small firms'. Enterprises reported that the burden of stringent regulations is such that small firms are remaining small to avoid further regulatory requirements, to 'grow less in order to hide from the authorities' (Aterido *et al.*, 2011). In addition, burdensome regulation governing the entry newcomers into business may have a 'disproportionate effect on potential entrepreneurs' (Levie and Autio, 2011).

Despite the numerous initiatives such as, The Small Business Act of 2008 (SBA) and more recently the Regulatory Fitness and Performance Programme (REFIT) 2014, there is a gap or a disconnect between theory and practice (Sampson *et al.*, 2014, Hasle, 2015).

The limitations of the many initiatives are well documented in European Commission reviews and as recently as 2013, 'The positive impact of the newly implemented measures has not yet been observed by SMEs due to the lead-time effect or due to the lack of communication between policy makers and SMEs' (European Commission Project Consortium, 2013). Regulation itself is beneficial, however, the design and the dissemination of regulation are problematic. Ireland in particular has not yet bridged the gap between policy and practice (The Organisation for Economic Co-operation and Development, 2010). Small businesses have difficulties in meeting the demands from authorities, and have significant problems complying with legislation (Vickers *et al.*, 2005, Baldock *et al.*, 2006). The reasons for these problems are inextricably linked with firm size, lack of resources, informal management etc. discussed earlier and these problems are characteristics result in SMEs perceiving regulation as burdensome.

Although regulations are regarded by small business as burdensome, compliance with regulations can result in a number of benefits for business. The most significant benefits of compliance with safety regulations are illustrated in Figure 3.2. These benefits are for the most part not recognised by SMEs as the costs of accident and illness are not measured and it is difficult to quantify the improvements of OHS compliance.

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*Figure 3.2 The Advantages of Regulatory Compliance*

Kitching *et al.* (2015) argue that regulation enables as well as constrains performance. They have also identified how regulation can promote and enhance business performance. Compliance with regulation for example can assist with, consistent quality of product, enhanced competitiveness, increased productivity and provide a safe work environment. This in turn enhances sales, reduces injuries and illness and generates a favourable professional reputation. Regulations and compliance can enable access to new markets and increase business opportunities. For example, market entry and the supply of goods and services in sectors such as transport, food production and distribution, entertainment and leisure, and health and care services is regulated. Breaking into these markets requires licencing and compliance (Kitching *et al.*, 2015). In the food and drink sector, a business cannot commence trading without first demonstrating compliance with food safety regulations. All food & drink business must have an approved safety management system in place prior to start-up.

Compliance with safety regulations in food and drink manufacturing will result in a safer workforce and a safer consumer base, which in turn reduces the number of incidences and accidents and the resultant costs to the economy. As well as the importance of reducing incidences and costs, safety compliance promotes business reputation and economic advancement. However, At present, surveys conducted reveal that the level of compliance with regulations, in particular health and safety regulations in the food and drink industry, is unsatisfactory, with food business operators reporting barriers to implementation (The Economic and Social Research Institute, 2007, Diugwu, 2011, Food Safety Authority of Ireland, 2011, Department

for Business Innovation and Skills, 2013). The current level of compliance is poor and current regulations are described as burdensome. This poses a risk to people (workers and consumers) and also to economic advancement. It is important that the safety message reaches small businesses and that regulations are suited to their needs and resources. A review of the literature in terms of the economic evaluation of OHS interventions found, the ‘large corporate groups are already persuaded that “safety pays and rewards” and are engaging in systematic evaluation attempts; by contrast, much more needs to be done to make the case with the smaller enterprises’ (Cagno *et al.*, 2013).

An economic crisis leading to a global recession in 2008 further impacted on the reported issues of unsatisfactory compliance with regulation. A European Commission review on the performance of the European economy and the success of the Small Business Act of 2008, reported that in 2013 small businesses continued to bear the brunt of the crisis more so than their larger counterparts (Gagliardi *et al.*, 2013). For small food business owners the additional cost of OHS compliance has a far greater impact on business as the typically limited resources are already strained with the cost of food safety compliance. A Food Safety Authority of Ireland survey found that ‘47% of the 3817 small businesses surveyed cited regulation (food safety) as an obstacle to the success of their businesses’ (Food Safety Authority of Ireland, 2011). The survey also reported that the cost of food safety regulation, regarded as part of the ‘regulatory burden’ by SMEs, can act as a deterrent for start-up businesses with 22% of new food businesses reporting significant challenges’.

Adding the cost of compliance with OHS regulation to the existing food safety compliance costs, many enterprises are prevented from starting up and the growth of many existing enterprises is hampered. Regardless of size, all food and drink manufacturing businesses must have a management system for both OHS and food safety and must demonstrate compliance.

Poor access to finance further exacerbates the level of regulatory compliance in SMEs (Targoutzidis *et al.*, 2014, InterTradeIreland, 2015). Aterido *et al.* (2011), from an international study of more than 56,000 enterprises in 90 countries noted ‘a positive effect of increased access to finance on the employment growth of medium and large firms and no significant effect among micro and small enterprises’. This is a significant finding supporting small business claims of poor access to finance as an obstacle to

advancement. SMEs have a high level of reliance on bank financing and generally have more limited internal resources as a result they tend to rely mainly on banks for funding. The credit constraints experienced by small business limit the investment and employment performance of SMEs (InterTradeIreland, 2015). In a difficult economic environment, access to finance has worsened, and despite the efforts of governing bodies the problem remains. A report on business demographics in Europe revealed that ‘in many countries the funding conditions for small and medium-sized enterprises (SMEs) have worsened more than those for large companies’ (Vetter and Köhler, 2014). More recently, an InterTradeIreland report found ‘a higher probability of difficulties in accessing finance faced by smaller and younger firms’. The report determined that between 2012 and 2014, employment has remained the same at 76.89% within the participating SMEs and there has not been any investment growth in 66.33% of the enterprises. It concluded that supporting access to finance for SMEs should be an ongoing policy objective in increasing the growth of the SME sector (InterTradeIreland, 2015).

There are costs associated with compliance. Legislative acts and policy initiatives most often produce costs and benefits. These costs apply to compliance with all governing regulations and are again amplified for the food and drink sector and SMEs. Each piece of legislation may impose several information obligations. The main factors adding cost to regulatory compliance are described in a summary compiled from the literature as;

- Consultancy Fees – wage costs external
- Wage Costs – activities done internally and externally
- Time required to complete each activity
- Managing the system – testing etc.
- Compliance costs
- Enforcement costs
- Administration Costs - recording and filing paper work,
- Lost time – due to inspections,
- Reporting requirements (LaMontagne *et al.*, 2004, Small Business Forum, 2006, Hopkins, 2007, The Economic and Social Research Institute, 2007, Haslam *et al.*, 2010, Renda *et al.*, 2013, Hale *et al.*, 2015).

Complying with regulations can also involve the requirement to purchase certain materials and equipment, implementing additional procedures and tests conducted by subcontractors adding to costs. A review measuring 11 years of EU regulation found ‘the costs of regulation outweigh the expected benefits of the regulation’, Gaskell and Persson (2010), reported the cumulative cost of regulations introduced in the UK between 1998 and 2009 at £176 billion, with £124 billion or 71% of this cost arising from EU regulation. In Ireland the cost of legislation is also a significant issue, with the administrative burden alone imposed by health and safety regulation for small businesses costing €243m a year’ (Health and Safety Review, 2010). As in the UK, EU regulation also governs businesses in Ireland therefore the cumulative cost of regulation and compliance is a large cost to the economy. According to Gaskell and Persson (2010) the European Commission’s official estimate for the administrative burden in the EU (domestic and EU regulation combined) amounted to 3.5 percent of GDP in the EU, which in 2009 would have been about €413 billion.

In the food and drink sector these costs are more significant as both OHS and food safety compliance require financial resources. Having fewer resources due to size and business characteristics, small businesses struggle economically and following the economic crisis this struggle is more pronounced, ‘regulatory obstacles can hamper the development of a competitive corporate landscape and ultimately result in negative employment effects’ (Vetter and Köhler, 2014). The main issues for business are;

- A disproportionate burden on SMEs
- A lack of finance to invest in OHS
- A fear of expansion with business believing a larger business may result in further ‘red tape’. Aterido *et al.* (2011) in a comparative study of more than 56,000 enterprises in 90 countries found that micro enterprises feared that growing in firm size would lead to additional regulatory costs.

An expert group on regulatory issues on behalf of the European Council collecting and analysing information on the various methods that have been used successfully to reduce the burden of public regulation on small businesses, found that the costs of regulation are higher for an SME than those for a large enterprise. Regulation was ranked as a more important challenge by micro and small businesses more so than

medium and large (Enterprise and Industry, 2007). The cost of legislation is a significant issue, with the administrative burden imposed by health and safety regulation for small businesses costing €243m a year (Health and Safety Review, 2010).

The most recent strategy introduced by the European Commission is the EU Strategic Framework on Health and Safety at Work 2014 – 2020. This strategy was developed following an online public consultation to seek stakeholder views on the implementation of the previous OHS strategy (2007-2012). The consultation identified that more should be done to reduce administrative burden and compliance costs for small and medium-sized enterprises (SMEs) while maintaining a high level of compliance with OHS principles, regardless of the size of the company. Gaps were acknowledged, particularly in terms of the impact of regulation on ‘individual companies at local level, especially SMEs’. In addition, ‘statistical data collection and the development of monitoring tools were found to be insufficient’ (European commission, 2014a).

Nevertheless it must be noted that there is also a cost associated with non-compliance, this is a cost that is often overlooked by small businesses, due to the informal management structure and ‘ad hoc’ approach described above, and costs of incidents, accidents, etc. are not measured. A study of 129 businesses across the UK, 49 of which were SMEs found that the ‘vast majority (94%) of participants did not know how much injuries were costing their business’. Only 10% of SME representatives were aware of the costs and none of the organizations had monitored the cost of occupational illness (Haslam *et al.*, 2010).

Non-compliance in addition to the human cost of accidents, the pain, suffering and disability inflicted on workers as a result of poor health and safety practice, imposes or results in a business cost. The Health and Safety Executive (2005) suggest that ‘the cost of food and drink accidents could represent as much as 37% of profit; 5% of operating costs; 36 times the insured costs’. Such large-scale estimates demonstrate the magnitude of the problem.

The non-compliance costs for food and drink manufacturing enterprises and businesses compiled from the literature include;

- High staff turnover – training costs
- Accidents and incidents

- The loss of a skilled worker – recruitment and training costs
- Doctors bills and claims
- Prohibition notices – stopping production
- Improvement notices – remedial action within a specified timescale
- Prosecution and fines
- Insurance costs
- Damaged professional reputation
- Reduced trade
- Lost profit

This list was compiled following a review of the literature. The costs of non-compliance are discussed in many studies conducted by researchers such as, (LaMontagne *et al.*, 2004, Small Business Forum, 2006, Hämäläinen, 2009, Hasle *et al.*, 2009, Elsler *et al.*, 2010, Haslam *et al.*, 2010, Taubitz, 2010, Cagno *et al.*, 2013, Niskanen *et al.*, 2014).

Although it is obvious that ineffective health and safety management incurs a cost on business, these costs are still very much hidden and difficult to evaluate objectively at small business level (Cagno *et al.*, 2013). Costs of accidents and injuries can easily be demonstrated as they are immediate and more measureable. However, the cost of occupational illness, absenteeism, productivity losses etc. are not as evident, they are more long term. Hence, SMEs are often unaware of the true cost of poor OHS performance. If SMEs are unaware of these costs it can also be expected that they are unaware of the economic benefits of proactive health and safety management. Following a study of businesses perception of injury and illness costs, Haslam *et al.* (2010), revealed that ‘90% of SME respondents did not feel that occupational injury represented a substantial business cost, while just over half of those from large organizations did’.

The non-compliance costs strain the already limited resources of small business, exacerbating the issue of unsatisfactory compliance by further restricting their ability to invest in improvement measures. I have portrayed the inextricable link as a ‘vicious circle’ in Figure 3.3.

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*Figure 3.3 The Vicious Circle of Compliance*

Whilst compliance costs are a continuous issue and discussed regularly, there is less of a focus on the cost of non-compliance. Conversely, following the economic recession in 2008, the problem of and cost of non-compliance has been prioritised once again by governing bodies. The EU and governments globally have and are reviewing legislation, with a view to reducing the economic burden and promoting growth, in particular the growth of small businesses. Non-compliance with health and safety results in a cost to businesses and also to the workers. The cost of non-compliance with regulation, to workers, businesses, and the EU Member States, ‘is one that we cannot afford – estimates put it at around 3 per cent of GDP’ (European Agency for Health and Safety at Work, 2013).

The factors having the most positive effect on health & safety performance were found to be enforcement influences, supply chain and intermediaries. The enforcement of regulation has a definite impact on the level of compliance. Again the impact can be positive and negative, however, for the most part enforcement has been proven to enhance regulatory compliance. Inadequate enforcement and absence of preventive systems have also been reported as a cause of poor OHS practices in SMEs (Flin, 2003). OHS inspections are for the most part announced, a risk-based approach whereby higher risk establishments are accorded a higher priority for inspection. This has been the case for a number of years in health and safety regulation (Baldock *et al.*, 2006). This is also true of the approach to OHS enforcement by the Health & Safety Authority in Ireland which can reduce the impact of enforcement on OHS performance in SMEs. According to Russell *et al.* (2015) this is an area that should be considered with some urgency. Following a review of occupational health & safety trends in Ireland, the authors when testing the effect of the annual inspection rate (per 1,000 workers) on the likelihood of a work-related injury, found that a higher inspection rate was associated with a significant decline in the likelihood of work-related injury. The review concluded that the enforcement of health and safety regulations can have a positive effect on reducing injuries. According to Levine *et al.* (2012) in research carried out on inspections and the burden of inspections concluded that random

unannounced inspections were less burdensome and produced better long term results. The study found a reduction in accidents over a period of four years (Levine *et al.*, 2012). Hence, improved consultation with SMEs and a determined frequency of unannounced OHS visits in SMEs may enhance the level of compliance and also the level of awareness. In Ireland, State support for enforcement and prevention of occupational injury and ill-health has fallen, as a consequence of the fiscal crisis. Russell *et al.* (2015) suggest from their findings that further falls in the inspection rate could have negative consequences for workers.

In the Irish food and drink sector businesses cannot trade without an approved working food safety management system. Enforcement of food safety is therefore stringent with three agencies responsible for conducting inspections. For this reason compliance is almost accepted as a matter of course. Hence there is more of a culture of compliance with regard to food safety. This focus on food safety compliance can often result in health & safety requirements being left aside. Legal rules have to be monitored and enforced to be effective and this will incur a cost on businesses. Enforcement cost as with all costs sustained by businesses have a greater impact on SMEs due to their characteristic lack of resources. Hence, regulatory enforcement is often included as an element of the perceived burden of regulation. Costs incurred due to enforcement include; downtime during inspections, report writing and implementing corrective actions etc.

Intermediaries working with SMEs can impact small business compliance directly. There are many different intermediary types and research suggests that OHS compliance can be improved through collaboration with the intermediaries involved with the SMEs such as; suppliers, customers, insurance companies, accountants etc. (Hasle *et al.*, 2010, James *et al.*, 2015, Olsen and Hasle, 2015). Diugwu (2011) found that the main influence on health & safety management practices in SMEs, was through their collaboration with larger enterprises. SMEs were found to be 'more receptive to improvement ideas recommended to them, or demanded by their bigger associates for fear of losing out on contracts'. Kvorning *et al.* (2015) identified a possible avenue in the utilisation of trusted intermediaries to disseminate information on OHS requirements and benefits.

There are a number of associations who support Irish SME business needs. These

associations provide guidance, information and updates for small business on all matters relevant to their business. The largest intermediary for SMEs at European level is the European Association representing the interests of European Crafts and SMEs known as UEAPME and regarded as the voice of SMEs in Europe. This is the employers' organisation representing the interests of European crafts, trades and SMEs at EU level and is a recognised European Social Partner. It is a non-profit seeking and non-partisan organisation. As the European SME umbrella organisation, UEAPME incorporates around 80 member organisations from 34 countries consisting of national cross-sectorial SME federations, European branch federations and other associate members. UEAPME represents more than 12 million enterprises, which employ around 55 million people across Europe (European Association of Craft Small and Medium Enterprises).

At a National level there are a number of intermediaries supporting small business needs such as:

- Irish Small and Medium Enterprises Association (ISME)
- Small Firms Association (SFA)
- Food and Drink Industry Ireland (FDII)

Both ISME and the SFA, represent small business in all areas relevant to their business needs. ISME describe themselves as the only independent representative body for small business owners. ISME give advice and support, promote, lobby on behalf of and provide training for SMEs (Irish Small and Medium Enterprises Association, 2014). The Small Firms Association (SFA) 'the voice of small business' in Ireland promote themselves as a 'one stop shop' for small businesses in Ireland. Providing the following for SMEs:

- Business Advice
- Management Training
- Voicing small business needs
- Networking Opportunities to build valuable business relationships
- Free Company Profiling through the SFA Website

- Membership Directory of other member companies with contact names (Small Firms Association, 2014).

The FDII represents the interests of the food, drink and non-food grocery manufacturers and suppliers. It is the main trade association for the food and drink industry in Ireland (Food and Drink Industry Ireland, 2014).

The information provided and communicated on OHS matters by these intermediaries is outlined in Table 3.2.

*Table 3.2 Intermediaries Working with SMEs and the Communication of OHS Matters*

Information source	Does the source address OHS?
Irish Small and Medium Enterprises Association (ISME) www.isme.ie	Address OHS very well, with a number of valuable documents on the site, however the information is only accessible to members. 'Membership costs are calculated on the size of the business'
Food and Drink Industry Ireland (FDII) www.fdi.ie	This group support food and drink businesses of all sizes in Ireland. The group primarily address food safety and other business and economic matters.
Small Firms Association (SFA) www.sfa.ie	This association have addressed OHS comprehensively, however, access to the detailed information of value to the small businesses requires membership. The cost of membership is not quantified, a name and email address are required to access this.
Enterprise Ireland www.enterprise-ireland.com	The group address OHS very well, it is included on a number of pages in the site, and most importantly there is a link to the health and safety authority website in the 'Business Start-up' section of the website. Access to all areas and information on this site are free of charge.

Kvorning *et al.* (2015) found that mainly the employer associations and personal networks had an impact on the motivation of SMEs and health & safety performance. In Ireland the associations supporting small business for the most part address occupational health & safety regulatory requirements and direct users to guidance documents. However, unless an SME owner is looking for OHS information, these associations do not have an impact on health & safety performance.

The food and drink manufacturing sector like other sectors is influenced by customers, regulators and the supply chain. For the most part, these intermediaries influence regulatory compliance predominantly from a food safety compliance view point. Again, the food and drink sector is primarily concerned with food safety, the safety of the consumer and the international reputation of the sector due to the value of exports to the economy. Customers mainly look for confirmation of food safety management systems and quality systems and if the requirements go beyond this, as with the findings of Aterido *et al.* (2011), some SMEs will avoid this 'burden' of further requirements by remaining small. The supply chain, does not have a particular influence and suppliers are most often small and medium-sized enterprises themselves. Small businesses owners often being unaware of OHS requirements and having to deal with all of the other aspects of business tend to leave health & safety to the side. The OHS message is not reaching small businesses.

### **3.5 Information Sources and Communicating the Safety Message**

The nature of small business is fast paced, with time constraints and poor resources. Compounding these issues is the problem of dissemination of policy and guidance to the SMEs. It is evident from the literature that there are a number of broken links within the regulatory chain from the EU through to the small business owner with regard to communication. In simple terms, the policies, guidance documents and initiatives are developed at a European level, from there they communicated to the Government representative of each Member state. The Governments must then inform the relevant authorities. The relevant authorities are responsible for the dissemination of the information to the businesses on the ground.

To communicate the safety message internally within organisations, methods used may be formal and informal, verbal and written and must ensure a two way communication between management and staff. However to communicate the safety message within an organisation, it must first be communicated to the organisation. In Ireland the communication of health & safety information and food safety information including the relevant statutory documents, regulations and guidance is the responsibility of the HSA and the FSAI respectively. Both the HSA and the FSAI

primarily use their websites to communicate with industry.

Information for SMEs is disseminated primarily using the international web. However, the cost of technology can be insurmountable for SMEs and many SMEs are not able to afford the cost of connecting (Forfás, 2011). According to a survey run by the Central Statistics Office (CSO) in 2008 only 29% of Irish micro enterprises from a sample of 3485 SMEs had a website (Central Statistics Office, 2008). In 2008 the survey recorded that 98% of SMEs were using the internet, however, more than 80% of the completed surveys were returned by post. Only 66% of micro-sized enterprises were using the internet. Considering that more than 80% of small business are micro-sized and that a Forfás review conducted on behalf of the Irish Government found that the majority of Governing bodies within Ireland such as the Health & Safety Authority and the National Standards Authority use their websites to communicate regulations, legislation and European initiatives, awareness of and compliance with requirements may therefore be effected due to the internet being used as the primary method of dissemination (Forfás, 2011).

Lamm (2002) also highlighted communication with SMEs as an issue. Lamm found that, 'the OHS programmes and interventions aimed at the small business are overwhelmingly concerned about providing electronically accessible, comprehensible, guidance material, the question is 'do small businesses know where to access the information and how useful is this information?' (Lamm, 2002). Lentz and Wenzl (2006) also noted the difficulties with dissemination of information to small business when conducting a surveillance study of SMEs. They found that to improve safety awareness of employers and employees, the best means of reaching the numerous small worksites had to be considered. They concluded that 'it may be useful to poll a sample of these employers to learn if they have web accesses'. For many years authors have questioned the effectiveness of the internet as a method of disseminating important information to SMEs. Surveys carried out have demonstrated that the method is not as effective as the intermediaries may expect. The European Association of Craft Small and Medium-sized Enterprises (2012), (UEAPME) state that some 50% of European SMEs are one person enterprises and the average SME has only 6 employees. Based on these figures and the findings from the literature such as;

- The low number of enterprises reportedly using online services documented in

the Small Business Ireland survey of 2008,

- The lack of awareness in SMEs with regard to regulatory requirements and
- The poor level of communication of initiatives by the authorities (identified in the literature).
- Can it be assumed by the regulators and the authorities that;
- Small business owners have access to the internet?
- SMEs are aware of the presence and availability of groups who support them?
- SMEs know where to find the information needed to help them with safety regulations and compliance?

If the internet becomes a default medium for the dissemination and transfer of information, SMEs who have not yet adopted the internet will be at a disadvantage and their growth will suffer. The aim of the European Commission and the Irish Government is to enhance the competitive position of SMEs, however this cannot be achieved if the information is not accessible. When deciding on a method of communication, the characteristics of SMEs, in particular micro enterprises must be considered. These include a lack of resources, expertise, time etc. (MacEachen *et al.*, 2010).

### **3.6 Emerging OHS challenges**

Although this study does not develop on the emerging challenges to OHS within the food and drink industry, it is important to acknowledge that significant changes are taking place within the workplace due to internationalisation of businesses and free movement of people globally. In addition to the trade benefits from internationalisation, it also poses significant new challenges to safety. These challenges may have a further negative impact on the unsatisfactory level of compliance within small businesses.

A changing world of work leads to new challenges for the health and safety of workers such as:

- The economic crisis,
- Demographic change,
- An increasing number of micro-enterprises,

- An increasing number of people who are self-employed – which is an on-going trend being reinforced in the context of the economic crisis,
- People who work in several workplaces/having multiple jobs,
- An increase in sub-contracted work,
- Short-term work contracts (European Agency for Health and Safety at Work, 2013).

All of these changes pose specific challenges of OHS management in terms of monitoring, enforcement and raising awareness, ‘as it gets more difficult to reach smaller workplaces’ (European Agency for Health and Safety at Work, 2013).

Globalisation of trade and culture and the new approach to work for example, short term contracts, temporary positions and people working more than one job per day, also poses additional challenges for SME owners in terms of OHS. One such example is the training of operatives, in particular in the food and drink sector where seasonal contractual work is common place. These temporary or contract workers find themselves at a greater risk, as a result of short-term contracts as training may not be provided. The economic challenges and the new approach to work combined often lead to workers needing to work more than one job per day/week. Working in several work places at the one time may result in stress, fatigue and increased risk. The reclassification of work i.e. employers moving workers to sub-contractor class increases the vulnerability of workers. Employees on short term contracts or casual labour do not have the same protection or legal rights as full-time employees. Workers with flexible forms of employment often receive less OHS training, which increases the risk of occupational accidents. ‘The disruption of human biological rhythms, the increase of workers fatigue due to changes in patterns of working hours and years of employment, job insecurity and occupational stress, which have a serious impact on workers’ health and may result in an increase in occupational accidents’ (Papadopoulos *et al.*, 2010). This type of worker has been classified by Professor Guy Standing as ‘the Precariat’ (Standing, 2011). This new class of worker is described as, ‘moving in and out of jobs that give little meaning to their lives’ and are precarious in terms of workers facing lives of insecurity due to informal poorly paid jobs, as the new normality in global markets. In Ireland the Health & Safety Authority also noted a change in the nature of the workforce stating that an increased casualisation of the workforce has been observed since the economic downturn (Health and Safety

Authority, 2013a).

Furthermore with the movement of people, the workplace becomes culturally diverse with migrants employed across all industries. Cultural diversity adds to OHS risks for many small business owners and for the workers themselves. Complexities such as the language barrier, perception of safety, desperation for work etc. can lead to miscommunication of instruction and training (Forfás Expert Group on Future Skills Needs, 2013, Starren *et al.*, 2013). The statistics in Ireland reveal that, '30% of those employed in food and beverages are non-national and the national average is 13%' (Forfás Expert Group on Future Skills Needs, 2013).

The EU27 population is projected to become older with the median age projected to rise from 40.4 years in 2008 to 47.9 years in 2060. This will result in an increase of 13% in the share of people over 65 years, 84.6 million in 2008 to 151.5 million in 2060 and the number over 80 years tripling from 21.8 million in 2008 to 61.4 million in 2060 is projected (Giannakouris, 2008). In Ireland trends indicate that the share of persons aged 65 years and over in the entire adult population as described, will increase from 53 % to 58 % between 2010 and 2021 (Sexton, 2012). With people living longer and working for more years, an ageing workforce is expected to add to the OHS challenges in the work place (Papadopoulos *et al.*, 2010). Schwatka *et al.* (2012) concluded injury at an older age was related to higher injury costs not due to the number of injuries but due to the severity of injuries. With the food and drink industry being physically demanding and the work environment characteristically hazardous and fast paced, reassigning the older worker to less cumbersome work may prove difficult. Research is required to establish the requirements of and to identify the risk factors relating to the older worker in the food and drink manufacturing workplace, to effectively manage a health and safety program that addresses the needs of the aging worker.

An emerging challenge, for all categories of worker with regard to OHS, is the consideration by the European Commission to introduce exemptions for small businesses, in particular micro-sized enterprises which incidentally account for the majority of SMEs. The European Commission (2011), state that 'from January 2012 the Commission's preparation of all future legislative proposals will be based on the premise that in particular micro-entities should be excluded from the scope of the

proposed legislation unless the proportionality of their being covered can be demonstrated'. The Commission say that this will be achieved without undermining public policy objectives however, the report demonstrates that small businesses are concerned that these exemptions and extended transition period for regulatory compliance may have a negative impact for their businesses. In addition to incidences where the regulatory burden can outweigh the benefits, there are also 'instances when lightening the burden for smaller operators, could produce broader negative repercussions which could outweigh any benefits' (European Commission, 2011). The Commission in response to this realisation have decided that involving SMEs in the decision making regarding exemptions will settle their concerns. An international literature review examining whether or not better working conditions improve SME performance also found that 'the efficacy of a 'light touch' approach to regulation is contested' (Croucher *et al.*, 2013). An example of the dangerous interpretation of these planned exemptions is contained in a speech made by David Cameron, Prime Minister of the United Kingdom to an audience of SMEs, "So this coalition has a clear New Year's resolution: to kill off the health and safety culture for good. I want 2012 to go down in history not just as Olympics year or Diamond Jubilee year, but the year we get a lot of this pointless time-wasting out of the British economy and British life once and for all" (Safety and Health Practitioner, 2012). Preparation for emerging risks and intervention rather than reducing employer responsibility and accountability will be more beneficial to the worker, to the enterprise and to the economy.

There is an abundance of literature which focuses on the regulatory burden as a barrier to compliance in SMEs. The European Commission in particular has introduced more than 660 initiatives over the past 10 years in an attempt to simplify regulation for SMEs and lessen the burden with regard to the complexity, the number of requirements and the amount of regulation for SMEs. Although regulation is for the most part cited as the main barrier to OHS compliance by small business, it can be concluded from the review of the literature that there are many factors impacting on regulatory compliance in small business. Many of these factors are inextricably linked, resulting in a vicious circle of compliance for small businesses. Also, there are many competing influences on OHS compliance, particularly in the food and drink sector, where a plethora of food safety legislation applies.

The relationship between the characteristics of SMEs and the difficulties associated

with the management of OHS have been identified and demonstrated by several researchers. The nature of small businesses is inextricably linked to the poor level of OHS management and to the management of regulatory requirements generally. Similar findings have been reported from studies on small business and OHS spanning over more than 35 years and as recently as this year for example ‘Managing safety in small and medium enterprises’ (Legg *et al.*, 2015). The various studies, show that the challenges in managing OHS reported by small businesses are particularly significant and can increase in significance as the enterprise size decreases. Therefore with regard to OHS particular focus must be given to SMEs, especially, the very small enterprises (European Agency for Health and Safety at Work, 2013).

### 3.7 Summary

This chapter discusses small and medium sized enterprises and compliance with OHS. The value of OHS compliance and performance and the elements impacting on this performance in small businesses is presented. Small business owners describe regulation and regulatory compliance as a burden to business and attribute this burden to the insufficient level of OHS performance. The review determines that there is no one factor attributable to the poor level of OHS compliance in SMEs. There are a number of issues such as size, characteristics, regulation etc. impacting on OHS performance. These issues overlap and are regarded as barriers to regulatory compliance. They can be classified under three main headings, regulation, resources and information (Masi and Cagno, 2015). To assist SMEs with health & safety performance all of the elements impacting on small business must be addressed to reduce the perceived burden these businesses.

While there are costs associated with both compliance and non-compliance with safety regulations, SMEs report the compliance costs as more burdensome. SMEs do not measure the costs of accident and illness costs hence the benefits of compliance are often not recognised. Haslam *et al.* (2010) found that small businesses believed that the work involved in meet with requirements would outweigh the benefits of regulatory compliance. Hence, small businesses are characteristically viewed as resistant to regulatory compliance and due to the size and characteristics of these businesses, this is often the case. The majority of small business owners do not see the value or the business case of safety, with regulation regarded as ‘burden’. The European Agency for Health & Safety at Work who conducted a study to promote the

business case for safety at work found that small business owners who are aware of the importance of safety, implemented interventions in-house. The report details a number of in-house interventions with the ability to improve safety practices. However, these interventions were designed by researchers for specific problems identified within particular industry sectors, and so are small scale interventions which cannot be applied on a large scale (Targoutzidis *et al.*, 2014). SMEs for the most part do not recognise the value of OHS as it is difficult to demonstrate quantitatively the link between safety and productivity.

The protection of the health and safety of people from both an occupational and a consumers point of view is a legal obligation and is also vital to the continued success of food and drink manufacturing business of which the majority are micro-sized. Health and safety performance in business is positively linked with profitability, an intervention with large scale applicability quantifying this link may convince SMEs of the business case for OHS and result in improved compliance.

The following chapter builds on this theory with a view to the development of an intervention to assist food and drink manufacturing SMEs with health & safety performance. An intervention which considers and addresses the needs of SMEs and which takes account of the many factors competing with OHS compliance.

## **Chapter 4: Theory Building - Assisting SMEs with OHS Compliance**

### **4.1 Introduction**

Previous chapters have demonstrated the scale of the problem existing in SMEs with regard to regulatory compliance, in particular OHS compliance. The literature review has provided a better understanding of the challenges and motivational factors with regard to regulatory compliance from a small business view point.

With the many barriers to OHS compliance identified this chapter focuses on the current methods used in industry generally to enhance regulatory compliance and business performance for SMEs. A brief review of existing interventions is used to form the basis for the development of performance specifications for a proposed better ‘right-sized’ system or potential solution to the issue of unsatisfactory OHS compliance in food and drink manufacturing SMEs.

### **4.2 Interventions and Regulatory Compliance**

The evidence that SMEs are challenged by OHS management and compliance spans over a number of decades. Walters (1987) when reporting on the challenge of new regulations in health and safety for non-union representation in the UK, also found that the regulations were a challenge for European countries where this legislation has existed for decades. Findings on the challenges and issues small business with regard to regulatory compliance are reported time and time again, and as recently as 2015 in the literature. Ozmec et al. (2015) describes methods of negotiating safety practices in small construction companies. This study concluded that small companies have a high rate of injury and struggle with the implementation of prevention measures. Holte et al. (2015) measured the differences in injury prevalence and injury risk among apprentices in building and construction in Norway. Their findings reflect those in previous studies spanning a number of decades, the incidence of injuries is higher in the smaller businesses and due to size and characteristics they report a disproportionate burden of regulation and struggle with interventions.

More recently, researchers are focusing more on assisting SMEs with the challenges

they face with more studies detailing interventions. However, for the most part the interventions and preventive measures developed and tested are very specific and implemented on a small scale. They are often sector specific with little evidence of OHS improvements (Sinclair *et al.*, 2013, Cunningham and Sinclair, 2015).

In 2006, Hasle and Limborg (2006) in a review of the literature from the 1980's through to the 2000s' concluded that the preventive measures had not significantly addressed the problem of OHS compliance in small business. At that time they suggested that an improvement was required in the quality of the research with a need to evaluate OHS interventions fully and in the workplace. As recently as 2010, Eakin *et al.* (2010) concluded that policy, legislation, practice and interventions were not fitting with the OHS problems or the 'character and the context' of small businesses. Many of the interventions and preventive measures detailed in the literature tend to be overly specific to a particular industry type or to a particular area of intervention, they do not represent the safety performance of a generic SME (Cagno *et al.*, 2014).

A change in direction in the research is becoming evident with a number of recent publications now examining intervention methods more generic in their approach. Intervention measures such as; realistic or quantitative evaluation of the intervention, appointing employees as in-house facilitators of OHS tools, insurance incentives, supply chain, identifying motivational factors such as motivating participation of SMEs through the involvement of trusted intermediaries etc. (Pedersen *et al.*, 2012, Cunningham and Sinclair, 2015, Ipsen *et al.*, 2015, Kvorning *et al.*, 2015). However, many preventive methods are still specific to an area of intervention and are not being adopted on a large scale with the result that compliance with OHS continues to be unsatisfactory. There are many possible reasons for this such as; cost, sustainability, workability etc. on a large scale and whether or not the interventions are reaching the SMEs. There is a gap or a disconnect between theory and practice (Sampson *et al.*, 2014, Hasle, 2015, Masi and Cagno, 2015).

Masi and Cagno (2015) when investigating methods of breaking down small business barriers to promote sustainable OHS compliance produced a list of factors which they conclude should facilitate the design of interventions. These factors were listed under the headings of regulation, resources and information. These factors are also reported in the literature as barriers to OHS compliance.

Regarding the findings from the literature as small business specifications for an intervention, for a preventive system to be employed by SMEs on a large scale it must:-

- Consider the needs or special characteristics of SMEs,
- Must not add to the regulatory burden, cited by small business owners as a major barrier to regulatory compliance and,
- Should include the factors which have been found to influence the uptake of interventions globally, such as; cost effectiveness, practicability, workability and sustainability.

Aligning OHS with an existing system would meet these specification in particular aligning OHS with food safety management systems as food safety is prioritised and stringently enforced. Food safety is managed based on the codex principles of HACCP and follows a number of specified steps making it systematic. Hence aligning OHS requirements with those of food safety in a systematic manor would assist food and drink manufacturing business. A systematic approach such as a standard or a baseline for a standard using HACCP would allow these enterprises to navigate health & safety requirements in a language they understand.

### **4.3 Standards, SMEs and Regulatory Compliance**

Zink (2014) report that a systems approach is necessary for sustainability of a process. Although the authors are looking at work systems from an ergonomic view point, their findings can be applied to OHS interventions. They suggest that the ‘whole life cycle’ has to be regarded: the development, maintenance and reuse have to be considered in a systematic manner. Similar factors are also highlighted by Hasle and Limborg (2006) following their review of OHS preventive systems. They concluded that it is important to develop intervention which study the complete intervention of the system, ‘systematic testing’. Although standards were not designed as a method of intervention, they are designed around regulation and therefore provide a systematic method or tool to assist with regulatory compliance in businesses. They also cover the entire ‘life cycle’ of an intervention including; system development, maintenance or management and continuous improvement or review. Using standards in the design of

an intervention would aid the inclusion of all stages of an intervention and also assist the systematic testing of the intervention in practice.

Standards are ‘commonly agreed reference documents that help to bring order to the world. They are a common and vital element of the society in which we live, and form an essential component of everyday life’ (Stroyan and Brown, 2012). The implementation of standards is not compulsory, however many laws and regulations refer to standards thereby making their implementation as a management system standard a requirement. OHS legislation requires that OHS is managed in the workplace and this is achieved using a management system. A business can design their own management system, however, many business choose to adopt or are requested by customers to adopt an approved management system or management system standard. This is because, standards provide a systematic method of achieving compliance. Current standard need to be reviewed in conjunction with legislation and regulation when looking for solutions and methods of reducing the burden on small enterprises.

The process for the design and development of standards involves multidisciplinary teams of experts which usually include regulators, users, producer and buyers of a particular product, service or system. Standardisation is the process leading to the acceptance of standards. Working to a recognised standard adds value to a product for a business, removes barriers to trade, increases customer base and access to customers making the business more competitive.

The structured template of standards can be utilised to benefit small enterprises. The elements outlining the requirements in the majority of standards are repetitive. Due to the structure and the repetition, standards for different regulations or areas of control can be aligned. This is particularly true of food safety and OHS standards or management system standards. OHS and food safety regulations and the corresponding management system standards are concerned with safety, safety of food for the consumer and safety of the worker manufacturing the food respectively.

A solution to the problem faced by SMEs premised on the findings from the literature must be one that is sustainable and lean in nature. It must enhance compliance and reduce costs while at the same time add value and be sustainable. The alignment of OHS requirements with existing food safety management systems using the structured

systematic format of HACCP would enable food & drink manufacturing SMEs to comply with both OHS and food safety in one management system. Effectively maintaining one management system instead of two, with the reduction of paperwork, time and manpower.

The repetitive elements evident in existing OHS and food safety standards, are compared and presented in Table 4.1. Both OHS and food safety management systems require the employer to conduct a hazard analysis, a risk assessment and to identify and implement controls. The systems also require that a corrective action plan is documented for each hazard in the event that control is lost and regular review of the system. Other common requirements and elements are presented in Table 4.2.

*Table 4.1 Comparison of Safety Standards Relevant to Food & Drink Manufacturing*

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*Table 4.2 Common Elements in OHS and food Safety Management Systems*

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Table 4.2 Continued

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Table 4.2 Continued

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Comparison of the OHS and FS management system requirements and identification of the repetition in standards enables their alignment. The alignment of OHS and food safety management systems rather than integration enables the systems to run concurrently, they can function together but are independent to an extent. As an approved food safety management system incorporating the principles of the Codex Alimentarius Commission's Hazard Analysis and Critical Control Point (HACCP) is required in order for a food & drink enterprise to trade, the alignment of OHS

requirements would increase the standing of health & safety in the sector. However, in order to ensure uptake by the SMEs, the aligned system must consider the special characteristics of small businesses and be recognised nationally by the governing bodies and authorities. The alignment of OHS with the recognised food safety management system HACCP is illustrated in Figure 4.1.

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*Figure 4.1 OHS and Food Safety Management System Requirements Aligned*

With almost a culture of compliance in the food and drink sector with regard to food safety management due to the level of enforcement aligning OHS may enhance small business compliance with health & safety. Effectively ‘piggy backing’ OHS requirements on existing food safety management systems which are for the most part are managed as a matter of course.

### **4.4 Application of the Theories to Safety Management**

Aligning duplicated management system tasks and requirements prevents enterprises from having to analyse the same risk factor several times with a different scope of assessment such as OHS and food safety. This concept and the approach of giving consideration to the safety of the consumer as well as the worker when dealing with the food and drink sector has been tested previously (Dias *et al.*, 2006). The authors designed a tool in the form of a ‘safety checklist’ to facilitate a joint risk assessment of OHS and food safety hazards in the warehouses belonging to one large food and drink sector firm. The idea was to design a standardised safety tool to reduce or eliminate safety risks across all of the company’s warehouses. Although the authors refer to HACCP as a method of identifying common risks to both the workforce and the consumer, the application of HACCP when conducting the risk assessments is not detailed. The research is said to be based on three pillars:

- ‘The legal obligations applicable to warehouses and workplaces’,
- ‘HACCP – the specific requirements to be met by food companies’,
- ‘Two specific hazard and risk assessments’ (Dias *et al.*, 2006).

The checklist according to the authors is comprehensive, however, it was designed specifically for and is only applicable to food and drink warehouses. The content of the checklist questions is very general, lacking description and specific measurements. The paper does promote the food and drink industry sector as a ‘special activity sector’ impacting on the health and safety of consumers as well as workers. Additionally, the authors confirm the commonalities of OHS and food safety risks, the burden of regulation on this sector and finally, that OHS interventions for the food and drink sector must comply with food safety regulations and vice versa.

The requirement for a sustainable low cost method to enhance safety compliance in food and drink manufacturing enterprises is evident, particularly for SMEs. In practice it is difficult to manage and align all of the management systems relevant to the food and drink manufacturing industry. Even the alignment of the safety management systems in their current format would prove difficult for SMEs. Therefore the solution to the unsatisfactory level of OHS compliance must be designed specifically for SMEs and must consider small business needs. To meet the requirements of SMEs the development of a solution such as an aligned safety management system should consider:

- sustainability in the design/at the design stage,
- the requirement for a cost effective user friendly system,
- the application of lean principles at the development phase of a system,
- the application of the Plan, Do, Check, Act (PDCA) cycle.

For an aligned safety management system to be effective in enhancing regulatory compliance such as OHS and food safety compliance, commonalities must be identified within the existing management standards. Upon examination of the management systems standards applicable to the food and drink manufacturing sector, it is evident that quality system management, hazard analysis and risk assessment are

common to all. The majority of management standards incorporate a system to formally manage the quality elements through continuous improvement, for example Deming's Cycle (Plan, Do, Check, Act) (Deming, 1986). Deming's Cycle also referred to as the circle of continuous improvement guides the management of quality through the planning stages, conducting/carrying out the plans, to testing of the plans meet objectives and implementing corrective action where objectives are not being met. The cycle aims to assist a company in ensuring that the desired goals with regard to quality of system/product/ service etc. are achieved. The essence of the PDCA cycle is:

- An assessment of the current status – where quality management is now
- A clear understanding of what needs to be implemented to reach the desired state
- A detailed plan to reach the desired state or level of quality management required
- A review to check if the quality management system meets the desired objectives.

Food and drink manufacturing enterprises of all sizes are required to carry out an OHS risk assessment and a food safety risk assessment and to build their management systems on the results of these assessments. As the regulators continue to inch ever closer to risk-based regulations and policies, and the fact that risk assessment is common to both OHS and food safety management, the risk assessment requirements for both management systems were studied and compared. Following the comparison of the OHS and food safety risk assessment requirements, there is obvious duplication. These are documented in *Table 4.3*.

*Table 4.3 The Comparison of OHS and FS Risk Assessment Requirements*

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Although the terminology varies between the risk assessments, both OHS and food safety systems aim to achieve safety and quality system management. Safety (safety of people, the worker and the consumer respectively) and quality management as per Deming's Cycle (Plan, Do, Check, Act) (Deming, 1986). Existing food and drink manufacturers already have a HACCP system implemented and all start-up companies have to implement it in order to trade. A licence to trade is not issued by the governing food safety body without an approved HACCP system. An aligned system would enable food and drink manufacturing start up SMEs and existing SMEs to meet their OHS and food safety requirements using one management system instead of two. Such a system would be significantly more sustainable for small businesses

Sustainability in the context of food and drink manufacturing is primarily concerned with financial savings and competition for dwindling resources such as energy, raw materials etc. Measures taken within the industry are most often based on three pillars, namely economic, environmental and social equity and are the focus of the large food and drink manufacturers. Those enterprises who function sustainably, are concerned with:

- Economic; businesses are beginning to realise that acting sustainably and saving resources makes good business sense. 'This is about the sustainability of each and every individual organisation rather than companies being altruistic or 'doing good for the sake of doing good'.
- Protection of the environment; initiatives such as a reduction in waste produced, energy and water used etc.
- Social equity; 'sourcing foodstuffs sustainably, looking at supply chains, work ethics and the growing pressure to deliver healthy and nutritious food' (Leatherhead Food Research, 2014).

The main focus of sustainability is towards a 'Green' initiative which promotes a

reduction in waste emissions, and the consumption of water and energy etc. One such example is 'The Origin Green Promise' a sustainability programme introduced by Bord Bia, the Irish Food Board. The programme 'enables Ireland's farmers and producers to set and achieve measurable sustainability targets – reducing environmental impact, serving local communities more effectively and protecting the extraordinarily rich natural resources that our country enjoys. It is inclusive for the entire Irish food and drink industry (Raw Material Sourcing, Manufacturing Processes and Social Sustainability) and operates on a national scale. The programme unites government, the private sector and food producers through Bord Bia, the Irish Food Board' (Bord Bia, 2012a). A combination of environmental protection and social equity results in a more sustainable business from an economical view point. The proposed alignment of OHS and food safety in one system follows the logic of sustainability and sustainable systems in manufacturing, i.e. behaving sustainably saves resources resulting in financial savings. Rather than focusing solely on sustainable work systems and operations, sustainability logic applied to management systems and design of management systems can further impact on financial savings for enterprises.

The findings suggest that the design of a comprehensive system by addressing duplicated requirements in one system would result in a more sustainable method for safety compliance. According to Zink (2014), 'Sustainable work systems have to be able to function in their environment and to achieve economic or operational objectives'. In addition a suitable system must be user-centric, designed specifically to meet the needs of small businesses. Kvorning *et al.* (2015) in their investigation of motivational factors for OHS compliance concluded, 'it is crucial to develop programmes where the content is tailored to the specific context of small enterprises and outlined in a way which makes it easy for the owner-managers to understand the use of the programme and how it can be beneficial for his or her enterprise'. It is anticipated that both food safety and OHS due to the repetition in requirements and management and also as they are both concerned with safety when aligned can function together in the food & drink manufacturing environment to achieve operational safety in the sector. By providing SMEs with one documented system rather than two, which will enable the business owner-manager to comply with and manage both food safety and OHS requirements, it is easy for them to understand how this can be beneficial for their enterprise. Recognising this, it is hoped that such a

system once tested would be adopted by the SMEs. Enhanced compliance and operational safety equates to a safer work environment for operatives and safer food products for the consumer. The theory discussed here is employed in the design of a proposed safety management system for food and drink manufacturing SMEs detailed in chapter 7.

### 4.5 Summary

SMEs are the engine of the European and Irish economies, accounting for the majority of enterprises. To this end SMEs must be considered when developing solutions to the insufficient level of compliance with regulation, in particular OHS regulation. In order to improve the unsatisfactory level of compliance with OHS in food and drink manufacturing SMEs, a suitable system or tool is imperative. Ireland in addition to many countries worldwide are focusing on cutting ‘the red tape’ surrounding legislation, regulation and standards with the aim of moving towards standardisation. Whilst there are many sound and apt remedies promoted to enhance regulatory compliance within SMEs a truly effective solution to meet the needs of SMEs has yet to be achieved. This may be because the regulation itself is not the only barrier to small business compliance. There are many factors which impact on safety compliance and these should be considered when developing initiatives or tools to assist SMEs with OHS compliance. The literature suggests that an intervention must be user-centric, consider the special needs of SMEs, be practical, cost and time effective, sustainable and evaluated in practice in order to be adopted by SMEs (Hasle and Limborg, 2006, Hasle, 2015). Another important consideration is the cost factor, legislative acts and policy initiatives most often produce costs as well as benefits. Small business characteristically have a lack of resources and demonstrating the economic value of an intervention for business, is probably the most powerful and best convincing argument within the SMEs context (Cagno *et al.*, 2013).

Although the utilisation of safety standards in their current format as a tool to assist business with regulatory has proven ineffective in SMEs, standards are a useful tool. Standards and standardization are promoted as business tools with tangible benefits (CEN-CENELEC, 2014). It is proposed that the alignment of standards relevant to food and drink manufacturing SMEs such as OHS & food safety in one safety management system, while also considering the special needs of small business in its

design, would work as an effective business tool promoting OHS compliance. Using one management system to manage both OHS and food safety regulatory requirements which are complied with as a matter of course due to the level of enforcement, should enhance the standing of OHS in the sector. Complying with food safety and OHS in one management system should not add any additional cost to food and drink manufacturing SMEs. These business are familiar with food safety management, thereby aligning OHS with these existing system should be time and cost effective and therefore work as a sustainable method of managing and improving OHS performance in these businesses. Enhanced compliance with OHS will lead to enhanced worker safety.

The following chapter outlines the methods used to;

- Obtain a better understanding of the nature and the scale of the problem with regard to OHS compliance in Irish food and drink manufacturing SMEs.
- To establish performance specifications for the design of a better solution which can address the human cost as well as the business cost of health and safety failures documented.
- To test one possible solution.
- To achieve the following thesis objectives:-
  1. To determine the current level of compliance with OHS and safety in food and drink SMEs.
  2. To determine the deterrents and the drivers of OHS and regulatory compliance in food and drink SMEs.
  3. To ascertain SME owner-manager requirements with regard to regulatory compliance and safety management in Irish food and drink manufacturing.
  4. To learn what approach would work to enhance OHS compliance and how best to disseminate information to small businesses.
  5. To identify and evaluate current interventions, preventive activities, tools and solutions for the enhancement of OHS and safety in food and drink SMEs.



## **Chapter 5: Methodology**

### **5.1 Introduction**

This chapter outlines the research methods employed to address the theoretical proposition and to answer questions exposed by the literature (see below) with a view to developing an aligned safety system to enhance compliance and worker safety in the sector. Developing an aligned safety system required a number of steps. The first step was to analyse the literature to demonstrate the requirement for such a system and to provide an understanding of the characteristics of small business. The second step, to inform the aligned safety system, required an overview of the current situation with regard to occupational health & safety compliance, safety and regulatory compliance generally, SME business characteristics, requirements and factors influencing compliance etc.

Mixed research methodology using both qualitative and quantitative methods was employed as illustrated in Figure 5.1. The mixed methods research and analysis will address the theoretical proposition devised from the literature and evidence from the authors experience in the food & drink industry that the implementation and awareness of occupational health & safety practice in the industry in particular in the SMEs is critically insufficient. An in depth literature review uncovered a second proposition; many obstacles exist which hinder SME compliance with OHS and also exposed many questions such as;

- What factors influence regulatory compliance or non-compliance as the case may be?
- What are the perceived benefits and/or barriers to regulatory compliance?
- How do SMEs access information on regulation and changes to regulation?
- Are SMEs involved in the development of new regulations, initiatives etc.?
- Is there a business case for OHS?
- What is the involvement of workers in regulatory compliance/management?

The research adopted an exploratory approach with evidence and data obtained using concurrent mixed methods to answer these questions and to substantiate the propositions satisfying Yin's requirement of linking the data to the proposition (Yin, 2009).

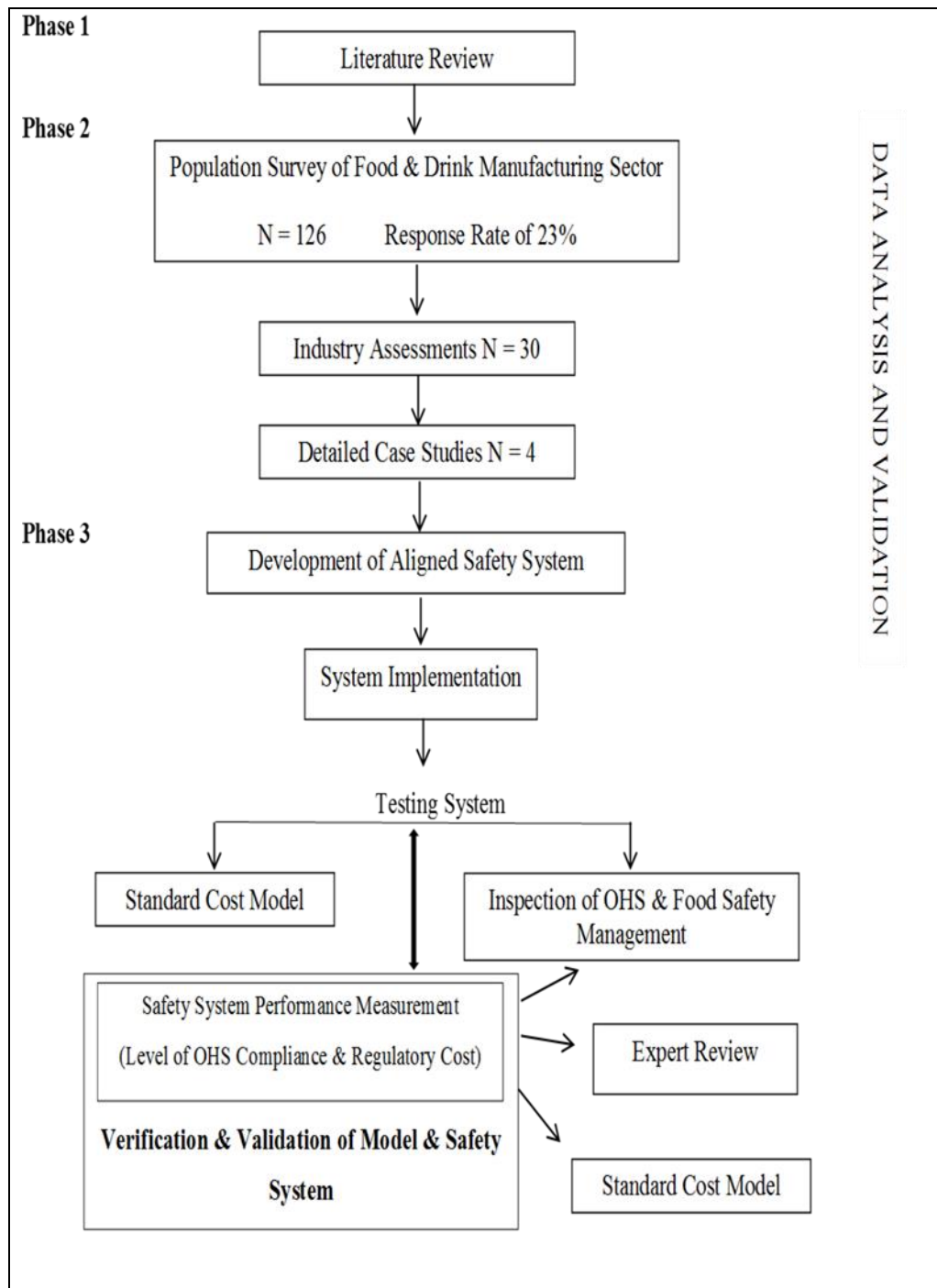


Figure 5.1 Flowchart of Methodology for Aligned Safety System Development

Mixed methods research has been defined in many studies however, the definition presented by Creswell and Plano Clarke (2011) is most applicable to this research. The authors define a number of core characteristics of mixed methods research all of which are applicable to the methodological approach taken in this study, Table 5.1.

*Table 5.1 Definition of Core Characteristics of Mixed Methods Research*

<b>Core Mixed Method Characteristic</b>	<b>Application to Mixed Methods Adopted</b>
Collects and analyses persuasively and rigorously both qualitative and quantitative data	Literature review Survey, Industry Assessments and Case Studies (qualitative and quantitative data).
Mixes or links the two forms of data concurrently by having one build on the other.	The quantitative data builds on the qualitative data. The quantitative data will help to validate the findings of the qualitative data.
Gives priority to one or to both forms of data (in terms of what the research emphasises).	Qualitative data is given priority in terms of emphasising the level of compliance with OHS regulation.
Use these procedures in a single study or in multiple phases of a program of study	Procedures are used in a single study
Frame these procedures within philosophical worldviews and theoretical lenses	Validated methods incorporating qualitative and quantitative methodology.
Combines the procedures into specific research designs that direct the plan for conducting the study.	Research design used mixed methods to direct the study from data gathering to intervention design and intervention implementation to testing and validation.
A researcher seeks to evaluate a program that has been implemented in the community	Evaluation of an aligned safety system designed and implemented in the Irish food & drink SME manufacturing community.

Creswell and Plano Clarke (2011) describe the research problems best suited to mixed methods as those in which:

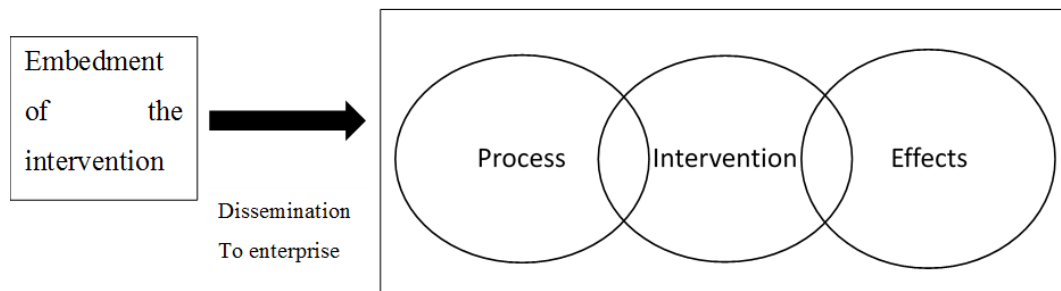
- One data source may be insufficient
- Results need to be explained
- Exploratory findings need to be generalised
- A second method is needed to enhance a primary method
- A theoretical stance need to be employed
- An overall research objective can be best addressed with multiple phases or projects.

The authors describe mixed methods as ‘ideal’ in situations where the research explores qualitatively to learn what questions, variables, theories etc. need to be studied followed with a quantitative study to test what was learned from the exploration. Therefore justification for the adoption of mixed methods for this research is based on the requirement to explore the problem, to gather data from multiple sources, to inform and design an intervention (qualitative) and finally to test the effectiveness of the intervention as a solution within the SMEs (qualitative and quantitative). Specifically the overall research objective can be best addressed using multiple phases.

Mixed methods integrate both quantitative and qualitative methods and have been described as an approach in which both methods complement one another. Zou *et al.* (2014) however, report that mixed methods are not without their limitations, finding that mixed methods may present contradictory results or the different aspects of the investigation may not merge. In these situations one method may override the other and contradictions identified can be ignored. Nonetheless, mixed methodology also encourages iteration between theory and practice to generate meaningful and reliable findings. Using both methods in a study the quantitative can compensate for the weaknesses of the qualitative and vice versa the value of the methodology outweighs the limitations (Zou *et al.*, 2014). Using mixed methods allows the researcher to gather multiple sources of evidence to gain the in-depth exploration required to achieve a comprehensive analysis of the research problem and therefore the perfect design for this research. However, multiple sources of evidence can lead to a large quantity of data with the result that bias may be introduced and misinterpretation with information that is not uniformly collected across all cases. In order to overcome this, the qualitative aspect is emphasised, with the quantitative aspect building on the qualitative strand and by employing validated methods with an emphasis on replicability and reliability. Mixed methods are used for this study to facilitate comprehensive quality research at each stage through the inclusion of important elements as described by Hasle and Limborg (2006).

Hasle and Limborg (2006) following a review of the literature on preventive OHS activities in small enterprises found, that only a limited number of studies had thoroughly evaluated the preventive measures developed, with evaluation and systematic testing of interventions missing. They conclude that ‘the study of the whole intervention process, from intermediaries through dissemination methods to

preventive activities in the small enterprises, must be a priority' (Hasle and Limborg, 2006). The mixed methods approach adapted for this research based on the Hasle and Limborg (2006) model for 'Intervention Research in Small Enterprises', presented in Figure 5.2 facilitates this.



*Figure 5.2 Model for Intervention Research in Small Enterprises*

The research methods adopted in small business research as well as research investigating the occupational health & safety activities in these enterprises in recent years is predominantly qualitative (Walters, 1987, Mayhew, 2000, Lamm and Walters, 2003, Robson *et al.*, 2007, Makin and Winder, 2008, Eakin *et al.*, 2010, Geldart *et al.*, 2010, Kheni *et al.*, 2010, MacEachen *et al.*, 2010, Zeng *et al.*, 2010, Laird *et al.*, 2011). Internationally, the number of studies and the findings are significant but scattered between many disciplines and organisations, few have focused on OHS in food and drink manufacture SMEs. Studies conducted on the subject of OHS in small business or in the food and drink manufacturing industry in Ireland are even more limited. A comprehensive search of the literature returned 5 studies related to the industry of which only one paper had studied small food businesses but not in the context of safety; 'Enablers and inhibitors of the development of network capability in entrepreneurial firms: A study of the Irish micro-brewing network' (McGrath and O'Toole, 2013). 'Ireland: Only 3% of Irish SMEs are active in manufacturing' (Michael Hennigan, 2015), 'Closing the Gap: Competitiveness Indicators' (Food and Drink Industry Ireland, 2009). OHS was not mentioned or referenced in any of the five papers published.

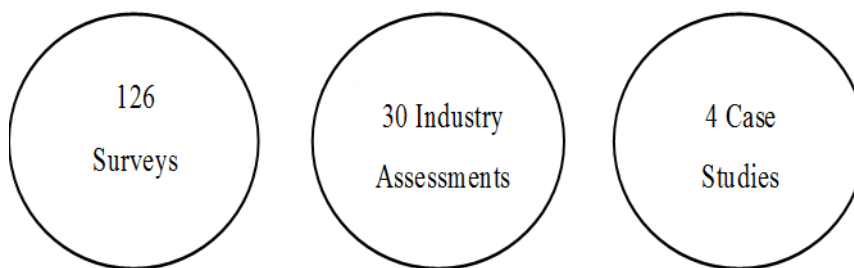
Although qualitative methods have been described as lacking objectivity, real evidence and structure due to the use of limited samples Bryman *et al.* (2008) referenced in (Zou *et al.*, 2014), and this study is predominantly qualitative. By employing a quantitative

strand aims to conduct a comprehensive investigation gathering real evidence using a broad based analysis. Mixed methods will improve the quality of inferences drawn from both the quantitative and the qualitative methods and the combined data gathered will provide a better understanding of the theoretical proposition (Creswell and Plano Clarke, 2011).

## 5.2 Research Design & Sample

The intent of this study is to study and evaluate the level of OHS compliance in Irish food and drink manufacturing SMEs with a view to developing a system to assist these business with OHS compliance. It is anticipated that with the provision of an SME specific ‘right sized’ tool OHS compliance can be enhanced in these SMEs and hence worker safety will also be enhanced. To achieve this the mixed methods design used is a ‘convergent design’. This is a design in which qualitative and quantitative data are collected in parallel, analysed separately, and then merged (Creswell and Plano Clarke, 2011).

The design is predominantly qualitative, data is triangulated and thematically analysed. The data collection methods and sample sizes are outlined below in Figure 5.3.



*Figure 5.3 Data Gathering Methods*

The study explores the current OHS practices, collecting evidence to determine the extent of the problem with OHS compliance and the perceived barriers to compliance in Irish food and drink manufacturing SMEs. Broad based in-depth analysis of the current situation in a representative sample of food & drink manufacturing SMEs is required in order to inform a proposed solution to the problem of non-compliance, implement and then to test and evaluate the effectiveness of the proposed solution. A quantitative phase of the study is utilised to gather data to evaluate the effectiveness of the proposed aligned safety system as a solution to a reduction in the regulatory burden in the participant SMEs. This is achieved using the Standard Cost Model designed to measure the cost of the regulatory burden in monetary terms. The quantitative data in the context of this study will complement the qualitative data and vice versa when developing and testing the resultant aligned safety system. Both quantitative and qualitative data are used to validate the results.

When applied to this study, adopting a mixed method approach facilitated the collection of data at a number of points to inform an intervention and to evaluate the intervention in terms of effect and practical applicability. Data is collected at three points (survey of food and drink SMEs nationally, assessments of selected food and drink SMEs and case study SMEs) to establish the state of play from a broad industry perspective, a more detailed industry perspective using a smaller stratified sample and finally an in-depth detailed perspective to develop and test a comprehensive and inclusive aligned safety system.

The surveys, industry assessments & case studies will be used to explore the problems with OHS compliance and to inform the design of an aligned safety system as an intervention. While at the same time the cost of compliance will be measured before and after intervention to measure the safety system effectiveness in reducing the regulatory burden and the cost of compliance.

Results from the literature review and the survey are used in the development of a more detailed assessment of the industry SMEs and case studies which provide an in-depth analysis of the current situation with regard to OHS and compliance within the SMEs. Triangulation of results, cross case and content analysis are conducted to identify common themes. Based on the resultant findings an aligned safety system is proposed, designed and tested. The rationale for the design of Safe Food Safe People safety system was discussed in Chapter 4 and the system design is detailed in Chapter

## Chapter 5

7. The validation of the system and the methodological approach adopted is detailed and discussed in Chapter 10.

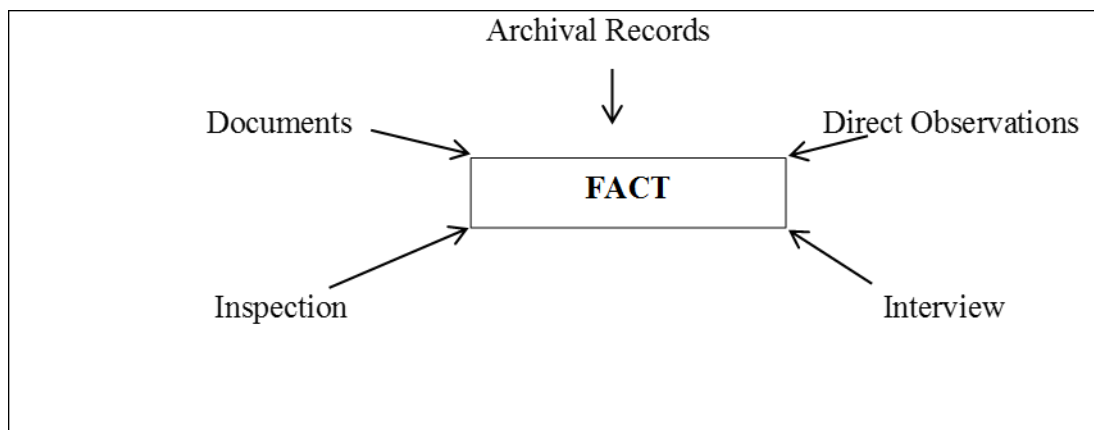
A summary of the methodology applied is presented in Figure 5.1 Flowchart of Methodology for Aligned Safety System Development.

Phase of research (see flowchart of methodology) Figure 5.1	Important Elements for Comprehensive Quality Research (Hasle and Limborg, 2006)	Research Method Type	Adaptation of these elements to this study
<b>Phase 1 – Literature Review</b> Framing the hypothesis or problem	Use of the existing knowledge from earlier research in design and analysis of future studies.	Mixed methods literature	Literature review findings considered when developing the aligned safety system.
<b>Phase 2 – Field Work</b> Establishing SME industry requirements & informing an intervention or a solution to the problem.	Use of the special nature of small enterprises as point of departure for the research. To study the complete intervention system, starting with the intermediary agency and reaching out to the small enterprises and then continue with the methods to get in contact.	Qualitative  Qualitative  Qualitative	<ul style="list-style-type: none"> <li>- National survey of SMEs to capture the perceived level of OHS compliance, issues preventing compliance in addition to the views on regulation cost, burden and effectiveness.</li> <li>- Industry assessments involving an in-house assessment of the current status with regard to OHS compliance and SME characteristics in the field.</li> <li>- SME case studies involving pre and post intervention inspections to measure the level of safety compliance.</li> </ul>
<b>Phase 3 – Validation &amp; Verification</b> Testing the solution in practice and measuring the effectiveness. Also verifying suitability of mixed methods for this study	Getting the intervention accepted and the intervention itself. Study the effect of in the small enterprises. Evaluation of the effect of the intervention.	Qualitative Qualitative  Qualitative  Quantitative	<ul style="list-style-type: none"> <li>- Case studies, intervention accepted by SMEs.</li> <li>- Design of intervention based on SME requirements and guidance documents.</li> <li>- Evaluation &amp; testing the effect of the intervention on the level of OHS compliance (inspection) in the SMEs and,</li> <li>- The cost of compliance with regulations (Standard Cost Model).</li> </ul>

*Figure 5.4 Mixed Methods adopted aligned with Elements of Particular Importance to OHS Research Quality in SMEs (Hasle and Limborg, 2006).*

### 5.2.1 Data Collection and Analysis

The data will be triangulated and content analysed to; identify themes and to make comparisons between the large sized enterprise and the SMEs, to make comparisons between the different sized SMEs i.e. (medium, small and micro-sized enterprises) and finally to compare the level of compliance and regulatory burden in the case study companies before and after intervention. Triangulation is the primary method used and will strengthen the analysis. The strategy has been described by Patton (1987) as a means of testing what people say overtime, comparing observational data with interview data, as well as validating information obtained through interviews by checking program documentation. The data collected from the surveys, interviews, industry inspections and observations is triangulated and content is analysed (Patton, 1987). From each case study multiple sources of evidence are used and the data is converged to determine the facts. This is detailed utilising the diagram designed by Yin (2009) ‘Convergence and Non-convergence of Multiple Sources’



*Figure 5.5 Convergence of Data*

### 5.2.2 Replication Logic

Following the emergence of key themes in the literature and in findings from the survey and industry assessments, a theory or a solution to the defined problem of insufficient compliance with OHS in Irish food and drink manufacturing SMEs was proposed. The development of the proposed aligned safety system was informed by a

number of reports, existing standards, results from survey etc. Central to building theory from case studies is the notion of replication (Eisenhardt and Graebner, 2007). With this in mind the theory developed from the industry assessments was further informed and tested using, four case studies to collect further data and extrapolate further on evidence gathered from the literature and the survey conducted.

According to Yin ‘The complete case study should demonstrate convincingly that the investigator expended exhaustive effort in collecting the relevant evidence’ (Yin, 2009). Consistent with Yin’s recommendations, the case study sample was selected to include various cases, enterprise sizes and industry types in the food & drink manufacturing sector, to demonstrate the replication logic (Yin, 2009). A case study must be significant, Yin found that if the ‘underlying issues are nationally important-either in theoretical terms or in policy or practical terms’ a case study is significant (Yin, 2009). It is hoped that the theory stemming from this research on which a safety system is developed and tested addresses issues which are of importance nationally, namely protection of the food and drink manufacturing worker through enhanced OHS compliance with the added benefit of reduced costs for the enterprises.

It is anticipated that by aligning OHS compliance requirements with the existing food safety management systems in the food and drink manufacturing SMEs, health & safety will receive more attention in these businesses. The effect of this should result in safer workplaces, a reduction in incidents, injuries etc., a reduction in the associated costs of incidents and growth of the SMEs and the industry leading to economic advancement. This theory was tested using three case study enterprises, a micro, small and medium-sized enterprise. The resultant safety systems was both informed and tested in these enterprises.

According to Yin (2009), a theory is valid when the findings or expected results can be replicated in multiple studies. Yin suggests that replicating studies can be achieved in two ways:

1. Literal Replications - Studies which predict similar results to the original theory building case studies.
2. Theoretical Replications – Studies which predict contrasting results, but which can be anticipated prior to the undertaking.

The case studies carried out for the purposes of this study were replicated literally and theoretically. Each of the 30 industry assessments presented similar findings with the same overall result, confirmation that the level of OHS compliance is insufficient due to; a lack of awareness, poor understanding, a lack of technical & financial resources and a perceived regulatory burden, that is, a literal replication. Owing to the varying enterprise sizes and a control enterprise within the case study sample contrasting results were predicted prior to undertaking the study. The result of theory building and replicated studies is described by Eisenhardt and Graebner (2007) as fresh theory that bridges well from rich qualitative evidence to mainstream deductive research.

### 5.3 Survey

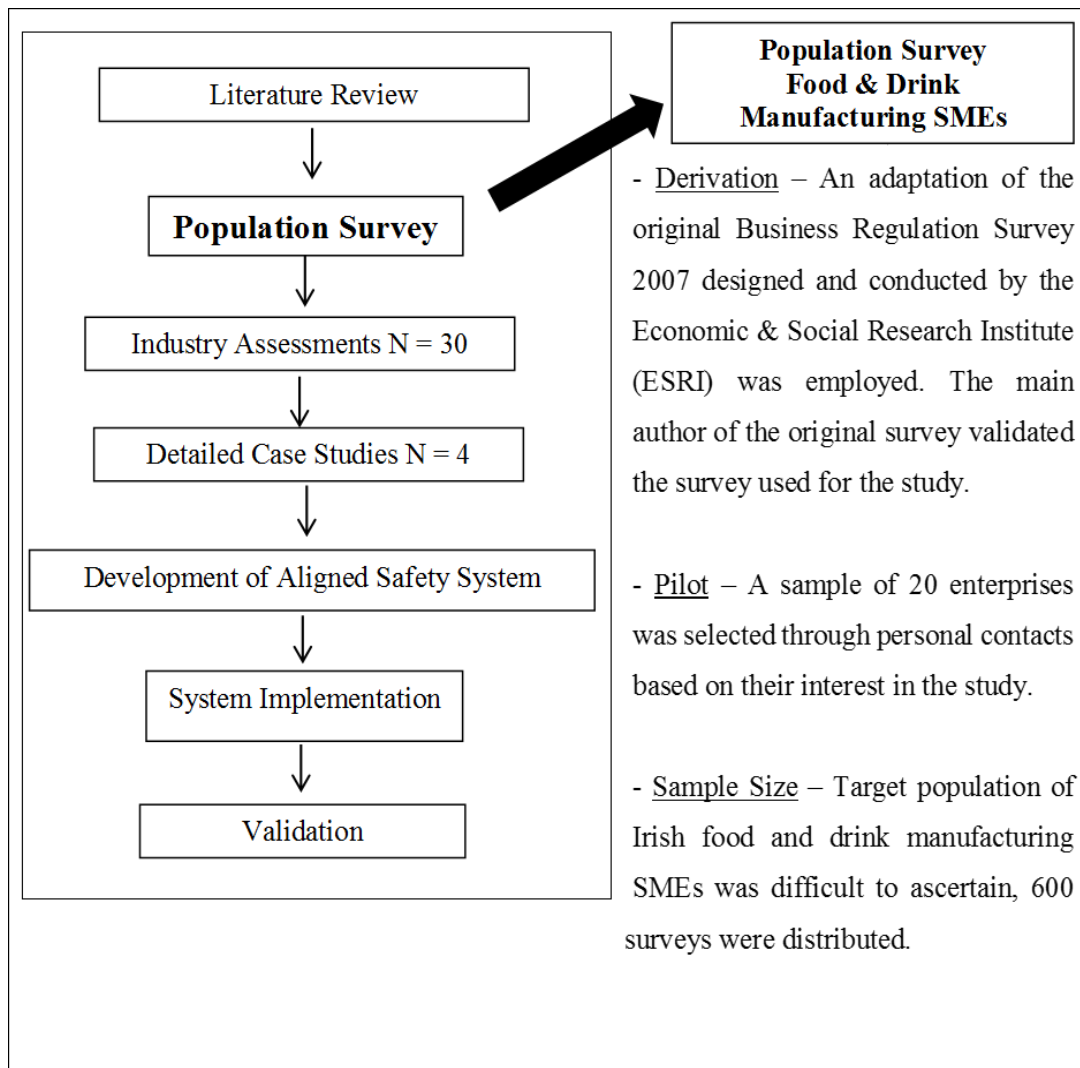


Figure 5.6 Summary of Methodology for Survey

### 5.3.1 Introduction

To establish the current state of play from a broad industry perspective in Irish food and drink manufacturing SMEs with regard to OHS and compliance, a survey was employed. The most efficient method of accessing information from a large industry sample in a short period of time at a modest cost is through the application of survey methodology. The main aim of the survey was to establish the level of compliance with regulation in particular OHS legislation in the industry sector. The survey was also used to establish the following;

- Background information (Type of food business, number employed, number of sites etc.)
- Areas of regulation applicable to the SMEs
- The level and form of contact with the regulators
- The perceived impact of governing regulation on business
- The perceived level of consultation and communication of regulation and new developments by the regulators
- The perceived barriers to compliance
- Other issues affecting the enterprises with a view to regulation
- The cost of compliance with relevant regulation etc.

This list is not exhaustive.

### 5.3.2 Survey Development

The survey used the original Business Regulation Survey of March 2007 (The Economic and Social Research Institute, 2007) published by the Department of the Taoiseach (The Economic and Social Research Institute, 2007). The survey consisted of six sections and the contents of the original questions were amended to focus on attaining information on the subject of OHS regulation and compliance. The original survey designed and conducted by the by the Economic and Social Research Institute (ESRI) aimed to establish the views of Irish businesses with regard to regulation and to establish which areas of regulation posed a problem in terms of compliance costs and administrative burdens. Following a 'Better Regulation' initiative the Taoiseach sought the measurement of the extent of the problem of regulation for Irish businesses.

The original survey objectives paralleled those defined in this study and the original design was adaptable. The authors were contacted and permission for the manipulation and administration of the survey for the purposes of this study was requested and granted. The survey questions were amended and directed more towards OHS compliance as opposed to regulation in general, in keeping with the aim of this study. The survey followed the process summarised in Table 5.2.

*Table 5.2 Summary of Survey Process and Methodology*

Database Construction	A database was constructed following a search of the internet
Pre survey procedures	A literature review of similar research topics and studies. Selection of an existing survey from literature
Methodology Phase 1 Phase 2 Phase 3 Phase 4 Phase 5	Contacted author of original survey for permission to re-use. Adaptation of survey to research topic (19 minor changes – 10 questions added, 4 deleted and 5 modified), pilot and validation. Amendment of question D7 following pilot and review. Administration of internet survey to a sample selected from constructed database. Follow up email and telecon reminders
Survey Scope	All Irish food and drink manufacturing SMEs
Survey Format	Six sections, incorporating multiple response formats.
Survey Setting	Survey was conducted from the School of Engineering at the National University of Ireland Galway
Medium of Administration	Survey Monkey package using a hyperlink to the survey administered to 600 participants via electronic mail (email).

*Table 5.2 Continued*

Required Resources	Information technology programmes, on line search engines, Statistical Package for the Social Sciences (SPSS), laptop and telephone.
Data Management & Security	Survey Monkey™ Software uses Secure Sockets Layer Technology (SSL) authenticating and encrypting data.
Assumptions Formed	All participants are competent in English, giving honest responses - there may be a degree of social desire to over report on the burden of regulation as a result of media/government attention on the requirement to reduce the burden for SMEs
Ethical Considerations	The purpose of the study was outlined for participants and anonymity was guaranteed.
Elimination of Bias	In an attempt to eliminate any bias no leading questions or personal points of view on behalf of the survey administrator were included. Bias on behalf of the respondents could not be controlled and was therefore outside the scope of the study to identify its occurrence. Further detailed case study research with direct observation methods and triangulation of data allow for possible response and strategic bias.
Time Period of Survey Process	May 2011 to June 2012

### 5.3.3 Sample Size and Selection

Calculating the sample size and attaining a database of SME enterprises proved to be a major obstacle in the execution of the research plan. The target population was Irish food and drink manufacturing SMEs, the number of which in Ireland was difficult to ascertain at the time of the study. A number of agencies and authorities were contacted but could not provide data on the number of SMEs in Ireland or the number of food and drink manufacturing SMEs. These included;

- **Bord Bia Irish Food Board** - An Irish state agency with the aim of promoting

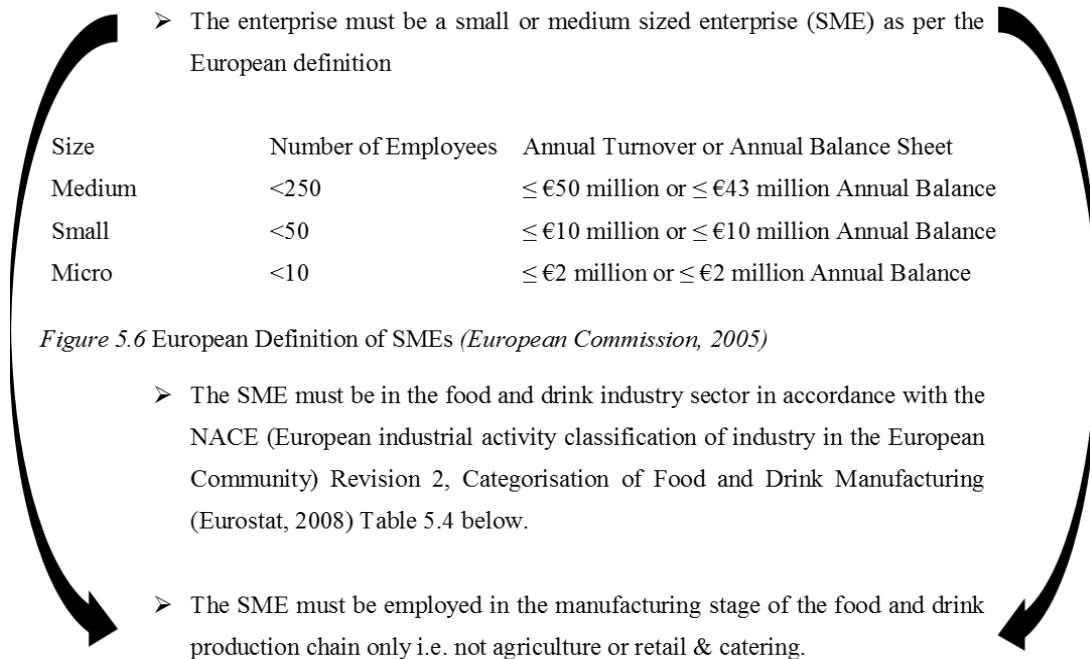
sales of Irish food and horticulture both abroad and in Ireland itself.

- **Food Safety Authority of Ireland (FSAI)** - Protects public health and consumer interests in the area of food safety and hygiene.
- **Central Statistics Office (CSO)** - Government body responsible for compiling Irish official statistics. Provides data and information on methodology.
- **IBEC the national voice of business in Ireland** - Represents the interests of business in Ireland and provides a wide range of direct services to its 7,500 member companies.
- **Food and Drink Industry Ireland (FDII)** - Represents the interests of the food, drink and non-food grocery manufacturers and suppliers. The main trade association for the food and drink industry in Ireland.
- **European Commission (Europe Direct Citizen Enquiry)** - an advice service on EU rights for everyone, provided by a network of legal experts in all Member States who work on the basis of a contract with the Commission.
- **Oireachtas Library and Research Services** - Manages the Irish parliamentary library and provides an impartial research service to Members of the Oireachtas (legislature of Ireland) in support of their parliamentary business.
- **Department of Agriculture, Food and the Marine (DAFM)** – Government department responsible for the promotion and development of agriculture, food and rural development in Ireland.
- **Mr John Perry Minister for Small Business** - TD the Minister of State for Small Business in 2012 (when running the survey).
- **Irish Small and Medium Enterprises Association (ISME)** - The only independent representative body for owners of small & medium business in Ireland. They provide advice, support and lobby for small business.
- **Small Firms Association (SFA)** - The "Voice of Small Business" in Ireland, providing information resources which are designed to assist in managing small business, as well as allowing interaction with fellow members through a members connect area.

In the absence of an official record of the number and distribution of food & drink SMEs employed in the manufacture of food and drink, a database was constructed.

The database is constructed using online search engines and defined strata with the final sample used consisting of 600 SMEs. Thus the resultant sample used for the survey is stratified and one of convenience.

The defined strata were;



*Figure 5.7 Strata for Database Construction*

### 5.3.4 Reliability of Sample and Survey Questions

Prior to the deployment of the survey the reliability of the survey sample and the survey questions was required. The reliability of sample size as discussed was difficult to attain. However, to strengthen the reliability of the survey and the generalizability of the findings to the target population nationally, the survey was distributed to the total population of the constructed database N = 600 SMEs. Participants in the pilot survey were independent of the 600 in the constructed database.

The reliability of the questions was validated using a number of methods these included; a Pilot Study and validation in the form of an expert review by Associate Research Professor Dorothy Watson the main author of the original Business Regulation Survey of 2007 (The Economic and Social Research Institute, 2007).

## **Pilot Study**

A sample of 20 enterprises was selected through personal contacts based on their interest in the study. The sample was selected to include micro, small and medium-sized enterprises from all four provinces in Ireland in accordance with the strata identified above. The enterprise owners and/or managers were contacted by telephone to discuss the research and to request their participation. The questionnaire was sent via email and followed with a teleconference meeting to discuss and analyse the comprehension of each question. This type of survey pretesting is described as the ‘cognitive approach’ which according to Presser and Blair (1994) is not the most reliable method of pretesting, but is consistent; ‘showing as much between-method as within-method consistency’. During the analysis of the questionnaire with half of the participants it became apparent that there was a problem with the interpretation of one of the questions ‘D7’, the question was being interpreted in two different ways. The original question was worded as follows; ‘Please say to what extent you agree or disagree with the following statements about compliance with regulation [TICK ✓ ONE BOX ONLY FOR EACH STATEMENT, Agree. Strongly Agree, Nether Agree or Disagree, Disagree and Strongly Disagree.

- a. Compliance is having a documented system
- b. Compliance is having a system in practice
- c. Compliance is having both a system in practice and having a documented system

The way in which the question was worded resulted in some participants selecting all of the options instead of one option. By adding the word ‘only’ to each statement the question was interpreted correctly. Once amended the survey was re piloted, the questionnaire and a feedback form ‘pilot study feedback form’ were distributed via email. No further problems were highlighted. The results of the pilot survey and the full Business Regulatory Compliance Overview are presented in Appendix D and Appendix H respectively. An extrapolation of the Regulatory Compliance Overview is presented in Appendix I.

The response to the survey is detailed in Table 5.3 below. The low response demonstrates the prevailing constricted nature of small business. Characteristically as depicted in the literature, SMEs have informal management systems, high work demands, time pressures, commercial pressures, few resources etc. hence the low

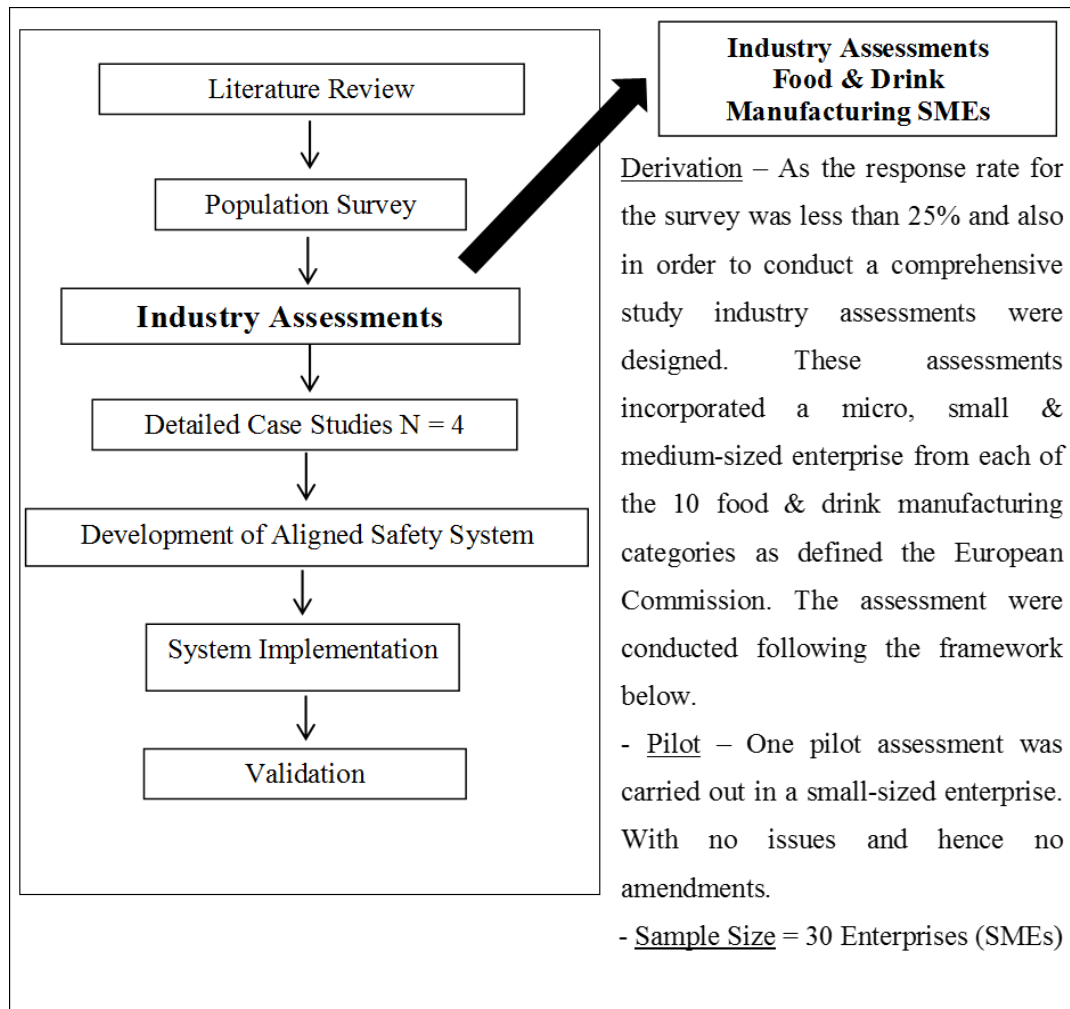
response to the survey is not unusual. Accessing and reaching SMEs can be problematic, researchers have traditionally found small businesses difficult to survey. There are many explanations for this, one such reason is the heterogeneous nature of the small business sector and the owners, managers are too busy to fill questionnaires. One business owner rather than filling the survey took the time to send a complaint via email, detailing his upset at ‘receiving yet another survey’! The following email from a participant encapsulates the problems SMEs have with regard to research participation; ‘Thanks for the acknowledgement and best wishes on your study submission. About this time of year, I would receive about 5 – 15 emails from students with requests for survey assistance and so, as a food producer, putting this time aside to complete surveys isn’t always there. I do try and assist students as I know what it was like when I was doing a masters but the influx of requests means that I can’t get around to everyone and I’d say that this is a difficulty in getting a response from producers generally’.

*Table 5.3 Survey Response Summary*

Number of surveys sent	Total successfully received	Completed surveys returned	Incomplete surveys	Emails re non participation	Response Rate
600	552	126	2	2	21%

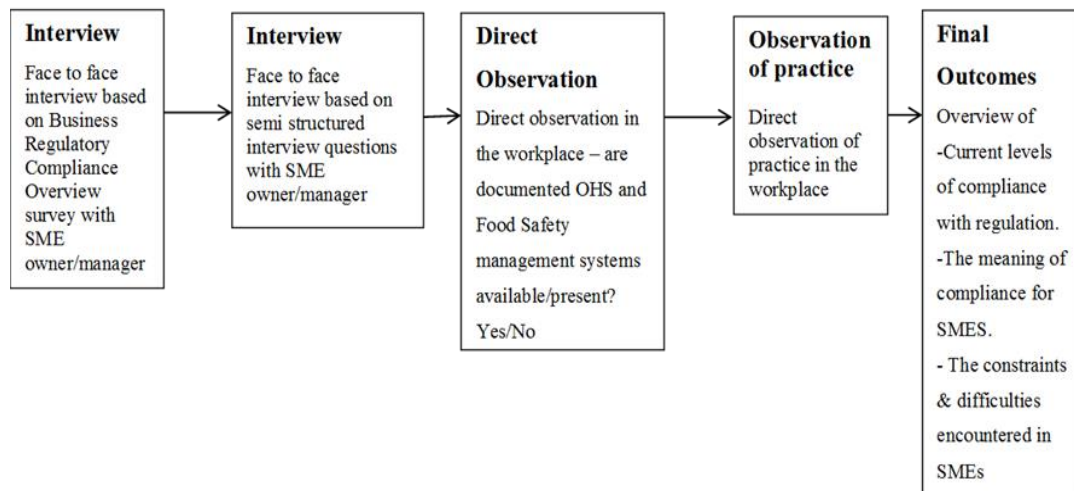
Copies of the all documents used in the formulation and distribution of the survey are contained in Appendices A, B, C & D.

## 5.4 Industry Assessments



*Figure 5.8 Summary of Methodology for Industry Assessments*

The industry assessments were employed to establish the state of play from a more detailed industry perspective using a smaller stratified sample than that used in the survey. The assessment were conducted within actual SMEs in the field. They included an interview with the owner, confirmation of a documented health & safety and/or food safety management system(s) and finally observation of practices, the framework is presented in Figure 5.9.



*Figure 5.9 Framework for Assessments*

The purpose of the assessments was to carry out a more focused analysis of the issues and themes arising from the survey feedback. Surveys although an inexpensive method of covering a large sample size, they rely on the responses of others and bias and inaccuracies can appear in the results. Visiting enterprises in person gives a more accurate picture of the current state of play. Whether or not OHS and other legislative requirements are managed, how these requirements are managed, OHS theory versus practice, the meaning of OHS compliance for SME owners and the perceived constraints when implementing and complying with legislation will be inspected and assessed.

#### 5.4.1 Sample Selection

A sample of 31 SMEs was selected in accordance with the NACE revision 2 categorisation of the food and drink manufacturing industry. The sample consisted of 30 participating SMEs and 1 SME to pilot the study. NACE is the European industrial activity classification of industry in the European Community, NACE (Nomenclature statistique des activités économiques dans la Communauté Européenne: Statistical Classification of Economic Activities in the European Community), maintained by Eurostat (Statistical Agency of the European Commission) (Eurostat, 2008).

NACE Rev 2 categorises the food and drink manufacturing industry under ten different headings detailed in Table 5.4. Manufacturing is categorised under ‘Section C, food

and drink manufacturing is classified under 'Division 10', food manufacturing is identified under Groups 10.1 to 10.9, and beverage manufacture is categorised under Group 11. A number of the food and drink manufacturing groups are broken down further into class, detailing the individual products within a group, however this level of detail was not required. For comprehensiveness of the assessments and sample reliability, a micro, small and medium-sized enterprise from each of the 10 manufacturing groups was selected.

The sample was selected from the list of enterprises who when taking the survey stated that they would be interested in participating further in the research. The sample was strategically selected based on their size and industry category with a combined criteria of their product category, high, medium or low risk. This was to get as broadly based and as representative a sample as possible. To protect the identity of the companies and to uphold the confidentiality agreement, only the industry size and type is recorded in Table 5.4 in which the actual sample used for the theory building case studies is presented.

Table 5.4 Enterprises Assessed as per NACE Rev. 2.

NACE No.	NACE Activity	Enterprise Type Studied
10.1	Processing and preserving of meat and production of meat products	<b>Micro</b> - Preserved meat <b>Small</b> – Wholesale pork (slaughter and boning) <b>Medium</b> – Wholesale meat (beef and lamb)
10.2	Processing and preserving of fish, crustaceans and molluscs	<b>Micro</b> - Smoked salmon <b>Small</b> – Shell Fish processing & cooking <b>Medium</b> – Fish processing & Smoking
10.3	Processing and preserving of fruit and vegetables	<b>Micro</b> – Jam production <b>Small</b> – Processing & packing vegetables and potatoes, prepared meals, cooked potatoes and vegetable meals. <b>Medium</b> – Production of salads
10.4	Manufacture of vegetable and animal oils and fats	<b>Micro</b> – Edible oils production <b>Small</b> – Edible oils and fats production <b>Medium</b> – Edible oils, Olives, Wine vinegar, Spanish wine production
10.5	Manufacture of dairy products	<b>Micro</b> – Cheese production <b>Small</b> – Farmhouse Goats Cheese (soft and hard cheese) <b>Medium</b> – Yogurt & deserts
10.6	Manufacture of grain mill products, starches and starch products	<b>Micro</b> – Organic Flour <b>Small</b> – Flour <b>Medium</b> – Porridge
10.7	Manufacture of bakery and farinaceous products	<b>Micro</b> – Fresh and filled pasta, ready meals and pasta sauces <b>Small</b> – Bread & cakes <b>Medium</b> – Bread, cakes and dietary products such as gluten free.
10.8	Manufacture of other food products	<b>Micro</b> - Herbal Tea <b>Small</b> – Organic chocolate <b>Medium</b> – Chocolates, chocolate bars, chocolate cookies
10.9	Manufacture of prepared animal feeds	<b>Micro</b> - Animal feed <b>Small</b> – Animal feed <b>Medium</b> – Specialised animal feed
11	Manufacture of beverages	<b>Micro</b> - Fruit juice <b>Small</b> – Alcohol <b>Medium</b> – Tea and Coffee
PILOT STUDY		MICRO MEAT PROCESSOR

#### 5.4.2 Assessment Design

The assessments are designed to determine the actual state of play with regard to OHS compliance within the manufacturing SMEs. The assessment structure included three

methods of information gathering in order to obtain as much detail as possible during the visit and to support triangulation of data gathered.

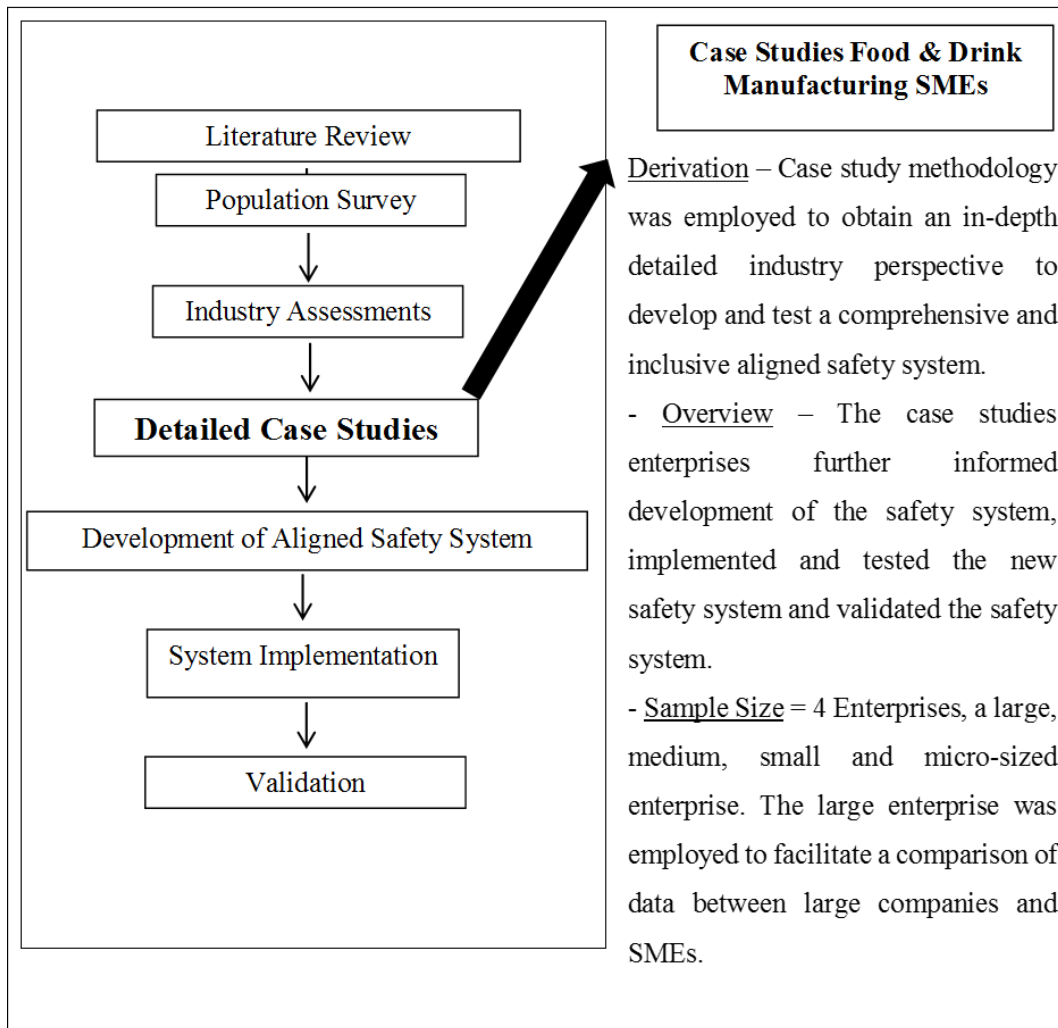
**A. Interviews** - Face to face interviews with the enterprise owner, manager or owner/manager (herein referred to as ‘Owner/Manager’) using the original questionnaire distributed for the survey and also semi structured questions developed following feedback from the survey distribution. The questions were read to the enterprise owner from the survey and the answers and any comments were documented by hand on the survey document.

**B. Management System Documentation** – Direct observation was employed as the method of establishing whether or not there was a documented food safety and a documented occupational health & safety management system in place. For the purposes of the theory building case studies it was just noted whether the safety management systems were available or not.

**C. Observation of Practice** – Direct observation of worker occupational health & safety and food safety practice on the production floor with results documented as field notes. Patton (1987) specifies that field notes can be used to describe what has been observed and should contain everything that the observer believes is worth noting.

The assessments provided a better understanding of the SMEs with regard to OHS compliance and also the operational aspects of the business. The SMEs report many constraints and a requirement for the simplification and reduction of regulatory requirements. In the course of the field work the author noted a requirement for a safety system designed specifically with the needs of small business in mind. An aligned safety system incorporating both OHS and food safety is proposed. To inform the system further and to validate the functionality of the system case study methodology was employed.

## 5.5 Case Studies



*Figure 5.10 Summary of Methodology for Case Studies*

Findings from the survey and the industry assessments identified a lack of OHS compliance within the SMEs and also linked the insufficient level of compliance with a burden of regulation. To attain a ‘richer contextual understanding’ of these results case study methods were employed (Modell, 2005). A multiple case study design with a view to triangulation of data and attainment of reliable results is employed. Gerring and McDermott (2007) describe the case study as ‘a form of analysis where one or a few units are studied intensively with an aim to elucidate features of a broader class of—presumably similar but not identical—units. The units for the purposes of this

study are food and drink manufacturing SMEs. Case studies provide an opportunity to gather evidence from many different sources strengthening the reliability of the resultant data. A good case study uses as many sources as possible (Yin, 2009). The study design aims to gather data from a number of sources within each case studied and make direct comparisons between the cases as a means of generating data. A number of sources are utilised with evidence collected from all but one 'physical artefacts' of the sources suggested by (Yin, 2009).

Case study methodology according to Yin (1994) 'are rich, empirical descriptions of particular instances of a phenomenon that are typically based on a variety of data sources' therefore each enterprise is studied individually in accordance with a defined framework with the case study methodology replicated within each enterprise. The results are analysed for themes, compared and converged to build on the theory and to provide a better understanding of the issues and constraints with regard to OHS compliance within the SMEs. Theory building from multiple cases typically yields more robust, generalizable, and testable theory than single-case research (Eisenhardt and Graebner, 2007). Case studies were conducted to further inform and to test the proposed systems content and effectiveness. within 'the real-life context of the SME' (Yin, 2009).

Case studies were conducted to further inform and to test the proposed systems content and effectiveness. The details from the viewpoint of the participants was pertinent to the success of the proposed system. The case studies followed the framework illustrated in Figure 5.11.

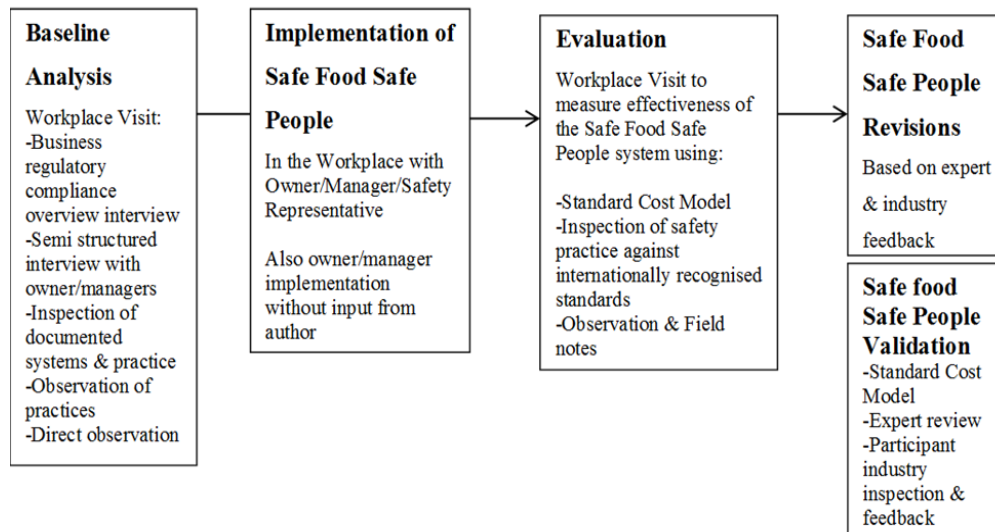


Figure 5.11 Framework for Case Studies

### 5.5.1 Case Study Sample Selection

The sample was both purposeful and one of convenience with 4 enterprises (large, medium, small, and micro) selected to participate in the study detailed in Table 5.5. The micro, small and medium-sized enterprises were selected purposefully from survey participants who indicated their interest in further participation, the large enterprise and the control enterprise were samples of convenience and were arranged through industry contacts. The selection criteria was a micro, small, medium and large sized enterprise fitting the European Union (EU) definition for SMEs and in accordance with the NACE Rev 2 categorisation to achieve case study sample representative of the ‘real-life context’ (Yin, 2009).

Table 5.5 Case Study Sample

Enterprise Size	Enterprise Type	Description of Process
Large	Beef slaughter & processing	Low risk process
Medium	Turkey processing, cooking & packing	Low and high risk processes
Small	Ready to eat dinners and baked goods	High risk process
Micro	Jam production process	Low risk process

### 5.5.2 Design and Reliability of Methodology

#### **Design**

The study will inform the design, development and testing of an aligned safety system incorporating both an Occupational Health & Safety Management System (OHSMS) and a Food Safety Management System (FSMS) in four workplaces following the protocol detailed in Figure 5.12. Yin's protocol is applied to study the food and drink manufacturing enterprises and is adhered to for each case study following the case study framework detailed above. Both the case study protocol and the case study tactics are applied throughout the case study phase as recommended by Yin (2009) to attain reliable results.

A. An overview of the case study project

The purpose, the sample size and the theory are established. The project will further develop the theory, inform and test the proposed system using observation, interviews, inspection and measurement of the cost of compliance etc.

B. Data collection procedures

A plan was devised to ensure replication of the case study methodology in each enterprise and to allow for replication of results and findings within each case.

C. A guide or outline for the case study report

The report format is designed to follow the data collection plan, containing 6 sections reporting on:

1. The current state of play with regard to regulatory compliance, awareness and communication within each enterprise. The barriers & constraints, benefits and advantages associated with either compliance or lack of compliance.
2. The agreement or disagreement that an aligned safety system is a viable solution.
3. The availability and content of the documented systems employed in the management of OHS and FS.
4. Practice of the documented OHS and food safety management systems.
5. Measurement of compliance using recognised standards to carry out a full OHS and FS factory inspection and to collect data such as; documented methods and practice of OHS and FS, previous audit results, accident and incident records, training records, non-conformances, customer complaints, attendance records etc.
5. Following implementation and running of the aligned safety system, concluding on the suitability and effectiveness the system as a solution to insufficient compliance with safety requirements.

D. Case study questions

Designed based on the questionnaire developed for the broad based survey and from key themes emerging from the survey and the industry assessments carried out. The owner and/or the manager(s) were interviewed in all cases. The food safety and occupational health & safety inspections included a number of questions, both closed and open-ended, and followed the requirements of recognised standards.

*Figure 5.12 Case Study Protocol*

## Reliability

Validation and reliability are embedded in the research design for this thesis at every level with the validation of each data collection method and the adoption of the ‘Model for Intervention Research in Small Enterprises’ (Hasle and Limborg, 2006). However, there are a number of limitations associated with case study methods.

To overcome the limitation of a small case study sample size Yin (2009) recommends the employment of replication logic, ‘case study tactics for four design tests’ and ‘case study protocol’ for conducting case studies. The reliability of the design employed for the study was safeguarded in a number of ways:

1. Utilising a reliable research design, tested in accordance with Yins’ model (Yin, 2009)
2. Developing a case study protocol described by Yin (2009) as ‘essential in a multiple case study’.
3. Informing and testing the developed theory through replication in multiple cases.

With the aim of successfully generalising from theory to practice the quality of the research design is tested using the case study tactics (Yin, 2009).

The application of the tactics for the four design tests within the research design for this study is detailed in Figure 5.13.

Test	Case Study Tactic	Phase of Research
Construct Validity	-use multiple sources of evidence -establish chain of evidence -have key informants review draft case study report	data collection data collection composition
Internal Validity	-do pattern matching -do explanation building -address rival explanations -use logic models	data analysis data analysis data analysis data analysis
External Validity	-use theory in single-case studies -use replication logic in multiple-case studies	Research design Research design
Reliability	-use case study protocol -develop case study database	data collection data collection

*Figure 5.13 Case Study Tactics for Four Design Tests (Yin, 2009)*

There are three tactics to increase construct validity and all three tactics are addressed in the study. Multiple sources of evidence are collected throughout the study which according to (Yin, 2009) is another method of addressing the ‘potential problems of construct validity, essentially providing multiple measures of the same phenomenon’. External validity is confirmed through the use of multiple cases, using analytical generalisation. The problem of poor compliance with OHS in Irish food & drink manufacturing SMEs is demonstrated but the broader theoretical issues related to and affecting compliance with OHS are explored in detail also, such as the role of regulation, enterprise size, governing bodies etc. in regulatory compliance. The findings from the industry assessments and pilot/control case study are replicated in multiple cases. The external validity is also addressed using replication logic in section 5.2.2.

The case study design is documented in a manner which would enable another researcher to conduct the same study and arrive at the same findings and conclusions. The methods utilised are detailed in section 5.5.2. The case study follows a protocol and the survey, inspection etc. conducted employ validated methods and internationally recognised standards and the case study report adopts a predetermined structure. The research design meets with Yin’s recommendation that, ‘the general approach to the reliability problem is to make as many steps as operational as possible’(Yin, 2009).

Test	Case Study Tactic	Phase of Research
Construct Validity- Aim is to measure the level of and problems associated with OHS compliance in food & drink SMEs.	-Published studies etc., Surveys, interviews, inspections & observation -Results from survey, industry assessments, inspections & observations -Pilot study also used as a control study	data collection  data collection  composition
Internal Validity	Not applicable as the case studies are exploratory and descriptive	
External Validity	-use replication logic in multiple-case studies	data collection research design 4 case studies used
Reliability	-Case study protocol developed to include operational steps. -A predetermined case study report format was used. Presented in Chapter 7	data collection data collection

*Figure 5.14 The Application of Yin's Case Study Tactics for Four Design Tests*

## 5.6 Summary

This chapter has outlined the methodology employed to gain an understanding of the current situation with regard to OHS compliance in Irish food and drink manufacturing SMEs and the development and testing of a possible solution. The selected methodology enabled a study of the whole intervention process, from intermediaries through dissemination methods to evaluation of the effectiveness in the small enterprises. The survey introduced many variables and themes of interest, with further in context investigation required. Based on this, 30 industry assessments were conducted using a stratified representative sample of SMEs. The replication in the findings revealed a number of key themes, leading to a further detailed investigation in case study enterprises. The findings from the literature and the field work identified performance specification for the design of a possible solution to the unsatisfactory level of compliance with OHS in Irish food and drink manufacturing SMEs. The proposed solution was designed based on these performance specifications and the data collected at each stage of the research. Using mixed methods and case study

methodology for this study ensures comprehensiveness and reliability, in line with the Hasle and Limborg (2006) model.

The developed theory for a possible solution, specifically, an aligned safety system designed to manage OHS and food safety in one management system when implemented correctly has the potential to enhance compliance with OHS and thereby worker safety at no additional cost to Irish food & drink manufacturing SMEs. The solution will be tested in practice by conducting case studies where it will be implemented in participating enterprises. The effectiveness of the solution will be tested both qualitatively and quantitatively by conducting OHS and food safety inspections and by applying the standard cost model pre and post intervention. The inspections will determine the practicability of the aligned system as a solution to enhanced OHS compliance and the standard cost model will be employed to determine the effectiveness of the system in the reduction of compliance costs.

## **Chapter 6: Results of Survey, Industry Assessments and Baseline Case Study**

### **6.1 Introduction**

This chapter presents the preliminary findings from fieldwork carried out in this study to establish the current state of play in the food and drink manufacturing SMEs with regard to OHS compliance. In order to test the rationale that the level of regulatory compliance and economic growth in Irish food and drink manufacturing SMEs is hampered by resource draining regulation and ‘red tape’, an analysis of the current situation was required. As the number of food & drink manufacturing SMEs in Ireland was difficult to ascertain, and to ensure that sufficient data was collected, the approach to obtaining the facts involved the three different stages/phases of data collection listed below:-

1. Broad Analysis of the current state of play included a Pilot study of 20 surveys and the Business Regulatory Compliance Overview consisting of 600 surveys.
2. Detailed Analysis of current state of play = Industry Assessments x 30 (A micro, small and medium-sized enterprise from each of the 10 NACE categorisations of the food and drink manufacturing industry.
3. Focused Analysis of current state of play = Case Studies x 4 (Case studies were conducted in a large, a medium, a small and a micro-sized enterprise pre and post intervention. Results pre intervention, referred to as the baseline analysis of the current state of play are presented here and the case study results following intervention are presented in chapter 8.

A summary of the key findings from the Business Compliance Overview survey, the industry assessments and preliminary results from the case studies showing the current state of play pre intervention with the safety system are presented. Detailed results are presented in the appendices as outlined in Table 6.1.

*Table 6.1 Numbered Appendices Containing Detailed Results*

Appendix	Title
Appendices H & I	Business Compliance Overview Results
Appendices J, K & L	Industry Assessment Results
Appendices M & N	Case Study Baseline Results (Pre Intervention)

The case studies follow the protocol in Figure 5.12 chapter 5 methodology. The case study results pre intervention are presented here and the results post intervention with the safety system are presented chapter 7. The preliminary results incorporate data from the surveys, the industry assessments and phase 1 of the case studies (the baseline assessment pre intervention). This is because the case studies were employed to both inform the safety system and also to test the usability and effectiveness of the system in the SMEs. The final results are presented in Chapter 8. Content and thematic analysis was used to analyse the data collected and the key findings are tabulated in section 8.8.

## 6.2 Business Regulatory Compliance Overview Results

### 6.2.1 Introduction

Irish food and drink manufacturing SMEs reported that there was a disproportionate burden of regulation on SMEs and that this burden was acting as a barrier to compliance with regulations, OHS in particular and to economic advancement. As a result, it was decided to conduct a broad survey to determine current OHS compliance in the sector. To this end the Business Regulatory Compliance Overview survey was sent at random to 600 SMEs nationally as per the database created for the study. In total 126 completed surveys were returned from which the data gathered was analysed using SPSS and also analysed for themes.

Derivation – The Business Compliance Overview is an adaptation of the original Business Regulation Survey of 2007 designed and conducted by the Economic & Social Research Institute (ESRI) was employed. The main author of the original survey validated the adaptation of the survey used for the study.

Pilot – A sample of 20 enterprises was selected through personal contacts based on their interest in the study.

Sample Size – Target population of Irish food and drink manufacturing SMEs was difficult to ascertain, 600 surveys were distributed.

Response Rate – 21%

*Table 6.2 Business Regulatory Compliance Overview Summary*

Number of surveys sent	Total successfully received	Completed surveys returned	Incomplete surveys	Emails re non participation	Response Rate
600	552	128	2	2	21%

The Business Regulatory Compliance Overview survey was divided into 6 sections outlined in Table 6.3. A summary of the survey results is presented here. Detailed results for each section are presented in the appendices as per Table 6.1.

*Table 6.3 Sections A to F of Business Regulatory Compliance Overview*

Section	Title
A	Respondents Profile/Company Background
B	Areas of Regulation
C	Contact with Regulators
D	Compliance with Regulations
E	Impact of Regulations
F	Consultation and Communication

### 6.2.2 Respondents Profile/Company Background

- The participating SMEs ranged in size with the survey population dominated by micro-sized enterprises. Almost half of the respondent enterprises were micro-sized at 48%, small-sized accounted for almost 38% and the remainder were medium-sized. The sample included one large enterprise for comparative analysis.
- 74.21% of SMEs surveyed were Irish Owned Private, 23.27% were Sole traders and the remaining 1.6% were franchise/other.
- 82.39% of participating companies had one branch only, the remainder had more than one branch with the large case study enterprise having 9 branches.
- The survey population included enterprises representing all 10 NACE Rev 2 classification groups. The largest business activity at 30.19% corresponded to NACE Group Number 10.8 ‘Manufacture of Other Food Products’ to include;
  - Sugar, cocoa, chocolate, confectionery, tea, coffee, condiments, prepared meals, food preparations, dietetic food, dried foods, broths etc.

### 6.2.3 Summary of Findings

The level of compliance with OHS legislation as reported by the SMEs is insufficient and unsatisfactory;

- With regard to compliance with OHS only 5.66% reported a high level of compliance and 37.74% reported a moderate level. The remaining and the majority of respondents reported a low level of compliance.

The food & drink manufacturing SMEs in their replies to the survey questions demonstrate that regulation and regulatory compliance is regarded as a burden for small businesses.

- When asked to compare the importance of regulation with other challenges faced by business, regulation was cited as the most important challenge with 48.43% of participants selecting regulation.
- The heavy burden of regulation is due to 'actual requirements of the legislation' and 'the reporting requirements'.
- Regulations are inconsistent, not easy to understand, do not achieve their objectives, are not flexible and are not appropriately enforced.
- Regulation is not appropriately enforced, is too rigid and is inconsistent across companies.
- 33.33% stated that health & safety should be tackled by the Government as a matter of priority.
- Regulation was viewed as having a negative impact on most aspects of business.

Also the participating enterprises prioritise food safety compliance. This is demonstrated by the following;

- Food safety regulations are regarded as the most significant regulation for the majority of businesses. Almost a third of participants regarded health & safety regulations as the most significant...

- Food safety was ranked as a priority by more than three quarters of participating enterprises of participating enterprises. Health & safety was ranked as a priority by a quarter of participants, however, more than half of the participants reported a low level of compliance. Possibly OHS enforcement may not be perceived as a threat.
- All of the questions with the exception of one question directly referring to OHS were answered in relation to food safety and food safety regulators. Regulators most dealt with by the participants are the food safety regulators. None of the participants mentioned the Health & Safety Authority or OHS. The regulators listed were mainly in connection with food safety (Department of Agriculture, Food and the Marine (DAFM), Local authority County Council vets, environmental health officers (EHOs) etc.), or in connection with revenue & tax.
- A low level of compliance with OHS regulation was reported by more than half of the enterprises, while only 4% reported a low level of compliance with food safety.
- The regulation having the most negative impact on business was cited by the majority of participants as food safety. Only 16% of participants selected OHS regulation as having a negative effect which may be evidence that OHS is not implemented or complied with in the majority of enterprises.
- Although few enterprises regard OHS regulation as having a negative effect on business, more than half of these business reported OHS to be a heavy burden, 38% reported OHS to be a moderate burden and the remaining participants did not regard OHS as a burden. This may demonstrate bias towards regulation with the food and drink SMEs struggling to comply with food safety regulations. Regulations with which they must comply in order to trade. The burden of OHS regulations may be a perceived burden of an additional body of regulations, also demonstrating the lack of awareness within the SMEs in this sector with regard to health & safety requirements.
- Food safety regulation was cited as the regulation incurring the greatest cost by over half of the participants stating that they spend 10 to 40% of total working hours on food safety compliance. The majority of enterprises reported that they spend 0 to 5 hours on OHS compliance.

There is insufficient communication of health & safety regulation by the Authority’.

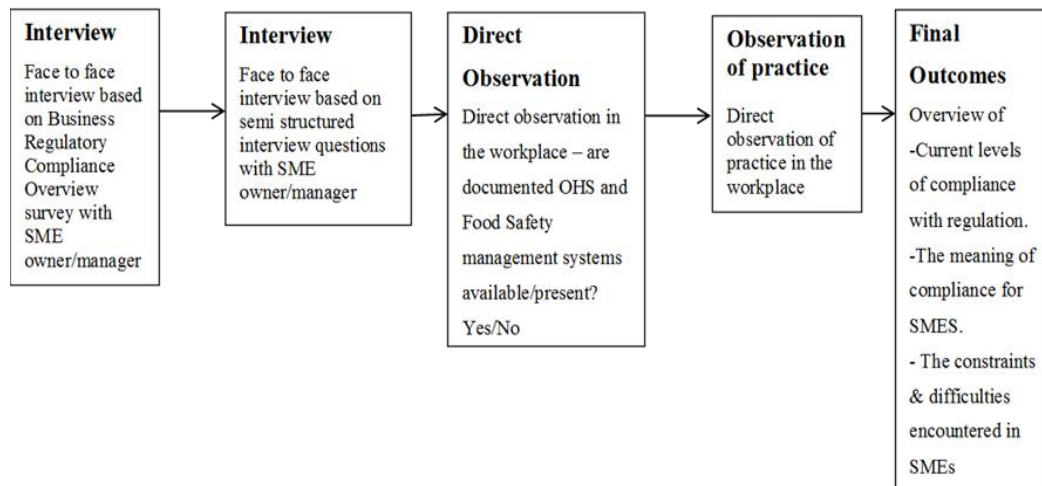
- More than three quarters of the participating enterprises disagreed with the statement, ‘there is sufficient communication of health & safety regulation by the Authority’. The majority of enterprises agreed that there is sufficient communication of food safety regulation.

Regulatory requirements to demonstrate compliance are repetitive across different areas of regulation;

- Almost half of the enterprises state that they provide the same information to a number of different regulators.
- There are ‘too many regulators there are over 15 bodies involved in our industry’ (fish processing).

### **6.3 Industry Assessments Results**

The assessments were carried out as in relation to the number of Business Regulatory Compliance Overview surveys distributed the response rate was low at 23% and also to gather more detailed data. As the comments areas on the completed surveys were always filled and always contained many suggestions for improvement, and the Food business owners (FBO’s) were found to have numerous grievances with the current situation in relation to regulation, industry assessments were employed. The assessments were used to obtain further detailed feedback by visiting a sample of companies in person in order to gather as much available data as possible. The sample size for the industry assessments was strategically selected using the NACE Revision 2 classification system for food and drink manufacturing detailed in chapter 5 and followed the framework described in Figure 6.1.



*Figure 6.1 Framework for Assessments*

The interview schedule for the industry visits was derived from the feedback received following the distribution of the Business Regulatory Compliance Overview. To obtain further detail and to develop further on a number of issues highlighted in the responses, the Business Regulatory Compliance Overview format was used in addition to a further of questions which were also derived following an analysis of the responses provided by the enterprises following the Business Regulatory Compliance Overview.

The questions were posed and answered verbally and in person with the owner or manager of each enterprise. Thirty enterprises were selected in accordance with the NACE Revision 2 Categorisation of Food and Drink Manufacturing (Table 2.2), which divides the industry into 10 categories. A visit was conducted at a micro, small and medium-sized enterprise from each of the 10 NACE categories totalling 30 visits. A pilot industry assessment was conducted with a visit to a micro-sized meat processor.

The responses recorded at the interview were analysed using triangulation methodology to extract themes.

### 6.3.1 Results of Interviews

A summary of the results for the ‘Business Regulatory Compliance Overview’ questions and the ‘Semi Structured’ questions are presented here under two separate headings.

## **Responses to Business Regulatory Compliance Overview Questions**

All of the questions from each of the sections A to F as outlined in Table 6.3 were asked and the response were documented. The responses from each enterprise was entered into SPSS and the data was content analysed. The results and interpretation of the data are detailed in Appendices J, K & L.

A summary of the findings is presented here.

- The majority of the companies were private Irish owned with one branch only throughout the Republic of Ireland.
- The distribution of enterprises by size was as follows:
  - Medium-sized enterprises = 8
  - Small-sized enterprises = 12
  - Micro-sized enterprises = 10
- The survey population included enterprises representing all 10 NACE Rev 2 classification groups. The largest business activity at 30.19% corresponded to NACE Group Number 10.8 ‘Manufacture of Other Food Products’ to include;
  - Sugar, cocoa, chocolate, confectionery, tea, coffee, condiments, prepared meals, food preparations, dietetic food, dried foods, broths etc.
- The majority of enterprises have been in operation for 5 to 10 years.
- The most important challenge for business for the majority of respondents was named as regulation.

NOTE – The term ‘regulator’ is used to cover independent or sectoral regulators and any Government Department office. The ‘impact’ refers to a negative impact.

- Food safety regulations was reported by 70% as having the most significant negative impact on business.
- The majority of enterprises agreed that the health & safety regulations and regulations generally were not easy to understand, were not flexible enough to be implemented efficiently and they were not properly enforced.
- More than 90% of respondents stated that there was insufficient communication of health & safety legislation by the authority.
- The regulator most often dealt with for all of the enterprises was in relation to food safety legislation.
- With regard to the level of compliance with Health & Safety regulation within the participating enterprises almost three quarters reported having a low level of compliance.
- Compliance with food safety was again prioritised with less than 45 of participating enterprises reporting a low level of compliance in this area.
- More than 80% of respondents report that they are required to provide the same information to a number of different regulators.
- More than 80% of participants report that there is too much regulation.
- Food safety incurs the greatest cost for 83.33% of participating enterprises.
- All of the participants report that the cost of compliance with regulation has increased in the past two years.
- The annual cost of regulations is reported by the majority of respondents to be on average between 10 to 30% of total business costs.
- All of the participants stated that the views of their business sector are not taken into account when new regulations are being developed and more than 60% report the requirements of new regulations affecting their businesses are not

clearly communicated.

- The majority of business are not aware of developments at EU level to introduce legislation in the sector.
- Food safety was suggested by more than three quarters of participants as the area of regulation they believe the government should tackle as a priority. Only 26% named health & safety regulation.

### **Semi Structured Interview Results**

The responses to the semi structured questions posed during the industry assessments interview are detailed in Appendix N. A summary of the replies is presented here.

Note: The pilot enterprise was a micro-sized meat processing plant and therefore belonged to the NACE category, ‘Processing and preserving of meat and production of meat products’.

#### **Q1. Does your company work to a recognised OHS standard/food safety standard and why?**

Only 2 of the enterprises worked to recognised external safety standards, both of these enterprises worked to external standards in FS and OHS.

#### **Q2. Would you consider implementing a standard that was designed specifically for SMEs with the needs of SMEs taken into consideration?**

All of the enterprises with the exception of 2 agreed that they would work to a safety standard designed specifically for small business. Those who replied ‘no’ did not give reasons for their answer.

#### **Q3. (If applicable) Does your company operate any other management systems or work to any other standards?**

None of the enterprise operated any other management systems.

#### **Q4. What are the key business drivers for OHS management and for food safety management?**

The key drivers for food safety was the regulatory body in all cases. Two of the medium enterprises also replied that it was customer requirement and can be used as a marketing tool. None of the enterprises referred to OHS management.

**Q5. What is the involvement of workers in OHS and food safety management?**

Safety was considered to part of the job and management was not required in small business. Only three of the enterprises directly involved their operatives and this was through training.

**Q6. How are OHS and food safety implemented and communicated to staff?**

In all but 6 of the enterprises, the owner implements and communicates food safety. In these 6 enterprises food safety is communicated through training and instruction with meetings also used in one medium enterprise. Only 3 enterprises communicate OHS through training and instruction. All of these enterprises are medium-sized.

**Q7. Is there more of an emphasis on OHS now than there was 10 years ago? Why?**

All but 5 of the enterprises felt that there was no change in the emphasis on OHS now than there was 10 years ago. Those who felt there was more of an emphasis now stated that there was more awareness with regard to safety of equipment and injury claims. It was also stated that the additional emphasis was 'being pushed by the retailers and it was the cause of more regulation being developed for SMEs'.

**Q8. Would you report a reportable incident/accident? Reportable to include an employee absent for more than 3 days, not including the day of the injury OR not absent for more than 3 days but could not perform normal work for more than 3 days.**

All of the enterprise owners admitted that they would not report a reportable incidence.

**Q9. Is there more an emphasis on food safety management now than there was 10 years ago? Why?**

All of the enterprises felt that there was more of an emphasis on FS now than 10 years ago. Mostly due to food safety scares, environmental factors and new processing methods.

**Q10. Did the economic downturn effect commitment to OHS? Commitment to**

**food safety? What training is provided for operatives?**

All of the enterprises with the exception of 1 agreed that the downturn had not effected commitment to food safety and food safety training was provided when training on the job with job task procedures signed off by operatives. One enterprise stated that cut backs were made in the testing and verification procedures. Formal training in both food safety and health & safety is provided by 5 enterprises, all medium-sized.

**Q11. Would you say there is a ‘business case’ for health and safety management other than the legal requirement?**

Seven enterprises agreed that there is a business case for health & safety management. However two of these stated, that they believed in a different economic climate there was a business case but with the current requirements and the current financial situation they would say there is not a business case.

**Q12. What are the main benefits of OHS and food safety management?**

The benefits expressed by all but 10 enterprises were uninterrupted production and keeping the enforcement bodies and customers ‘happy’. The other 10 enterprises listed benefits such as; safety of food is protected and shelf life extended giving better saleability, remaining open and being allowed to trade, a reduction in incidences etc. Five of the enterprises referred to the benefits of OHS management citing benefits such as safe people, happy people increased production rates, a reduction in incidents and costs etc.

**Q13. What are the main costs of management systems for your company?**

The main cost of management systems is ‘time’ for all. With other cost reported such as testing, carrying out checks, employing consultants etc.

**Q14. What are your comments on the integration of management systems?**

The comments on an integrated management systems were positive, enterprises owners stated that any system that would reduce the paper work, cost less money and take less time to manage while meeting requirements was one in which they would invest. Two of the enterprises were not in favour of such a management system or any management system stating that their business were too small to manage safety systems.

**Q15. Are you aware of the guidance available from the Food Safety Authority of Ireland (FSAI)/ Health & Safety Authority (HSA) / the National Standards Authority of Ireland (NSAI)?**

All but 3 of the enterprise were aware of the existence of the FSAI. 8 of those who were aware of the FSAI were not aware of the guidance offered and had not accessed the site or any of the guidance documents. At least 10 enterprises of all sizes were aware of all three bodies FSAI, NSAI and the HSA.

Although there is an awareness many enterprises do not contact the authorities or access their sites, those who do reported them to be difficult to navigate. Two enterprises one small and one micro stated that they do not have access to or use the internet.

**Q16. (If applicable) - Are you aware of the simplification of HACCP and the ‘choose your option’ section on the FSAI website?**

None of the enterprises had heard of or were aware of the ‘choose your option’ simplification of HACCP for small business with exception of the pilot study enterprise. The pilot enterprise conveyed an incident where they were informed by an external food safety consultant with regard to the simplification of HACCP, and that the veterinary inspector had asked the consultant not to inform us!

**Q17. Awareness of the small business supporting bodies in Europe such as UEAPME (the voice of SMEs in Europe), CEN-CENELEC comprised of CEN (European Committee for Standardization) and CENELEC (European Committee for Electrotechnical Standardization), who are responsible for developing and defining standards at European level. Together as CENCENELEC they are the driving force behind a move to standardisation and harmonisation of standards.**

None of the enterprises were aware of the small business supporting bodies at European level such as UEAPME, etc.

### 6.3.2 Observational Checks on OHS and Food Safety Management

It was observed whether or not there was a documented management system available for occupational health & safety and for food safety. It was also noted and documented whether or not these management systems where present were working systems i.e. implemented and reflected in practice. The following list was used as a guideline for the observational checks in each of the 30 participating enterprises and the pilot

enterprise. The guideline was adopted to ensure replication of the methodology when conducting the checks in each enterprise.

1. Is there a food safety management system in place?
2. Is this system documented?
3. Is the system working in practice (implemented and reflected in practice)?
4. Is there a health and safety management system in place?
5. Is this system documented?
6. Is the system working in practice (implemented and reflected in practice)?
7. Observation of practices in the form of field notes.

Occupational health & safety practices were observed in each enterprise visited and field notes recorded. The manufacturing process for each product at each enterprise was observed, safety practices and unsafe practice were noted. These results and these outlining whether or not occupational health & safety management systems and food safety management systems were present in the participating enterprises are tabulated and presented Appendix L.

A summary of the results is outlined here. The presence or not of a documented is discussed followed by a summary of the field notes in which points 3 to 7 from the guideline above are addressed.

- Four of the enterprises (all medium-sized) had a documented OHS management system. Two of these systems followed the internationally recognised standard BS OHSAS 18001:2007.
- The pilot enterprise had a documented OHS management system but the system was out of date.
- One enterprises (a micro-sized enterprise) did not have a documented food safety management system.

- OHS management systems and OHS practice when observed was only observed in the medium-sized enterprises.
- A number of enterprises had provided basic training for operatives, however the training provided was very specific covering areas such as manual handling, and fire safety etc. medium-sized enterprises were more likely to have provided this basic training.
- The medium-sized enterprises were also more aware of their requirements and the value of OHS management.
- Micro and small-sized enterprises were prepared to take the risk of having an accident or an inspection from the Health & Safety Authority rather than implement safety systems. Some of these enterprises were of the opinion that their business were very small and were not required to have manage OHS.
- A number of micro and small-sized enterprise owners were of the opinion that by having provided manual handling training for workers they had met their health & safety requirements.
- When the term 'safety' was mentioned, food business owners immediately referred to food safety measures. Food safety was prioritised in the majority of enterprises.
- Many hazards were observed such as, lifting, pulling and pushing of heavy loads, operatives walking around with knives, wet & slippery floors, cluttered walkways, dust etc.
- None of the enterprises with the exception of the pilot enterprise have had a health & safety inspection from the HSA.
- The majority of the enterprises visited rely on personal protective equipment as a means of protecting workers.

### 6.3.3 Summary of Industry Assessment Findings and Discussion

1. Small businesses continue to report a regulatory burden and this burden is regarded as a barrier to compliance with regulations. Regulations are described as costly, complex and time consuming.
2. Participants agreed that a system such as the proposed aligned safety system 'made sense' and was a system they would invest in. They agreed that such a

system would enhance safety compliance and free up resources to invest in continuous improvement and advancement.

3. Priority is given to the implementation and monitoring of food safety in all of the enterprises visited – Medium, Small and Micro. The main reasons cited for this are that food safety systems are audited regularly by the Department of Agriculture, Food and the Marine (DAFM), because it is a customer requirement or finally and most frequently because enterprises are afraid of being closed down by the authorities. All of the small and the micro sized enterprises visited expressed a fear of the authorities. Not one of the enterprises visited referred to the fact that food safety is a legal requirement. None of the enterprises had been audited by the HSA.
4. Occupational Health and Safety (OHS) management systems were not available in any of the small or micro enterprises assessed and only 3 of the medium enterprises had an OHS system in place. Awareness of the requirement to implement an OHS management system was lacking, the majority of enterprises were not aware of the requirement and were not familiar with the OHS regulations. The enterprises with OHS management systems in place reported that implementation of a basic health and safety system was required by their insurance companies or also because it was a customer requirement. These companies admitted that if insurance companies and customers did not require OHS management they would not have a system in place. Many of the systems are on paper but do not translate in to practice.
5. Many of the enterprises working towards a particular external standard such as a quality assurance standard or a food safety & quality standard such as ISO 22000 admitted that they only do so because it is a customer requirement. The enterprises did not recognise the current standards or standardisation in Europe as a marketing tool and many regarded standards as an additional expense.
6. All of the participating enterprises and the majority of respondents to the questionnaire (administered in 2012) agreed that the burden of regulation fell disproportionately on the smaller business. The consensus was that regulations

are far too complicated, costly and that the number of regulations governing the food and drink sector is outrageous. Enterprises stated that far too much time and money is spent in an effort to be compliant with legislation. Health and safety legislation was conveyed as the most complicated and viewed as least important to comply with. Food safety was regarded as the most important legislation to implement and comply with as it is enforced through regular inspections by the authorities and customers.

7. The legislation is vague and interpretations can vary from one governing authority to another and also from one enforcing officer to another within each agency. Food business operatives report this to be a cost, depending on the enforcement officer, auditor or inspector, changes can be made to practices, new testing regimes introduced etc. Small firms concerns with inconsistencies and interpretations of legislation were also reported in the business regulation survey conducted in 2007 with a number of specific examples of inconsistencies documented.
8. Communication of legislation, in particular health and safety legislation by the authorities to the SMEs was deemed insufficient, almost non-existent. The majority found that the regulators were competent and responded to queries in a reasonable time, however regulator practices were found to be bureaucratic and not very flexible.
9. Enforcement of legislation was viewed as being too rigid and both the requirements of regulation and the reporting requirements were quoted as being burdensome for all regulations being complied with. All of the businesses consider the number of and level of enforcement of some regulations to be excessive. There is far too much regulation. With the exception of the pilot enterprise, none of the participating enterprises had had an OHS inspection from the HSA. Hence the reply to the question does not include the enforcement OHS.

10. Regulations and compliance were regarded as complex, too expensive and a burden on business. The requirement to report microbiological test results was named as the most burdensome for enterprises. For the most part enterprises agreed that compliance was a combination of having both a documented system and a system in practice, nevertheless a number of micro enterprises believed having a documented system only equated to being compliant. Participants concurred that regulations impacted positively on the quality of products, negatively on labour costs and costs generally and did not have any significant impact on competitiveness or entering new markets. Regulations were regarded as being an obstacle to new businesses entering the sector and do not break down barriers to competition. Enterprises spend over 50% of their total work hours complying with regulations. This percentage varies depending on the size of each enterprise but the average is greater than 50%.
11. When conducting the observational checks in each company, when asked what the drivers for OHS management were, none of the enterprises referred to the protection of workers. However, a number of enterprises made reference to worker safety when asked if they thought there was a business case for OHS and when asked about the benefits of OHS management. In the majority of these cases, the protection of the worker was with a view to reducing accidents and preventing personal claims.
12. The consensus in the food and drink industries evaluated is that the views of SMEs are not taken into account when developing regulations and/or standards. Companies if aware of new developments in regulations are only made aware through audits and inspections.

## 6.4 Case Studies

Derivation – Case study methodology was employed to obtain an in-depth detailed industry perspective to develop and test a comprehensive and inclusive aligned safety system.

Overview – The case studies enterprises further informed development of the safety system, implemented and tested the new safety system and validated the safety system.

Number of case studies = 4 Enterprises, a large, medium, small and micro-sized enterprise. The large enterprise was employed to facilitate a comparison of data between large companies and SMEs.

### 6.4.1 Introduction

The case study methodology followed the steps in the order listed below to ensure continuity of methods used and to obtain as much as data as possible. The preliminary or baseline results i.e. the results pre intervention with the Safe Food Safe People system are presented in this chapter. The final case study results post intervention are documented in chapter 8.

1. Base Line Case Study Review Results to include:
  - a. Interviews with Owner and/or Manager(s) using survey and Semi Structured Interview Questions.
  - b. Inspection of Current Safety Systems and Practices in Participating Enterprises Pre Safe Food Safe People Implementation (against the international standards mentioned above).
  - c. Standard Cost Model Measurement & Results Pre (period of 6 months) ‘Safe Food Safe People’ Safety System Implementation
2. Introduction and Implementation of Safe Food Safe People Safety System:
  - a. Introduction to all enterprises
  - b. Implementation in the Small and Micro-sized enterprises with guidance from the author
  - c. The medium-sized enterprise implemented the system themselves without intervention from the author.
  - d. The system was not implemented in the large-sized enterprise as the design is specifically for SMEs.

3. Final Results:

- a. Standard Cost Model Measurement Results Post (after 6 months) ‘Safe Food Safe People’ Safety System Implementation.
- b. Inspection of Safety Systems and Practices in Participating Enterprises Post Safe Food Safe People Implementation (against the international standards mentioned above).

The case studies followed the framework Figure 6.2 and included a number of different stages, the preliminary results are based on data gathered following the baseline review phase only.

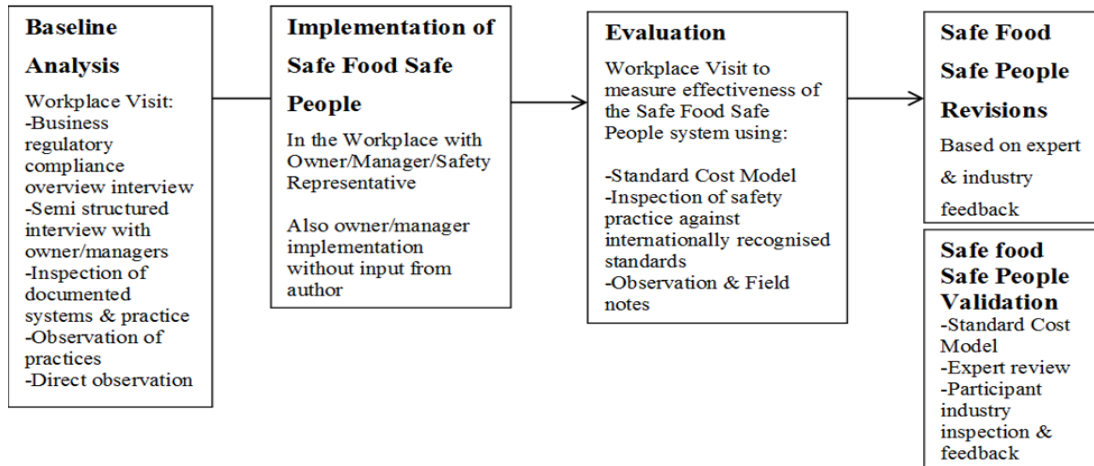


Figure 6.2 Framework for Case Studies

The preliminary visit to each enterprise was employed to assess suitability for participation in the study (measured against the strata identified in chapter 6) and also to gather baseline information. The baseline analysis was used to measure the current state of play with regard to compliance with occupational health & safety and food safety and to measure the current cost of compliance with regulation. The sample included a large, medium, small & micro-sized enterprise in order to converge the results within each study and also to compare and contrast the results between the different sized enterprises. The baseline data collected was also used to further inform the design of the aligned Safety System. The baseline review followed the steps outlined in Table 6.4.

*Table 6.4* Outline for the Baseline Review of Participating Case Study Enterprises

<p>The case study methodology was designed to collect baseline data on the current state of play by establishing the following within each participating enterprise:</p> <ol style="list-style-type: none"> <li>1. The current state of play with regard to regulatory compliance, awareness and communication within each enterprise. The barriers &amp; constraints, benefits and advantages associated with either compliance or lack of compliance.</li> <li>2. The agreement or disagreement that an aligned safety system is a viable solution.</li> <li>3. The availability and content of the documented systems employed in the management of OHS and FS.</li> <li>4. Practice of the documented OHS and food safety management systems.</li> <li>5. Measurement of compliance using recognised standards to carry out a full OHS and FS factory inspection and to collect data such as; documented methods and practice of OHS and FS, previous audit results, accident and incident records, training records, non-conformances, customer complaints, attendance records etc.</li> </ol> <p>A. Interview with Owner/Manager</p> <p>Face to face interviews were conducted using the questionnaire (appendix..) and the semi structured questions described below.</p> <p>B. Semi Structured Case Study questions</p> <p>Designed based on the questionnaire developed for the broad based survey and from key themes emerging from the survey and the industry assessments carried out. The owner and/or the manager(s) were interviewed in all cases.</p> <p>C. Inspection (OHS and Food Safety)</p> <p>The inspection were conducted against the internationally recognised standards. OHS using OHSAS 18001: 2007 and Food Safety using FSSC 22000:2009. The occupational health &amp; safety and food safety inspections included a number of questions, both closed and open-ended, and followed the elements and requirements of the standards.</p> <p>D. Observation of Practice</p> <p>Working practices were observed as part of the inspections conducted against the international standards mentioned above. Any observations made were recorded in the form of field notes.</p>
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Following the baseline inspection, the design, development and amendment of the Safe Food Safe People a follow up visit was conducted to introduce the safety management system. The measurement of compliance with safety and the cost of compliance with the new aligned system were determined after six months after implementation of Safe Food safe People. These results are presented in Chapter 8 Final Results. The preliminary data and the data recorded following Safe Food Safe People implementation was collected and documented as per the case study report outline presented in Figure 6.3.

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*Figure 6.3 Outline of Case Study Report*

## **6.5 Results of Interviews**

The Business Regulatory Compliance Overview format and a number of semi structured questions derived following an analysis of the responses to the Business Regulatory Compliance Overview and the industry assessments were used for the interviews conducted on regulation, regulatory compliance, OHS compliance and training, management systems etc. The questions were posed and answered verbally and in person with the owner or manager of each enterprise. The responses to the Business regulatory Compliance Overview questionnaire and the semi structured questions for each the four case study enterprises to include a large, medium, small and micro-sized enterprise are detailed in Appendices M & N respectively. A summary of the results for the ‘Business Regulatory Compliance Overview’ questions and the ‘Semi Structured’ questions are presented here under two separate headings. The business regulation overview summaries for each enterprise size are presented as follows, large enterprise in Table 6.5, Medium enterprise in Table 6.6, Small enterprise in Table 6.7 and finally the Micro enterprise in Table 6.8.

### **Responses to Business Regulatory Compliance Overview Questions**

The companies’ background is as follows:

- All of the enterprises were Irish owned private companies
- The large enterprise has 7 branches throughout the Republic of Ireland while the other enterprises each have one branch only.
- The interviewee was in a position to answer for all branches of the company.
- The numbers employed were:
  - Large enterprise employed >250 people
  - Medium enterprise 65 full-time and 5 part-time
  - Small enterprise 43 full-time

- Micro enterprise 3 full-time and 1 part-time.
- The main activity of the enterprises as per NACE Rev 2 classifications was, 'Processing and preserving of meat and production of meat products'.

*Table 6.5 Business Regulatory Compliance Overview Large Enterprise*

Business Regulatory Compliance Overview Summary	Although the enterprise regard OHS & food safety as a requirement for a sustainable business, they agree that; Food safety and OHS have an impact on business with regard to cost
Large Enterprise	<p>There is too much legislation imposed on food and drink manufacturing companies and that enforcement is inconsistent across companies in the sector.</p> <p>Safety systems have many repetitive elements.</p> <p>The approximate annual cost of complying with regulations, as a percentage of total business costs is 35%.</p> <p>The company state that food safety regulation should be tackled as a priority by the Government because food manufacturing is so regulated and therefore so expensive, that businesses take chances and don't comply. This is also applicable to OHS regulation.</p>

*Table 6.6 Business Regulatory Compliance Overview Medium Enterprise*

Business Regulatory Compliance Overview Summary	The enterprise manager regards health & safety regulation as having a low impact on the business (however this is because OHS is not managed).
Medium Enterprise	<p>Regulation was said to have a negative impact on entering new markets, competitiveness and on labour costs</p> <p>Management commented that regulators should ‘simplify OHS regulation and make it work for employer as well as employee, with every effort of be compliant, an accident cost us money as training in health &amp; safety was not in mother tongue although in a language understood and spoken by the employee. Where is the incentive?</p> <p>Damned if you do damned if you don't. It is not clear what exactly compliance is. Food safety was cited as the area of regulation that the Government should tackle as a priority.</p> <p>The approximate annual cost of complying with regulations, as a percentage of total business costs is 40%</p>

*Table 6.7 Business Regulatory Compliance Overview Small Enterprise*

Business Regulatory Compliance Overview Summary	The owner reported that enforcement of regulation is too rigid and inconsistent across businesses in the sector. There is too much regulation, it is too complex and it has a negative impact on all aspects of business.
Small Enterprise	<p>The cost of compliance with food safety alone is a financial struggle. Enforcement officers change their mind about what is required adlib at a cost to the business each time.</p> <p>The approximate annual cost of complying with regulations, as a percentage of total business costs is 30% and compliance costs have increased due to the introduction of amendments and new regulations.</p> <p>Health &amp; Safety was cited as the area of regulation that the Government should tackle as a priority.</p>

*Table 6.8 Business Regulatory Compliance Overview Micro Enterprise*

Business Regulatory Compliance Overview Summary	The owner reported that enforcement of regulation is too rigid and inconsistent across businesses in the sector.
Micro Enterprise	There is too much regulation, it is too complex, and a heavy burden and it has a negative impact on all aspects of business.
	The approximate annual cost of complying with regulations, as a percentage of total business costs is 25% and compliance costs have increased due to the introduction of new regulations.

### Semi Structured Interview Results

1. Does your company have a working OHS management system?

Enterprise	Replies
Large	Yes
Medium	Yes
Small	A dated documented system
Micro	Not a formal system, a few control sheets.

2. Does your company have a working Food Safety Management system?

Enterprise	Replies
Large	Yes
Medium	Yes
Small	Yes
Micro	Yes

3. Does your company work to a recognised OHS standard/food safety standard?  
Why?

Enterprise	Replies
Large	Yes, both food safety and OHS standards (British Retail Consortium Standard (BRC Issue 6) and ISO 9001 respectively) – it is a marketing tool and a customer requirement. We also work to the Bord Bia quality standard.
Medium	Yes, we work to the British Retail Consortium Standard (BRC Issue 6) standard for food safety as it is a customer requirement.
Small	No
Micro	No

4. How many management systems/standards are implemented in the company?

Enterprise	Replies
Large	Two (BRC and ISO 9001) – food safety, quality and lean manufacturing based - HACCP, QACCP, TPM, LEAN Tools, HnS, Continuous Improvement. OHSAS is not implemented: company uses the FBD Insurance Company's standard and risk management assessment.
Medium	1
Small	0
Micro	0

5. What are the key business drivers for OHS management and for food safety management

Enterprise	Replies
<u>Large</u>	<p><b>Plant Operations Manager</b> - To be honest this whole area has gained greater interest over the years and has really gone from a legislative requirement to a successful operations necessity. In a company such as ours OHS &amp; Food Safety must be a priority. We need to be sure we give our staff a safe working environment and that we produce a safe product in order to operate a sustainable business.</p> <p>I accept there are legislative requirements / customer requirements etc. but believe that businesses who are successful in manufacture in this day and age no longer need to be told of the priorities of these areas and standards in both often surpass aforementioned requirements</p> <p><b>Group Operations Manager</b> - OHS – employee safety and cost control</p> <p>Food Safety – Regulatory compliance, protection of reputation and cost control, prevention of food poisoning customers. Poisoning customers leads to cost, bad reputation etc.</p> <p><b>Group Health &amp; Safety Manager</b> –</p> <ol style="list-style-type: none"> <li>To prevent accidents.</li> <li>To retain trained operatives and to involve individuals (the meat industry is not going to be mechanised anytime soon.</li> <li>Pillar of three <ol style="list-style-type: none"> <li>To achieve a reasonable premium by managing risks</li> <li>Reduce claims i.e. money paid out</li> <li>Good relationship with broker</li> </ol> </li> </ol> <p>Additional Comment – In the food industry and in particular in the meat industry the hierarchy of controls does not apply as it does in other industries, in most industries PPE is as it should be, employed as the last form of defence. However in the meat industry PPE and training are the first and vital form of defence in the protection of operatives.</p>
<u>Medium</u>	Food Safety is customer driven and OHS is driven by the Government agencies.
<u>Small</u>	The food safety authority and the large retailers drive food safety. The *EHO drives it at our premises. Health & safety is enforced by the Health & Safety Authority however, it is not exactly driven by them!
<u>Micro</u>	Food safety is a legal and a customer requirement, health & safety is important with regard to accidents at work and claims.

6. What is the involvement of workers in OHS and food safety management?

Enterprise	Replies
<u>Large</u>	<p><b>Plant Operations Manager</b> - All staff undergo food safety &amp; OHS training at induction and the specific task related training on line. Food safety &amp; OHS considerations are explained for each task.</p> <p>Staff must understand the importance of 'controls' from a food safety &amp; OHS perspective otherwise control is impossible.</p> <p><b>Group Operations Manager</b> – Training is provided in both food safety and OHS (induction, on the job and refresher), safety is monitored and reiterated using tool box talks daily.</p> <p><b>Group Health &amp; Safety Manager</b> –</p> <p>a. Employee Forum – This is a group of employees selected by the employees, these selected employees meet with the factory manager each quarter.</p> <p>b. Communication – 10 interviews per month are carried with employees' one on one. These are very honest meetings where an individual can speak their mind and voice their opinions with regard to OHS, food safety and any other system or issue. The interviewee makes sure the operative has received training, is happy with the training received etc. All employees are asked how they think non-nationals are treated – now that we have a multicultural society. All meetings are documented and notes filed.</p>
<u>Medium</u>	Minimal, we have a quality control operative who looks after all of the food safety and health & safety. Training is provided.
<u>Small</u>	None, apart from them being required to take measurements for the *EHO.
<u>Micro</u>	None, I as the owner fill the records.

7. How are OHS and food safety implemented and communicated to staff?

<b>Enterprise</b>	<b>Replies</b>
<b><u>Large</u></b>	<p><b>Plant Operations Manager</b> – As above, training and using daily tool box talks.</p> <p><b>Group Health &amp; Safety Manager</b> –</p> <p>All operatives undergo IOSH training and they all receive an IOSH managing safety safely certificate.</p> <p>All managers and supervisors have black safety notebooks in which they must record all incidences, near misses, complaints from operatives etc. – all OHS related information.</p> <p>Operatives are rotated to different job tasks throughout the day and these rotations are recorded.</p> <p>There is an emergency response team at the ready at all times.</p> <p>All operatives undergo an audiogram annually to prevent hearing damage.</p>
<b><u>Medium</u></b>	Training in both health &safety and food safety.
<b><u>Small</u></b>	Training, our operatives have had food safety and manual handling training.
<b><u>Micro</u></b>	Training, this includes basic food hygiene and manual handling training

## 8. Is there more an emphasis on OHS now than there was 10 years ago? Why?

<b>Enterprise</b>	<b>Replies</b>
<b><u>Large</u></b>	<p><b>Plant Operations Manager</b> – Yes. In the past we were driven by standards / customer requirements / legislation whereas now we really self-govern as we realise the necessity of OHS and FS Management in a successful sustainable business.</p> <p><b>Group Operations Manager</b> – The level of emphasis is as it was, however there is more of an emphasis on practice now and not just the written systems on the shelf. Practical aspect is emphasised.</p> <p><b>Group Health &amp; Safety Manager</b> – Yes. Less new employees, less cost – happy, safe and healthy employees less turnover of staff. Accidents and rehabilitation cost money. Every factory is audited monthly by the group OHS manager. Most sites have a site OHS manger and others have OHS representatives and graduates. Risks are colour coded, if code red money is given to it and it is dealt with asap, code green means that it is safe. There is code orange (meaning it needs attention) however we prefer not use this, it is either safe or not, green or red. Increased production has resulted in greater measures. An increase in production at one site resulted in an unsafe dispatch area. Dispatch became very busy and dangerously full, there wasn't enough space and a number of accidents had occurred. This led to the 'Cappex programme' being devised – the operations manager, engineering manager, safety manager and group OHS manager can now call a code red, all of these managers must agree and then it goes to head office. They board are afraid of manslaughter charges and will always act on a code red.</p>
<b><u>Medium</u></b>	Not in our company specifically
<b><u>Small</u></b>	Yes, there is much more emphasis, everyone is prepared to claim now should they have a mishap. I was stung before by a delivery person who fell. I lost in court even though he fell on the footpath outside my premises. Some insurance companies require a health & safety system to be documented, however, they never check to verify it is working.
<b><u>Micro</u></b>	Not that I have witnessed no.

9. Would you report a reportable incident/accident? Reportable to include an employee absent for more than 3 days, not including the day of the injury OR not absent for more than 3 days but could not perform normal work for more than 3 days.

<b>Enterprise</b>	<b>Replies</b>
<b><u>Large</u></b>	Yes and we have done
<b><u>Medium</u></b>	No
<b><u>Small</u></b>	No
<b><u>Micro</u></b>	No, that would be inviting trouble, the Health & Safety Authority could call to investigate.

10. Is there more an emphasis on food safety management now than there was 10 years ago? Why?

<b>Enterprise</b>	<b>Replies</b>
<b>Large</b>	With so many changes to the industry and a number of outbreaks and deaths due to food poisoning over the years there is more of an emphasis now. A number of new regulations have come into effect, for example, the entire system of HACCP was updated in 2006. There are many more customer audits, the vets are vigilant and standards are reviewed more regularly with more and more requirements added.
<b>Medium</b>	Yes, and it steps up with each scare/scandal, it is getting more and more difficult and expensive to meet the requirements, in particular customer requirements. Legislation is being updated with new requirements added, new regulations are being introduced etc.
<b>Small</b>	Yes, the *EHO is here more and more. Customers are more aware and without food safety the business will fail. Also, new requirements are being introduced more often.
<b>Micro</b>	Yes, can't do business without it.

\*EHO – Environmental Health Officer

## 11. Did the recession effect commitment to OHS? Commitment to food safety?

Enterprise	Replies
<b><u>Large</u></b>	<p><b>Plant Operations Manager</b> - Absolutely not.</p> <p><b>Group Operations Manager</b> - No not in our company, from a health &amp; safety view point the recession and needing to reduce costs impacted positively on H&amp;S, there was more of a focus on keeping the employee safe and on the supervisors and managers role in ensuring safety of workers. Health &amp; safety policy and procedures were enforced more. Accidents cost money. However, I have seen evidence of the recession having a negative impact on commitment to safety in other companies – cutting corners, standards dropped etc.</p> <p><b>Group Health &amp; Safety Manager</b> - Yes, a claims culture has developed. There are now many more smart ass insurance people and smart ass operatives. Industry has moved forward to prevent these claims. The priority in many companies now is to prevent accidents to prevent claims – OHS management and risk assessment if implemented solely to cover their asses as it were! We have a ‘three strikes and you are out’ policy, three non-compliances and the operative is dismissed.</p>
<b><u>Medium</u></b>	No
<b><u>Small</u></b>	No
<b><u>Micro</u></b>	No

## 12. If you were to list the management systems in order of the priority they receive from senior management, in what order would they appear?

Enterprise	Replies
<b><u>Large</u></b>	All our management systems receive equal priority. We have operatives, supervisor and managers working with each system.
<b><u>Medium</u></b>	BRC/Bord Bia and food safety management generally is prioritised. OHS receives little attention and few resources. OHS training is the biggest concern to ensure operatives have signed off on procedures and understand how to lift safely.
<b><u>Small</u></b>	Food Safety Management, the OHS system with the exception of a few records and manual handling training is a documented system only.
<b><u>Micro</u></b>	Food Safety Management, with the exception of some OHS checks and manual handling training.

## 13. What training is provided for operatives?

<b>Enterprise</b>	<b>Replies</b>
<b><u>Large</u></b>	<p>SOP site specific training</p> <p>Food Safety, Personal Hygiene and HACCP</p> <p>IOSH managing safely</p> <p>Forklift Training</p> <p>Engineering Safety - lock out tag out</p> <p>Fire Safety</p> <p>Knife Safety</p> <p>Machinery Safety</p> <p>Slips, Trips and Falls information and training</p> <p>Tool Box Talks</p> <p>All training is validated :-</p> <p>Using the training matrix, an operatives training record is chosen and the jobs tasks etc. in which the individual is trained are observed to ensure that the operative is carrying the job safely as per SOP. It is also checked that the operative selected is actually carrying out the jobs in which they are trained and not working at a job task in which they are not trained.</p> <p>Carrying out 10-15 internal audits per month</p> <p>One monthly audit by group manager and the site is then rated accordingly</p>
<b><u>Medium</u></b>	Food safety and manual handling training- Internal and External
<b><u>Small</u></b>	About 8 staff members received food safety training about 6 years ago and everyone is training in manual handling.
<b><u>Micro</u></b>	Employee have basic food hygiene and manual handling training.

14. Would you say there is a 'business case' for health and safety management other than the legal requirement?

Enterprise	Replies
<u>Large</u>	In the past we were driven by standards / customer requirements / legislation whereas now we really self-govern as we realise the necessity of OHS and FS Management in a successful sustainable business.
<u>Medium</u>	No, we thought having employees trained would cover us in the event of an incident but we got caught out. There are too many regulation and requirements, as a small business we do not have the resources.
<u>Small</u>	No, it is just another cost more than anything else for small companies. As a small company accidents are minimal and the requirements are already too detailed and too many in number.
<u>Micro</u>	I can't comment really, I don't know much about it.

15. What are the main benefits and Costs of OHS and food safety management?

Enterprise	Replies
<u>Large</u>	<p><b>Plant Operations Manager</b> - Ability to stand over our product. Perception assists increased sales. Sustainability as a result. Costs – additional staff in FS and OHS roles but costs are covered in better industry perception / sales growth / market share / trust etc.</p> <p><b>Group Operations Manager</b> - Benefits – Unnecessary cost avoidance, avoidance of claims and damage to company reputation. Costs – Training, labour and production efficiency.</p> <p><b>Group Health &amp; Safety Manager</b> - The resource applied to it, the percentage of time from technical managers and operation given to safety. The cost of taking action, repairs etc. Code reds may require capital, money from the capital budget to pay for a possible management team required to remove/eliminate the danger noted. This team may need weeks, months to carry out the work depending.</p>
<u>Medium</u>	<p>Benefit - Compliance Cost - Maintenance</p>
<u>Small</u>	Food safety helps to ensure safety of the product for the consumer and thereby safety of our continued business. The costs are resources and time in the form of testing, interruptions to production due to audits, inspections etc.
<u>Micro</u>	Maintaining a customer base. Costs time and money.

16. What are your comments on the integration of management systems and integrated audit (where all of the management system standards are audited at the same time in one audit)?

Enterprise	Replies
<b><u>Large</u></b>	<p><b>Plant Operations Manager</b> - Not sure really what this question means but as with other standards; this may depend on progression of a company (i.e.) some standards are now falling behind the industry norm.</p> <p>Audits against standards don't seem to have the same 'punch' as they did in the past and personally I would rely on and have more faith in internal management rather than external auditing against a standard</p> <p><b>Group Operations Manager</b> - Great idea – anything to reduce costs but remain compliant - Probably a better idea for the smaller companies it would be difficult in our company.</p> <p>Audits are only ever as good as the auditor, to get value from an audit you need to have a good auditor who will find things wrong. There is great value in knowing the problems as it leads to continuous improvement.</p> <p><b>Group Health &amp; Safety Manager</b> - 'Integration is the only way to go'. Tool box talks should include OHS and FS – this will repeat again and again the requirements to operatives.</p>
<b><u>Medium</u></b>	A positive move for small business.
<b><u>Small</u></b>	Sounds like the only way forward, compliance with less cost. As small businesses we do not have the time or the money to invest in implementing all of the required systems. This is a system we would invest in. If it was recognised Nationally the savings would be benefit compliance generally.
<b><u>Micro</u></b>	It is something I would be interested in.

17. Are you aware of the guidance available from the FSAI/HSA/NSAI?

Enterprise	Replies
<b><u>Large</u></b>	Yes, we use the FSAI and the HSA website a lot.
<b><u>Medium</u></b>	Yes
<b><u>Small</u></b>	Yes
<b><u>Micro</u></b>	No

18. **(If applicable)** - Are you aware of the simplification of HACCP and the ‘choose your option’ section on the FSAI website?

Enterprise	Replies
<u>Large</u>	No
<u>Medium</u>	No
<u>Small</u>	No
<u>Micro</u>	No

19. Awareness of the bodies in Europe such as UEAPME = the voice of SMEs in Europe, CEN-CENELEC = standardisation, European Commission and the tools and strategies.....?

Enterprise	Replies
<u>Large</u>	No, we have not searched for any guidance outside that provided by the Irish bodies with the exception of the Health & safety Executive in the UK.
<u>Medium</u>	No
<u>Small</u>	No
<u>Micro</u>	No

\*EHO – Environmental Health Officer

## 6.6 Case Study One: Large

Case Study one, the large enterprise was characterised by the number of formal management systems and standards implemented to ensure compliance with legislation. The enterprises had a formal documented and working OHS and food safety management system. Due to the size of the customer base, these systems were audited and updated regularly. There was a team employed for OHS safety compliance and another for food safety compliance and a manager to oversee the daily running of both systems. According the OHS Manager, the Technical Manager and the General Manager, the management systems involved all members of the workforce with everyone consulted regularly. A background and description for the large-sized enterprise is presented in Table 6.8.

*Table 6.6 Large Enterprise Background and Description*

Enterprise Type (NACE Rev 2)	10.1 Processing and preserving of meat and production of meat products
Product Produced	Beef and Lamb in Plant Visited  However it also processes pork. Between Ireland and UK plants about 250,000 cattle, 800,000 lambs and 300,000 pigs are processed annually.
Number of Employees	The large enterprise is part of a group. There were greater than 250 employees in the plant visited with thousands of people employed internationally in the group. Employees in the plant visited are full-time or part-time permanent. A number of contract workers are employed occasionally depending on throughput, maintenance issues etc.
Workforce	Culturally diverse employing Irish, English, Brazilian, Polish employees. Employees range in age from 20 to 60.

### 6.6.1 Occupational Health and Safety and Food Safety Inspection

The occupational health & safety inspections were conducted against the OHSAS 18001:2007 OHS standard. The findings for the Large-Sized Enterprise (> 250 employees) are detailed here.

The OHS management system is implemented, maintained, monitored, reviewed and updated to the letter of the law. All aspects of the system, records, tests, practice etc. were compliant on the day of the inspection. Only one non-conformance was noted during the inspection, the operative stunning the cattle was using his mobile phone as we approached the work station. This is an obvious hazard as a stun gun is used to stun the animals and using the phone is a distraction. The operative was reprimanded immediately and asked to report to the operations manager after his shift. The enterprise operate a policy which states that mobile phones are to be left in the lockers. All employees have received training in this policy and are also reminded regularly in the form of tool box talks. All though the enterprise have and continue to be fully committed to regulatory compliance and the safety of their employees accidents occur but not very many. One such accident occurred the 4 days prior to the inspection and was reported to the Health & Safety Authority using the online form. The accident investigation concluded that the employee had decided to help another employee and

was therefore carrying out a job task other his own and was operating equipment with which he was unfamiliar. He had not received training in the operation nor had received training in the occupational hazards and risks of the equipment. Although fully trained with constant reminders in safety and with a fulltime translator on site for the non-national employees, operative error results in occasional accidents at the enterprise. The food safety inspection was conducted against the internationally recognised FSSC 22000:2009 standard. The findings for the Large-Sized Enterprise (> 250 employees) are detailed here.

The food safety management system is run very well with food safety regarded as a tool for achieving the best product possible. The best product possible equates the protection of the consumer, continued custom, good reputation and good profit margins this was evident throughout the factory. The only non-conformance with the paper work was – the internal audit had not been carried out as per schedule, with one audit overdue. The non-conformance documented during the health & safety inspection (the operative at the stunning operation using a mobile phone) is also regarded as a food safety non-conformance. Mobile phones are unhygienic carrying bacteria and are prohibited in food manufacturing plants.

The large enterprise visited is an example of how food safety and health & safety should be managed. Every effort is made to protect the safety of the food, the consumer and the worker. However the OHS manager did state that in the event of a requirement for new safety equipment or the identification of a hazard with the corresponding control carrying a cost, the worst case scenario i.e. the possibility of a major injury or death, has to be presented to the board in order to secure an investment.

### 6.6.2 Field Notes and Comments

Practices were observed in each enterprise visited and field notes recorded. The manufacturing of each product at each enterprise was observed, safety practices and unsafe practice were noted. The observations for each enterprise are presented here. The field notes for the large enterprise are presented in Figure 6.4 and the owner/manager comments are presented in Figure 6.5.

NACE Category	Enterprise Size and Food Manufactured
Processing and preserving of meat and production of meat products	<b>Large</b> – Slaughter and deboning of beef and lamb.
<p><b>Field Notes</b> – This enterprise was very clean and organised. Safety focused primarily on the staff, with training and refresher training provided in basic health &amp; safety and in the relevant job tasks. Tool box talks are held each morning before start-up. Meetings are held with staff members regularly on rotation to ensure they are well and don't have any issues. In return staff follow all procedures and policies and work to their full potential. Staff are reminded of safety procedures using signage and notice boards throughout the plant. The large enterprise has a health &amp; safety manager and a technical manager overseeing OHS. The enterprise is part of a group and therefore there is also a group health &amp; safety manager. OHS is implemented, monitored and controlled to the letter of the law. All accident and incidents are recorded and reportable accidents are reported and logged with the Health &amp; Safety Authority. The health &amp; safety system is designed to ensure the safety of visitors and hauliers to the plant.</p>	

Figure 6.4 *Field Notes Factory Tour Large Enterprise*

**Food Business Owner/Manager Comments** – ‘As the managers of the business we realise that safety both occupational and food safety impacts on people. Providing a safe work environment for our employees as well as for ourselves has many benefits and the cost in the case of this company do not out weight the benefits. Operatives are involved at every stage of the process and encouraged to provide feedback both positive and negative with regard to their health, safety and welfare while at work. Although our systems are effective and communicated through training, signage etc. accidents and near misses do occur. There will always be human error, a lapse in judgement or concentration. Such incidences are investigated to establish the cause, we learn from these mistakes and move forward. Production runs more smoothly with safety conscious competent employees and this benefits everyone from a safety and a financial view point. An aligned system will be a time and money saving method of achieving compliance with the regulatory requirements. As demand for Irish product is increasing more and more businesses will be expanding and others setting up, this is the perfect time to introduce such a system. As we are a large enterprise and work to a number of external standards, the proposed aligned system which is designed for SMEs would not work here, however, the theory behind the system is of great interest.’

*Figure 6.5 Food Business Owner/Manager Comments*

### 6.6.3 Standard Cost Model Pre Intervention

A detailed breakdown for the cost of regulatory compliance for each participating enterprise before intervention with the new safety management systems, ‘Safe Food Safe People (SFSP)’ measured over a period of 6 months, January to June 2014. The breakdown for the large-sized enterprise is presented in Table 6.9

*Table 6.7 Cost of Regulatory Compliance Summary Large Enterprise*

Large-Sized Enterprise (Covering a period of 6 months)	Cost (€) of Regulatory Compliance Pre SFSP	
	<b>€58,000</b>	
Cost of Regulatory Compliance for Jan to June 2014	<b>Description</b>	<b>Cost (€)</b>
	Statutory Audits (7 days)	7,750
	Resulting Administrative Costs	1,500
	Product Authentication International – BRC Audit	1,470
	BRC Related Costs (Hotel etc.)	1,000
	EPA	5,724
	Dept. of Agriculture – Cutting Fees	38,000
	Odour monitoring Ireland – Biofilter/Boiler Monitoring	1,245
	NSAI-Legal Metrology Service (weighbridge verification)	577
	Customer Audits	1,000
	Resulting Administrative Costs	750
	<b>Total Cost</b>	<b>58,000</b>

## 6.7 Case Study Two: Medium

Case study two was characterised by distrustful industrial relations with a number of past OHS incidents and despite company rehabilitation and care, one operative made a claim against the company and won her case.

This company also had a very well presented OHS management system and written policies but these were out of date. Operational OHS practice at the time of the audit was a document filling exercise. Records were filled but did not reflect practice. A background and description for the medium-sized enterprise is presented in Table 6.10.

*Table 6.8 Medium-Sized Enterprise Background and Description*

Enterprise Type (NACE Rev 2)	10.1 Processing and preserving of meat and production of meat products
Product Produced	Fresh Whole Turkeys and Cooked Turkey Slices & Crowns
Number of Employees	A local employer of 65 full time permanent staff and 5 part-time, with an additional 50 temporary staff employed during the busy festive season.
Workforce	Culturally diverse employing Irish, Polish and Lithuanian employees. Employees range in age from 20 to 60.

### 6.7.1 Occupational Health and Safety and Food Safety Inspection

The occupational health & safety inspections were conducted against the OHSAS 18001:2007 OHS standard. The findings for the Medium-Sized Enterprise (≤250 employees) are detailed here.

Operatives did not have job task OHS training and were operating machinery with moving parts, equipment with blades and hot ovens. The emergency stop buttons had not been tested and preventive maintenance was behind schedule or had not been recorded. There were a number of operatives working while assuming awkward postures – organisation of work flow to reduce manual handling and risk of musculoskeletal injury is required with many operatives crossing back and over to machines unnecessarily. Heavy lifting with incorrect postures, no mechanical aid in the slicing area – ‘because it is high risk’.

Noise levels while not measured were found to be high in the raw area (when machines and equipment were in use it was necessary to raise one’s voice to be heard), hearing protection was not used or available if required by a member of staff. Accidents are not reported to the HSA or logged in house.

Other hazards noted were:-

- There is nitrogen used and CO<sub>2</sub> stored on site internally.
- Very labour intensive with operative standing for long period of time carrying out repetitive tasks – weighing slices on a weighing scale.

- Long hours of work
- Small space per worker.

The work area in particular the floor had a lot of clutter such as trays, boxes etc.

The food safety inspection was conducted against the internationally recognised FSSC 22000:2009 standard. The findings for the Medium-Sized Enterprise ( $\leq 250$  employees) are detailed here.

Food safety was managed with a food safety manager and a number of operatives trained to carry out checks and record findings. There were a number of machines with 'old dirt' i.e. not dirty due to work in progress. A number of soap holder did not have soap and fixtures such as the soap, towel & sanitiser holders were very dirty. The cooked meat area (high risk area) was clean – which is to be expected. However, the soap and towel holders were dirty. 'Clean as you go' or general housekeeping was not implemented with the work area generally cluttered.

All checks required on the floor had been recorded with no issues found. The final product label on a number of packets of meat was illegible – therefore traceability was lost. Records, manuals etc. are all up to date with internal audits and preventive maintenance both behind the schedule devised by the food safety manager.

The language barrier was reported by company management as the biggest risk to both food safety and health and safety. The most evident risk to the health & safety of the workers identified during the inspection was the cleaning regime and general housekeeping. Work areas were cluttered, soiled with waste product, wet and slippery. The company had not been audited by the HSA.

### 6.7.2 Field Notes and Comments

Practices were observed in each enterprise visited and field notes recorded. The manufacturing of each product at each enterprise was observed, safety practices and unsafe practice were noted. The field notes for the medium-sized enterprise are presented in Figure 6.6. and the owner/manager comments are presented in Figure 6.7.

NACE Category	Enterprise Size and Food Manufactured
Processing and preserving of meat and production of meat products	<b>Medium</b> – Processing of raw turkey, cooking and packing cooked turkey slices. Slicing and packing cooked ham & beef.

**Field Notes** – The medium-sized enterprise had a documented OHS system with training, fire safety and OHS checks carried out. However, the OHS system on file is out of date and OHS checks are most often completed historically at the end of the day or at the end of the week depending on time pressures. OHS is not prioritised by the company, the reason for this is reported to be due to a lack of resources and time. The company have had a claim from an employee in the past 2 years. The employee suffered a laceration while using a knife in the workplace. The company provided health & safety training to all non-national employees in Russian, a language spoken and understood by all, however following the accident the court ruled that each employee must be trained in their mother tongue and the company lost the case. They state that as a medium-sized business the cost of training each employee in their mother tongue is very expensive and it difficult to find suitably skilled Irish staff.

The work environment is disorganised with many trip hazards. Operatives use a lot of mechanical equipment with blades and moving parts. There is also a large amount of repetitive work, with awkward posture and standing in the one position. Operative in the packing area were handling, moving and carrying heavy boxes. Accidents are not reported or logged. The enterprise does not employ health & safety personnel and do not employ expertise in OHS. A consultant was employed in the past and an OHS system was documented and implemented. This documented system is still available and used but has not been updated and does not reflect practice. The food safety manager, manages OHS in addition to food safety.

There was a discrepancy between audit results on file and the inspection conducted for this study in food safety, there were no health & safety audit results on file. The results on file did not reflect food safety practices. Previous audits conducted had recorded very few non-conformances.

*Figure 6.6 Field Notes Factory Tour Medium Enterprise*

**Food Business Owner/Manager Comments** – ‘We are a busy enterprise with plans for expansion. We would like to be compliant with all governing legislation however, with the number of regulations and requirements this is very difficult to achieve as a small business. The regulations are complex and compliance is a very costly business. An aligned safety system is a great suggestion, however, such a system would have to be recognised by the regulatory bodies before SMEs would adopt it. A recognised National safety system specifically designed for small business is long overdue’.

*Figure 6.7 Food Business Owner/Manager Comments*

### 6.7.3 Standard Cost Model Pre Intervention

A detailed breakdown for the cost of regulatory compliance before intervention with the new safety management systems, ‘Safe Food Safe People (SFSP)’ measured over a period of 6 months, January to June 2014 for the medium-sized enterprise is presented in Table 6.11.

*Table 6.9 Cost of Regulatory Compliance Summary Medium Enterprise*

Medium-Sized Enterprise (Covering a period of 6 months)		Cost (€) of Regulatory Compliance Pre SFSP	
		<b>€39,450</b>	
Cost of Regulatory Compliance for Jan to June 2014	Description		Cost (€)
	Statutory Audits		1,750
	Taxation Compliance		750
	Testing for verification purposes		1,200
	Waste Management		7,500
	Product Compliance		7,500
	Independent Internal Audits		2,500
	Resulting Administrative Costs		1,500
	Staff Training		1750
	Safety Manager		15,000
	<b>Total Cost</b>		<b>39,450</b>

## 6.8 Case Study Three: Small

Case study three is characterised by the number of hazards present in a small work area. There is a food safety system in place and there was a health & safety system in the past. The OHS system was a generic system and when the company were inspected by the HSA, the system did not pass. The out of date OHS management system remains in place as a documented system only. A number of checks are carried out as part of health & safety management. Safety in this company is driven by the fact that it is a legal and a customer requirement. A background and description for the small-sized enterprise is presented in Table 6.12.

*Table 6.10 Small-Sized Enterprise Background and Description*

Enterprise Type (NACE Rev 2)	Manufacture of bakery and farinaceous products
Product Produced	Ready Meals and Baked Goods
Number of Employees	Culturally diverse with Irish, English, Brazilian and Polish employees. 43 full-time permanent employees, contracted maintenance workers.
Workforce	Employees range in age from 18 to 45

### 6.8.1 Occupational Health and Safety and Food Safety Inspection

The occupational health & safety inspections were conducted against the OHSAS 18001:2007 OHS standard. The findings for the Small-Sized Enterprise ( $\leq 50$  employees) are detailed here.

Numerous hazards were identified during the inspection such as; hot ovens, overloaded sockets, equipment with moving parts, machines and equipment with blades. One operative was witnessed cleaning the slicer with a cloth while the slicer was on and the blade was moving. All of the equipment was fit for purpose but not organised, the equipment was poorly placed and hazardous e.g. operatives in the kitchen had to walk a distance with hot liquids and hot food to get to a workbench. Also, two single ovens were at head height with operatives reaching for hot food. Operative while encouraged to work safely had not received training on the OHS hazards associated with their relevant job tasks. Another example of hazardous working was the operative working

the compactor and strapping machine without any training. A number of operatives did not have English and were instructed using translation by other members of staff from the same country. The cleaning operative worked on their own after everyone had gone home and had not received training in the use of chemicals. Accidents and incidents were not recorded – ‘this would be an admission of accountability’. The owner stated that they would not report a reportable accident.

The company had been audited by the HSA on one occasion but have never forwarded a reply and have never had a follow up audit. Although management were aware of health & safety and the requirements, no one had received formal training. Manual handling training has been provided for all employees.

The food safety inspection was conducted against the internationally recognised FSSC 22000:2009 standard. The findings for the Small-Sized Enterprise ( $\leq 50$  employees) are detailed here.

Food safety checks were historical with some not recorded. This was more evident in the bakery than in the area processing the readymade dinners. The ceiling had grease marks and a dirty cloth was in close proximity to baked goods. Two operative were observed smoking outside in their protective clothing and they did not wash their hands on return to work. Operatives had not received training in food safety, food hygiene, personal hygiene or HACCP. The course was booked after the inspection. The company were using the catering guide to food safety as they also had a catering and retail aspect to their business, the guide is specific to retail and catering and therefore many food safety hazards and prerequisites were not documented or controlled. A formal documented system for the processing area was not available.

The enterprise had an out of date formal generic health & safety management system documented. A few checks were carried out such as verifying that guards were in place, operative had correct PPE and emergency stop buttons were working. The recording of checks both OHS and food safety were admittedly to satisfy the authorities. The records were not meaningful and did not reflect practice. The owner however was very eager to be compliant in OHS and food safety and was very interested in implementing the proposed aligned system. The field notes for the medium-sized enterprise are presented in Figure 6.8. and the owner/manager comments are presented in Figure 6.9.

## 6.8.2 Field Notes and Comments

NACE Category	Enterprise Size and Food Manufactured
Processing and preserving of meat and production of meat products	<b>Small</b> – Ready to eat dinners and baked goods.

**Field Notes** – The small enterprise had employed a health & safety consultant in the past but the system provided by the consultant was not specific to the company and the no one at the company understood the system or how to implement and run it. However, the walkways were clear and the processing area very tidy. Management were aware of and promoted health & safety. Training had not been provided. There were numerous unidentified hazards that required monitoring and control; ovens, knives, equipment etc.

*Figure 6.8 Field Notes Factory Tour Small Enterprise*

**Food Business Owner/Manager Comments** - The enterprise owner reported that he would like to be compliant but with a safety system addressing the core legislative requirements only. An aligned system is a system he would invest in and if it was recognised by the authorities that would be a bonus. Food and drink manufacturing SMEs are suffocated by regulatory requirements and the requirements are increasing all the time. A sensible compliance option based on the practicalities of small business is required and will be welcomed.

*Figure 6.9 Food Business owner/Manager Comments*

## 6.8.3 Standard Cost Model Pre Intervention

A detailed breakdown for the cost of regulatory compliance before intervention with the new safety management systems, ‘Safe Food Safe People (SFSP)’ measured over a period of 6 months, January to June 2014 for the small-sized enterprise is presented in Table 6.13.

*Table 6.11 Cost of Regulatory Compliance Summary Small Enterprise*

Small-Sized Enterprise (Covering a period of 6 months)	Cost (€) of Regulatory Compliance Pre SFSP	
	<b>€19,000</b>	
Cost of Regulatory Compliance for Jan to June 2014	<b>Description</b>	<b>Cost (€)</b>
	Statutory Audits	2500
	Resulting Administrative Costs	500
	Regulatory Compliance	15,300
	Customer Audits	500
	Resulting Administrative Costs	200
	<b>Total Cost</b>	<b>19,000</b>

## 6.9 Case Study Four Micro

The enterprise is characterised by the lack of awareness of OHS requirements and an unwillingness to implement OHS management prior to this study. A background and description for the micro-sized enterprise is presented in Table 6.14.

*Table 6.12 Micro-Sized Enterprise Background and Description*

Enterprise Type (NACE Rev 2)	10.3 Processing and preserving of fruit and vegetables
Product Produced	Jam Production
Number of Employees	4 employees in total, 3 full-time permanent and 1 part-time temporary.
Workforce	Two Irish and Two Brazilian

### 6.9.1 Occupational Health and Safety and Food Safety Inspection

The occupational health & safety inspections were conducted against the OHSAS 18001:2007 OHS standard. The findings for the Micro-Sized Enterprise (≤10 employees) are detailed here.

There was no formal health & safety management system available. The owner considered the business to be too small and the number of hazards to be minimal to

require an OHS system. Training in manual handling was provided. Hazards observed at the time of the inspection were, slip (pools of water and spilt jam) & trip (cluttered work space) hazards, manual handling (incorrect lifting of heavy boxes with finished jam product), Cuts (broken glass jars), Burns (hot oven & hot jam), repetitive tasks and awkward postures (potting, lidding, labelling & packing the jam). Fire extinguishers were not available, an evacuation plan had not been considered. The company have not been visited by the HSA. The owner stated that they would not report a reportable accident.

The food safety inspection was conducted against the internationally recognised FSSC 22000:2009 standard. The findings for the Micro-Sized Enterprise ( $\leq 10$  employees) are detailed here.

Food safety was implemented as a means to do business with supermarkets. A very informal system and therefore the listing the non-compliances found during the inspection against the FSSC 22000 requirements were numerous. Two specific food safety hazards with a real risk to the safety of the product were noted;

- The oven used to sterilise the glass jars is not calibrated and the owner could not demonstrate whether or not the required sterilisation temperature is reached when sterilising the jars. Whether or not the oven is reaching the temperature as per the setting on the dial/button is not verified/validated. It was the same issue with the temperature probe used to take the temperature of the jam.

- Glass control has not been identified as a hazard (prerequisite) and the product is sold to the consumer in glass jars. There is no glass breakage procedure in place. Jars have been broken during production previously.

The enterprise owner expressed an interest in achieving regulatory compliance with both food safety and health & safety if it was financially viable and easier to understand. A lack of awareness, time and resources were cited as the main reasons for not having a formal OHS system implemented. The owner was interested in implementing the aligned safety management system. Annual handling training had been provided to prevent claims should an employee damage their back. The field notes for the medium-sized enterprise are presented in Figure 6.10. and the owner/manager comments are presented in Figure 6.11.

## 6.9.2 Field Notes and Comments

NACE Category	Enterprise Size and Food Manufactured
Processing and preserving of meat and production of meat products	<b>Micro</b> – Jam Production Process

**Field Notes** – The micro-sized enterprise did not have a health & safety management system in place. The floor space was small and the only equipment used was an oven and a hob to sterilise jars and to make the jam. Other job tasks were carried out manually such as lifting, filling, sealing, lidding and labelling jars. The number of employees is 4, one of whom had little English, no one has received health & safety training. The owner does not have any plans to provide training, considering the business to be too small and the number of hazards to be minimal to require OHS training. Hazards were observed, slip & trip hazards, manual handling, broken glass jars, hot oven, hot jam, repetitive tasks, awkward posture and no fire extinguishers or evacuation plan.

*Figure 6.10 Field Notes Factory Tour Micro Enterprise*

**Food Business Owner/Manager Comments** – At the time of the visit the owner stated that her attitude had been, ‘the cost of regulation is such that as a business owner I was willing to take a chance and not bother with formal OHS. My employees have plenty of experience and the accidents we have had resulted in minor injuries. I haven’t had a visit from the HSA so I had decided to continue as I was until I was told to do otherwise by the authority’.

*Figure 6.11 Food Business Owner/Manager Comments*

### 6.9.3 Standard Cost Model Pre Intervention

A detailed breakdown for the cost of regulatory compliance before intervention with the new safety management systems, 'Safe Food Safe People (SFSP)' measured over a period of 6 months, January to June 2014 for the micro-sized enterprise is presented in Table 6.15.

*Table 6.13 Cost of Regulatory Compliance Summary Micro Enterprise*

Micro-Sized Enterprise (Covering a period of 6 months)	Cost (€) of Regulatory Compliance Pre SFSP	
	<b>€13,300</b>	
Cost of Regulatory Compliance for Jan to June 2014	<b>Description</b>	<b>Cost (€)</b>
	Statutory Audits	1000
	Resulting Administrative Costs	300
	Regulatory Compliance	6500
	Customer Audits	1200
	Resulting Administrative Costs	300
	Staff training	500
	Waste Management	3500
	<b>Total Cost</b>	<b>13,300</b>

Note: The enhanced compliance with OHS reduced insurance costs

## 6.10 Case Study Comparisons

A comparison of the findings following both the OHS and the food safety inspection for each case study company were compared and a summary is presented here. The comparison of OHS regulatory compliance for all case study enterprises is presented in Figure 6.12 and the food safety regulatory compliance for all case study enterprises is presented in Figure 6.13.

Enterprise Size	Large Enterprise	Medium Enterprise	Small Enterprise	Micro Enterprise
Results				
OHS Inspection	Comprehensive management system documented and in practice. There is a managerial commitment to OHS and the safety of the workers. Fulltime OHS management team. All employees are involved in the management of OHS. Training is provided and updated as required.	OHS is not a priority, with a generic out of date OHS management system documented. While a number of OHS checks and procedures are conducted, the results do not reflect practice and occasionally the records are filled retrospectively.	OHS was not a priority and regarded as complex and an unnecessary cost. The owner stated that 'he pays insurance to cover any injuries and claims that may occur'. Employees are not sufficiently trained and use hazardous equipment on a daily basis. Following his participation in this study, the owner has expressed an interest in implementing safety systems and meeting his regulatory requirements.	There was no formal health & safety management system available. The owner considered the business to be too small and the number of hazards to be minimal to require a formal OHS system. A number of hazardous were monitored such as manual handling and wearing PPE correctly.

*Figure 6.12 OHS Regulatory Compliance in Case Study Enterprises*

Enterprise Size	Large Enterprise	Medium Enterprise	Small Enterprise	Micro Enterprise
Results				
Food Safety Inspection	As with OHS, food safety is very well managed and there is a dedicated team. All staff members are involved in ensuring product safety.	Food safety is prioritised and a comprehensive system is in place on paper. Food safety practice however, does not reflect the documented system. Occasionally checks are not carried out but records are filled regardless. The importance of food safety is understood but time pressures result in safety procedures being disregarded.	Food safety is prioritised with some records and an incomplete management system documented. Product safety is managed 'in order to keep the authorities from stopping or slowing production. Food safety management is regarded as 'a paper work exercise' and as having 'no value' for the enterprise. 'There are too many requirement, the entire system is over the top and there is no return on investment for us the business owner'.	Food safety is prioritised. Again as with the small enterprise, food safety is implemented in order to be permitted to trade and also as it is a customer requirement. Although records are filled, the focus is on production and production rates. Filling orders takes priority. Safety management is regarded as out of reach for micro enterprises due to the complexity, the cost and the time required to manage a system.

*Figure 6.13 Food Safety Regulatory Compliance in Case Study Enterprises*

Safety systems in the large enterprise are regarded as paramount for trade and for continued economic advancement as a business. The legal and the moral obligation to manage safety of people and product and the resultant economic benefits are fully understood. However, as a large enterprise, the company have the resources to invest in safety and continuous improvement.

The commonalities with regard to safety in all of the participating SMEs were;

- Safety where managed was managed to ‘keep the enforcement agency/authority happy’, the benefits or the moral obligation of safety management was not comprehended. Safety management was regarded as a burden and an obstacle to production.
- Food safety is prioritised, because it is actively enforced.
- OHS is not required in their enterprises as they are small businesses.
- Food & drink manufacture is hazardous by nature.
- All of the business owners stated that they would not report a reportable accident or dangerous occurrence.

### **6.11 Current State of Play: Key Findings**

The results from the field work conducted pre intervention demonstrate that the current state of play in the food and drink manufacturing Irish SMEs with regard to OHS compliance is unsatisfactory. The enterprises for the most part report that they are struggling financially and hence do not have the resources or the time to commit to OHS management. The majority of the micro and small-sized enterprises are unaware of the benefits of OHS and of where to obtain information on the requirements. A number of micro and small-sized enterprises expressed a lack of interest and a disregard for OHS management with 2 micro-sized enterprises regarding both OHS and food safety management as a waste of time, ‘the industry is hazardous by nature, that is just the way it is’.

When asked to compare the importance of regulation with other challenges faced by business, regulation was cited as the most important challenge with almost half or 48.43% of participants selecting regulation. Food safety and OHS were most often identified by the enterprises as the areas which have the most negative impact on business costs and also as areas which the Government should prioritise for intervention 45.28% identified food safety regulation and 33.33% OHS regulation. The participants were concerned with the negative impact of regulation on their costs in particular as ‘access to credit is impossible and is required for compliance and expansion’, ‘underlying costs have jumped in recent years’ etc.

Most firms 62.64%, agreed that there is too much regulation, 80% agree that regulations are too complex to understand, more than 65% agree that regulations do not achieve their objectives, over 70% state that regulations are not flexible enough to be implemented efficiently, 75% agreed that regulations are not consistent with one another, more than 50% declare that it impossible to be compliant with the current number of regulations and only 18% agree that regulations are appropriately enforced.

Food safety is prioritised by 71% of SMEs and only 26% prioritise health & safety. Compliance with OHS is reported as a heavy burden with the 'actual requirements of OHS legislation reported to account for the heavy burden. More than 50% agree that OHS legislation is not easy to understand and 70% find that there is insufficient communication of health & safety regulation by the authority. The HSA or OHS regulator was not referred to by any of the enterprises throughout the study unless referred to directly in a question. Food safety regulation was cited (45%) as the regulation incurring the greatest cost.

SME owners generally have a negative view with regard to consultation, communication and the regulator. More than half of the business owners state that the views of their business sector are not taken into account when new regulation is being developed, the requirements of new regulation affect their sector are not clearly communicated and changes in regulations are not announced in a timely fashion. All of the enterprises had been audited in the past three years and more than 50% had been audited more than twice. The regulator most dealt with was the Environmental Health Officer (EHO) from the Health & Safety Executive (HSE) and more than 70% of the audits conducted in the firms surveyed were in relation to food safety.

More than 60% of SME business owners found decisions to be unclear and inconsistent and regulator practises inflexible and bureaucratic.

A summary of the main findings is listed below;

- Regulation is a burden on food and drink manufacturing SMEs.
- The burden on SMEs is disproportionate, expecting small business to comply with the same requirements as large enterprises is described as non-sensible.
- There is too much legislation and it is too complex and too rigid.

- The enforcement of regulations in particular food safety regulations is reported as being inconsistent.
- The communication of regulations, requirements and new legislation is insufficient.
- With the exception of two or three enterprises where OHS management systems are implemented, OHS is managed because it is either a customer requirement or it is required by the insurance company.
- SME business owners for the most part do not understand the requirements of safety legislation either food safety or OHS. They do not know how to comply, what they must do to comply and are unsure of exactly what is regarded as compliance/compliant.
- The complexity of regulation and the number of regulations are a barrier to compliance.
- Time, cost and resources are an obstacle with respect to safety management.
- Small businesses report that they would not report a reportable accident or dangerous occurrence to the HSA.
- There are discrepancies in the interpretation of the legislation across the different enforcement agencies and even within the one enforcement agency, with different inspectors/officers having different interpretation of the same requirement.
- Compliance with food safety regulation is prioritised to the detriment of OHS and worker safety.

The preliminary results demonstrate the poor level of compliance with OHS in Irish food and drink manufacturing SMEs and the primary reason offered for this is the burden of regulation in the form of the cost, complexity and time required. The results also determine a gap in communication between the regulator and the enterprises with poor communication of regulations and changes in regulations cited as secondary barrier to compliance.

The results support the rationale for the thesis: a system or solution is required to enhance the insufficient level of OHS compliance and protect the workers in Irish food and drink manufacturing enterprises. The focus in the sector is on the safety of the food and an equal emphasis is required for the safety of the worker manufacturing the food. The main factors reported as problematic with regard to regulatory compliance

are regulation, communication and resources, a system or solution which addresses these issues or barriers is needed to facilitate the special needs and characteristics of small business in order to have a positive impact on regulatory compliance.

## 6.12 Summary

The results converged the theory that the regulatory burden acts as barrier for SME compliance with regulation. In particular with OHS regulation as the findings demonstrate that priority is given by the small business owners/managers to food safety regulatory compliance. SME owners report that this is because:

- A business must register with the Food Safety Authority and obtain a licence prior to opening a food business.
- Food safety is rigidly enforced by the food safety authorities.
- Food safety is a customer requirement.

The unsatisfactory compliance with OHS legislation in the food & drink manufacturing businesses is inextricably linked to a perceived burden of regulation, a lack of resources, a poor level of communication and varying interpretations of regulation. The food & drink business owners reported that there is too much regulation, it is complex, there are too many requirements and the requirements change regularly depending on the governing body and also depending on the individual inspecting on behalf of the governing body. The disproportionate regulatory burden is hindering their compliance as they do not have the resources (time, money or employees) to implement all of the requirements for each Governing regulation. The perceived regulatory burden also reportedly deters some small enterprises from growing their businesses. The business owners fear that expansion of their business may lead to further requirements and costs. The current regulatory burden in combined with a lack of access to finance are reportedly preventing their economic advancement.

Food safety regulation is described by the food and drink manufacturing SME business owners as burdensome, costly and complex but it is also described as essential for business. The SME or small business owners are aware that compliance with food safety is a legal and a customer requirement and it must be implemented regardless of the resultant cost on business. With regard to OHS however, while the majority of

business owners are aware of the requirement to implement OHS they do not place the same emphasis on compliance and do not consider OHS as being essential for business. Only 5 of the 34 small business owners interviewed understood the OHS requirements and 3 small business owners appreciated the value of being compliant ‘overtime health & safety could make business sense but not in the current climate’, ‘safety management reduces the occurrence of incidents which can cost everyone time and money’. The benefits or the moral obligation of safety management was not comprehended. Safety management was regarded as an obstacle to growth, costing too much money and too complicated. Those who were interested in regulatory compliance agreed that ‘the information available i.e. the legislation and the guidance documents are far too complex for the ordinary person. One would need to have a qualification in food safety to health & safety to have any chance.’ ‘As a small business we do not have the time to figure out the requirements or the money to employ a qualified person or persons if we intend to implement both food safety and OHS’. ‘It is easier to follow requests from the Vet and to put the checks and the procedures in place as per his requirements’. OHS is another mine field that we do not have time to decipher and therefore we don’t bother and hope we are not inspected. I personally don’t know any company that has been inspected, it’s not as strict as food safety’.

Overall the food and drink manufacturing SME business owners report a disproportionate burden of regulation on small businesses as well as on their business sector. In addition to the number the amount of legislation governing food and drink manufacture, the business owners agree that legislation and regulations should be fit for purpose and business size must be considered in the design. 75% of the small business owners do not understand the requirements of food safety legislation or the management systems they have in place, most often implementing procedures and checks in accordance with the enforcing officer’s guidelines. These business owners state that they are already struggling with the burden of food safety and would not or could not consider complying with OHS regulation and introducing a second management system. The current inconsistencies in interpretation of the requirements by those enforcing the law, the lack of communication and the complexity and number of regulations are the main reason for the business owner’s expression of concern for the future of small businesses in their sector. 91% of the small business owners interviewed stated that they would like to be compliant with all of the governing

regulation but they do not have the time or the resources and therefore food safety without which food and drink businesses cannot trade is prioritised and in some instances is the focus within the enterprises studied.

Business owners believed that there was not much emphasis on OHS, those who were not aware of the requirements had also decided that 'should they be inspected by the HSA authority they would worry about health & safety management then'. They believed that their enterprises being small were safe and the only non-conformance was 'not having the paperwork to show the inspector'. They were not aware of the individual requirements of such systems or what exactly constitutes compliance. Business owners do not know how to meet the individual requirements of the many safety regulations governing their sector. Many depend on the instruction from enforcement officers in order to meet requirements.

The findings clearly demonstrate that regulation is a perceived burden for food and drink manufacturing SMEs. There are many areas of dissatisfaction such as flexibility of enforcement and consistency of requirements and interpretation of requirements. The cost of compliance is too much for small businesses and therefore the level of compliance is insufficient. Not only is the level of compliance with occupational health and safety unsatisfactory, it is also disregarded in most businesses who cannot afford to manage another safety system. Small business owners believe who believe that small business is safer than large business, food and drink manufacturing is hazardous by nature and that OHS management is not a priority as there is no great emphasis on it or enforcement of it by the authority. The business owners however, would prefer to be compliant if it was viable from a time and a cost view point. The concept of an aligned system designed to aid compliance with both health & safety and with food safety was met with great interest. More than 80% of the 35 enterprises visited were in favour of such a system and agreed that it was something they would invest in. The preliminary results were used to inform the development of an aligned safety system specifically for SMEs which incorporates OHS and food safety requirements in one documented safety management system. The system design is described in detail in the following chapter.





## **Chapter 7: Development of Safe Food Safe People System**

### **7.1 Introduction**

Both the literature and the review of the current situation in food and drink manufacturing SMEs have established that regulations and standards are too complex and costly placing a disproportionate burden on SMEs and due to this the level of OHS compliance is unsatisfactory.

The integration of standards and management systems as a method of reducing the regulatory burden for business has been identified in the literature as a solution to the insufficient level of regulatory compliance in SMEs. Although based on sound principles the integration of standards in the current format would not be suitable for SMEs as small business owners regard them as complex and as an added expense. One size does not fit all, the standards do not consider small business needs. ‘While the potential benefits of integration are attractive, the process of integration is far from straightforward’ (The Institution of Occupational Safety and Health, 2012). The guidance suggests that system improvements will only be achieved if the integration process is planned thoroughly and explicitly addresses any disadvantages, such as increasing the complexity of existing systems. With regard to SMEs, the complexity needs to be reduced, therefore, management system standards must consider the identified needs and characteristics of SMEs. To date a benchmarked integrated management system standard for SMEs is not available despite the requirement.

Hence, this chapter details the design of a safety management system for Irish food and drink manufacturing SMEs titled Safe food Safe People (SFSP). SFSP aims to align OHS and food safety regulatory requirements in one safety system designed specifically for SMEs by addressing the issues and complexities reported by them and by employing existing relevant strategies and guidance. The framework for the alignment of OHS with existing food safety management systems is presented in Chapter 4.

## 7.2 Elements Informing SFSP Design

Findings from the literature review demonstrate the requirement for SME needs and characteristics to be considered at the development stage of management systems. A number of barriers to compliance and many challenges for small businesses are documented. The same obstacles are documented time and time again in peer reviewed documents from the 1980's through to the present day. It is evident that OHS compliance is unsatisfactory in SMEs leading to accidents and incidents. Accidents and incidents which result in costs to the enterprises and to the wider economy.

SMEs report a lack of resources and the burden of regulation as the primary obstacles to compliance. It is demonstrated in the literature that the cost of regulations and standards can often outweigh the benefits of compliance when applied to small business. Governing bodies continually seek to reduce the costs and enhance compliance with safety, however, despite all of the interventions, strategies etc., SMEs continue to struggle with compliance and hence for economic survival, with many closing down (Vetter and Köhler, 2014). A reduction in the complexity of regulations and the cost of compliance would enhance small business participation. The obvious result of enhanced compliance is worker safety, reduced incidents and reduced costs. Small business claims regarding the cost of compliance, the complexity of regulations etc. are supported in the literature. Careful design of regulations specific to company size could lead to the realisation of policy objectives while at the same time reducing the associated negative impact and burden (The Economic and Social Research Institute, 2007).

A direct link between compliance in businesses, the regulatory burden, cost and economic growth & advancement exists. I have designed a model to depict this, presented in Figure 7.1.

***Figure Removed for Copyright Reasons***

*Figure 7.1 The Model Linking Regulatory Compliance and Economic Growth*

Considering the importance of SMEs to the economy, the complexities associated with them such as a lack of resources, time etc. and the increased risk to workers employed

in small businesses, OHS regulatory compliance is essential. To achieve this, SMEs require assistance, an intervention suited to small business requirements is necessary. In order for an intervention to work in assisting SMEs with regulatory compliance it must take account of the small business requirements identified in the literature, and the issues and the limitations of past interventions and tools. The proposed aligned safety system safe Food Safe People (SFSP) aims to achieve this by incorporating findings from the literature, recommendations from European Commission guidance documents and the findings from the review of the current situation in SMEs with regard to OHS and regulatory compliance conducted for this research. To this end the elements informing the system are presented in Figure 7.2.

### ***Figure Removed for Copyright Reasons***

Figure 7.2 Elements Informing the Aligned Safety System – Safe Food Safe People

Safe Food Safe People was designed based on all of the research findings and addresses the issues reportedly faced by Irish food and drink manufacturing SMEs. The elements of the proposed Safe Food Safe People safety system and how they address the SME requirements identified in the review are presented in Table 7.1.

It is anticipated that SFSP by considering the small business requirements identified in the literature and in the field and through the application of recognised interventions designed to assist small business can improve SME regulatory compliance.

Table 7.1 SME Requirements as Addressed by Safe Food Safe People

<b>SME Requirements &amp; limitations of existing management systems</b>	<b>Addressed in Safe Food Safe People System Formulation</b>
Cost effective, action oriented	Alignment reducing burden – managing two safety systems with one documented system. Testing the resultant system in practice with SMEs.
Knowledge with respect to SME characteristics, issues and requirements are not addressed at the planning stage of interventions	Designed specifically for SMEs – informed by SME owners, the literature and, existing interventions and regulatory requirements.
Unsustainable	Cost effective – the lean principle, the ‘Think Small First Principle’ and the guidance for the development of standards for SMEs were applied at the design phase
Complex & time consuming	The alignment as opposed to the integration of the management system requirements addresses this.
Little or no evaluation of the effectiveness of interventions	Action oriented research incorporating pre and post intervention visits to measure the effectiveness both qualitatively (inspections and interviews) and quantitatively (Standard Cost Model).
Interventions are hazard specific and therefore the reduction in illness, incidences can be measured but the uptake is not measured.	Safe Food Safe People is industry sector specific providing a system to assist the user in addressing all of the relevant hazards as opposed to addressing specific hazards for the user. The theory underlying the safety system is applicable to all industry sectors.

## 7.3 Formulating the Safety System

Safe Food Safe People was designed based on the findings of both the literature review and the investigation of the current state of play in Irish food and drink manufacturing SMEs with regard to OHS compliance.

### 7.3.1 Background

Health & Safety in Ireland is indeed well legislated for with defined legal obligations imposed on the employer and the employee. However, the preliminary results demonstrate that the level of compliance with OHS in food and drink manufacturing SMEs is insufficient.

It is proposed that OHS and food safety can be successfully aligned in one safety management system. Based on the successful applications of HACCP, the ‘think small first principle’, the ISO guidance on designing standards for SMEs and the underlying theory developed from the literature an aligned safety system designed specifically for small business has the potential to enhance regulatory compliance in SMEs. Lindøe and Lie (2002) who systematically implemented OHS and food control in the Norwegian hospitality sector using checklists and guidelines conclude that, ‘combining food control with the regulating of OHS seems to be a healthy recipe for the industry’. Safe Food Safe People as discussed previously aligns OHS and food safety requirements and controls based on Hazard Analysis Critical Control Points (HACCP), the ‘Think Small First Principle’ of the Small Business Act for Europe (SBA) of 2008 (reviewed in 2011) and ISO Guidance for writing standards taking into account micro, small and medium-sized enterprises’ (SMEs) needs. These are applied to the design of the safety system as follows:-

- **HACCP** for the safety management system development and, in conjunction with the principles of prevention, for risk assessment design.
- **Think Small First Principle** considering complex nature of SMEs identified in the literature:-
  - Time Constraints
  - Lack of Resources
  - Lack of knowledge and awareness

- Disproportionate burden of regulation
- Complexity of legislation and food and drink manufacturing process requirements etc.
- **ISO standard** to ensure SMEs needs are taken into consideration in the design.

The aligned safety system is designed to enhance OHS compliance by reducing the complexity of compliance while at the same time reducing the burden of cost. The safety system was developed from theory and tested and refined in practice in 4 case study enterprises. Enhancing safety and reducing costs will lead to improved productivity and competitiveness in small businesses. This in turn will have a positive financial impact on the economy, assisting in a move from recession to progression.

### 7.3.2 Rationale for SFSP

Frick (2011) refers to standards as voluntary management systems and compares them to mandatory regulations stating that the voluntary approach is criticised as having less external supervision. However, Frick and Wren 2000 referenced in (Frick, 2011) note that in the US and New Zealand ‘reduced enforcement costs can be used as motives to promote voluntary management systems’. Hence Safe Food Safe People is a management system and designed specifically to suit small business needs.

Aligning existing OHS and food safety systems and running them concurrently, they can function together but are independent to an extent, a non-conformance in the OHS sense may not affect the food safety of the process and will therefore be dealt with in a different manner independently of food safety system and vice versa. For example should the product temperature be too high, this will not hamper the effective running of the OHS and should an operative suffer an injury this will not hamper the manufacture of the product.

### 7.3.3 Safe Food Safe People Structure

Safe Food Safe People (SFSP) system elements follow the structure detailed in the ISO Guidance for writing standards taking into account micro, small and medium-sized enterprises’ needs (International Organization for Standardization, 2013) originally a CEN-CENELEC guidance document (CEN-CENELEC, 2010). Safe Food

Safe People contains three documents: the management system, a guidance document and an additional relevant information document. The management system details the requirements and the guidance document demonstrates how a business can meet the requirements by providing examples of procedures, records, illustrated and diagrammatic examples. The third document provides additional relevant information on guidance documents available, contact details for intermediaries etc. OHS and food safety requirements are dealt with in an aligned management system following the sequential format of HACCP. Each HACCP step and HACCP principle is applied and detailed in the main document with the guidance document following the same structure.

Safe food Safe People is a proposed system for the management of OHS and food safety in food and drink manufacturing SMEs. Implementation in industry and verification of the system is discussed in the following chapters.

### 7.3.4 The Management System

The management system for SFSP is based on the existing food safety management system standard FSSC 22000:2009 (ISO 22000:2005 and PAS 220:2008) and occupational health and safety management standard (OHSAS 18001:2007) discussed in detail previously. These standards generally recognise key elements for the management of safety;

- Management commitment and Interactive Communication
- Risk Assessment
- Documented System Management
- Prerequisite programmes or Good Manufacturing Practice
- Review and Continuous Improvement

Deming's Cycle (Plan-Do-Check-Act) is also incorporated into the management aspect of SFSP. The cycle forms the basis for most systematic system management and risk management systems such as OHSAS 18001:2007, ISO 22000: 2005, ISO 9001:2008 etc. (The Institution of Occupational Safety and Health, 2012, National Standards Authority of Ireland, 2014). The way in which Deming's Cycle is incorporated or applied to Safe Food Safe People is presented in Table 7.2

*Table 7.2 Organisational Systematic Management Approach Safe Food Safe People*

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Finally, SFSP considers the four areas suggested by Garavan (2002) as the key areas that health and safety management as an activity should cover;

- The management of Health & Safety operations.
- The measurement of Health & Safety performance on an ongoing basis.
- The motivation of managers and employees to improve standards of Health & Safety performance.
- The design of effective organisational structures and the creation of a safety culture that contributes to effective organisational safety performance.

Safe Food Safe People is designed to guide food and drink manufacturing SMEs with the management of OHS and food safety. When implemented correctly, the system will assist the SME with the realisation of all four areas as recommended by Garavan in both OHS and food safety management.

### 7.3.5 The Risk Assessment

OHS and food safety management systems are required to employ preventive measures and both systems are a legal requirement in Ireland. Both OHS management and food safety management are applicable to food and drink manufacturing. It is a legal requirement to conduct a hazard analysis and risk assessment for both OHS and food safety. The risk assessments must be based on the Principles of Prevention and on Hazard Analysis Critical Control Points (HACCP) respectively. Both approaches are aligned in SFSP however, the structure of the management system follows the Codex principles of HACCP to ensure validity of design.

## **Principles of HACCP and Principles of Prevention**

The concept of system safety has been traced to the missile production industry in the late 1940's but later by the U.S. military and U.S. National Aeronautics and Space Administration (NASA) (Vincoli, 2006). The Codex Principles of HACCP were adopted by NASA for the production of safe food used to feed astronauts when on space missions.

With regard to food safety the Codex Alimentarius international food standards, guidelines and codes of practice were introduced to contribute to the safety, quality and fairness of this international food trade. Founded in 1963 Codex is about safe, good food for everyone – everywhere and has evolved in an open, transparent and inclusive way to meet emerging challenges. International food trade is a 200 billion dollar a year industry, with billions of tonnes of food produced, marketed and transported. Codex was established by the World Health Organisation and Food and Agriculture Organization of the United Nations and governs international food standards (Codex Alimentarius, 2014).

The primary legislation governing OHS in all Irish businesses is, 'The Safety, Health and Welfare at Work Act 2005'. The Act a list of preventive measures to eliminate, reduce or control identified hazards, the measures are titled the 'Principles of Prevention' (Health and Safety Authority, 2014a). The Principles of prevention and the codex principles of HACCP are aligned in the risk assessment section of Safe Food Safe People and are detailed here in Figure 7.3 to demonstrate the commonalities in the approach to safety through the prevention of hazards and the reduction and control of risk:

### ***Figure Removed for Copyright Reasons***

Figure 7.3 HACCP Principle and Principles of Prevention Commonalities

Both risk assessment systems use a systematic approach to identify hazards, assess the risk, establish controls, implement corrective action and review the system as required. In the food and drink sector application of both system individually results in two documented systems run separately and duplication of work on a daily basis. Food

safety and OHS can be risk assessed and controlled concurrently as both are applicable to the manufacture of food.

HACCP identifies and prevents health and safety risks from the consumers' view point (Dias *et al.*, 2006) and OHS principles of prevention are used to identify and prevent risks from the workers view point. HACCP is a 'structured and systematic technique for the identification of hazards and risks: as such, it may help identifying certain risks that are common to both the consumer and the workforce' (Dias *et al.*, 2006). A HACCP based approach was adopted as the basis for the development of Safe Food Safe People with the inclusion of the Principles of Prevention to add depth based on;

- The successful application of HACCP as a risk assessment methodology to areas other than food safety,
- The fact that it is an internationally recognised, validated risk assessment tool,
- HACCP is a legal requirement in the European Union (EU),
- Food manufacturers are familiar with HACCP,
- The commonalities in the requirements of food safety and OHS management systems, hazard analysis and risk assessments.

Also the science of HACCP has been utilised for applications other than food safety in a number of other studies. Kojima *et al.* (2008) implemented HACCP in the risk management of medical waste generated from endoscopy. They found that the 'implementation of HACCP may simultaneously accomplish prevention of health hazards, reduction of environmental load, and containing the cost of waste disposal', they also concluded that HACCP 'can be integrated easily into the departmental routine without extra cost'. A study using the application of hazard analysis and critical control points and 'risk management in the preparation of anti-cancer drugs' reported that method 'helped us to focus on the production steps', critically influencing quality and improving processes (Bonan *et al.*, 2009). The authors found that by defining hazards affecting quality as biological, chemical or physical they could identify and define operations that were 'likely to cause illness or injury to patients or health workers' (Bonan *et al.*, 2009).

The aligned safety system aimed at SMEs will help firms with the production of a documented OHS and food safety management system based on hazard analysis

critical control point (HACCP) steps and principles. The SFSP management system is designed to provide the food business operator with the tools to develop a system that can meet the requirements of both food safety and occupational health & safety in one system thereby reducing the costs of compliance and enhancing safety of people and product. The expected benefits of SFSP if implemented correctly in food and drink manufacturing enterprises are;

***Figure Removed for Copyright Reasons***

It is important to remember that ‘nothing is completely safe under all circumstances or all conditions there is always an example in which a relatively safe system or piece of equipment can become hazardous’(Vincoli, 2006). Therefore, in order for the proposed Safe Food Safe People system to function as described and to realise the benefits, small business owners must implement it correctly, even then as with all management systems, it must be reviewed and updated.

### 7.3.6 Sustainability

Most often the term sustainability is applied to the inclusion of environmental provisions within standards, for example the ISO sustainability in standards guide makes reference to the environmental concerns, how the product and production of the product impact on the environment (International Organization for Standardization, 2008). Although sustainability and safety are both based on the conservation of resources namely environmental and people respectively, sustainable safety does not feature in any of the existing management system standards. However, CEN and CENELEC address sustainability of standards and management systems in a document titled, ‘Ambitions to 2020 with regard to standardisation’ (CEN and CENELEC, 2013).

Safe Food Safe People was designed in the knowledge that the sustainability of the system is pertinent to its success and the uptake by food and drink SMEs. With the application of the ISO guidance for the design of standards for SMEs and the ‘Think Small First Principle’, to the safety system design, sustainability is achieved through the removal of duplicated requirements, and the removal of complex terminology. The

system design is also such that the sustainability of managing the system will be enhanced once implemented as fewer resources and time will be required to achieve compliance with OHS and food safety concurrently.

According to Zink (2014) ‘The focus should not only be on short-term, static efficiencies, such as productivity and profitability, but also on long-term, dynamic efficiencies such as learning and innovation’. In this regard the application of lean manufacturing and sustainable logic to existing OHS and food safety management system requirements results in a comprehensive long-term solution to the administrative burden and the poor involvement of SMEs in standardisation, SFSP. It is anticipated that by aligning OHS and food safety, in a manner suited to SMEs, SFSP will function as a sustainable solution for Irish food and drink manufacturing SMEs. This is important when we consider that ‘the global population is set to increase by more than two billion by 2050 and the world will need to produce 70% more food’ (Bord Bia, 2012b). Safety is integral to the future of the food and drink sector and an aligned safety system in addition to assisting business with safety management can also add value in the form of enhanced regulatory compliance at a reduced cost.

### **7.4 The Conceptual Model for Safe Food Safe People**

Complying with OHS and food safety regulations through the implementation of one aligned safety system would reduce the paper work, the personnel and the time required to manage each system while at the same time enhance compliance. Enhanced compliance would and reduced incidences and accidents would save money, money which could then be invested in safety compliance thereby breaking the ‘vicious circle of compliance’ presented in chapter 3.

The main findings from the literature and the anticipated outcomes from the proposed safety management system are encapsulated and linked in the theory outlined in the following flowchart Figure 7.4.

***Figure Removed for Copyright Reasons***

*Figure 7.4 Flowchart of Theory Underlying Proposed Safety System*

It is proposed that a safety system aligning OHS and food safety and with the application of the documents listed below can enhance regulatory compliance in food and drink manufacturing SMEs;

- The application of HACCP,
- The application of recognised management principles,
- The application of the ‘think small first principle’ and,
- The application of International Standards Organisations ‘Guidance for writing standards taking into account micro and SME needs’.

The combination of these elements to the alignment of OHS and food safety requirements system will also enhance the suitability and the usability of the system for the SMEs.

Broadly speaking the functions of OHS and food safety management systems include generic functions of all management systems; namely planning, organising, implementing and controlling. Traditionally these are the common elements recognised when considering the integration of management system standards. More recently, in a risk-based approach to integration of management standards, the hazard analysis and the risk assessment elements are also recognised as common elements. This approach is presented in the conceptual model in Figure 7.5.

### ***Figure Removed for Copyright Reasons***

*Figure 7.5 Traditional Conceptual Model for Integration of Management Standards*

H.A. = Hazard Analysis    R.A. = Risk Assessment    Occ. = Occupational

Mgt. = Management    Comm. = Commitment    PDCA = Plan, Do, Check, Act.

The aligned safety management system Safe Food Safe People expands the traditional approach by identifying and aligning all of the requirements common to OHS and food safety management standards. The approach takes existing knowledge and findings and redesigns the traditional model by broadening the aligned area of the systems and creating, testing, validating and measuring the effectiveness of an aligned safety system for the management of OHS and food safety in food and drink manufacturing SMEs. The conceptual model for the aligned safety management system Safe Food

Safe People is presented in Figure 7.6.

The new system redefines the traditional model with additional common elements presented in the intersection. The new thinking is that more than 95% of the systems can be aligned. OHS can be managed in parallel with food safety in one safety system at every stage of the management process.

***Figure Removed for Copyright Reasons***

*Figure 7.6 Safe Food Safe People Conceptual Model*

In addition to the design of this new conceptual model, this study applies the ‘think small first principle and the ISO Guidance for Writing Standards taking into account Micro, Small and Medium-Sized Enterprises’ Needs. Traditional management standards and integrated management standards outline the requirements, this new approach as well as outlining the requirements, guides and demonstrates for the user how compliance with the requirements can be achieved.

## 7.5 Summary

The European Commission (2011) in a report on ‘Minimising the regulatory burden’, propose a number of measures to reduce the burden for small business in particular micro-sized enterprises. The Safe Food Safe People System achieves some of these measures as listed here;

- Improves and simplifies the business environment for start-ups,
- Improves access to finance by reducing costs,
- Combines pieces of legislation where relevant (OHS and Food safety),
- Simplifies the legislation for smaller businesses,
- Provides the basis for a standard which has the potential to be used in the ‘Standardisation process’ to improve competitiveness for SMEs.

Greater than 99% of businesses in Europe and Ireland are SMEs, their needs are specified and detailed in numerous reports and peer reviewed studies. The primary concern for food and drink manufacturing is compliance with safety and regulations generally with the added bonus of successful economic advancement. The European Commission acknowledges this, 'Getting legislation right is essential if we are to deliver the ambitious objectives for smart, sustainable and inclusive growth set out by the Europe 2020 Strategy. Better regulation must become smart regulation and be further embedded in the Commission's working culture' (European Commission, 2010). The aim of Safe food Safe people is to achieve smart, sustainable and inclusive growth through the enhancement of compliance with safety regulation, the primary concern and burden for food and drink manufacturing enterprises. Past approaches have proven unsuccessful. Safe Food Safe People, although designed specifically for the food and drink sector small businesses, is based on a theory and an approach which can be applied to small business in the majority of sectors. Zink (2014) when exploring the application of sustainability to human factors refers to 'a life-cycle-perspective'. He suggests considering sustainability starting with the design of the manufacturing process and continuing to the manufacturing, assembly, maintenance, disassembly, reuse and recycling processes'. Safe Food Safe People adds the design of management systems to this 'lifecycle' and promotes the thinking that sustainability and lean manufacturing should be considered when designing management systems for small businesses. The sustainable approach must commence at the design phase of regulations and standards and the needs of small enterprises must be considered from the point of departure.

The aim of the thesis was to enhance compliance with OHS in food and drink manufacturing SMEs in Ireland. To this end a user friendly, cost effective, sustainable system was devised, the system was designed from theory and defined and validated in industry. The SFSP safety system should, when implemented correctly, enhance compliance with occupational health & safety legislation in Irish food and drink manufacturing SMEs in a cost effective way. As affirmed by the Health and Safety Authority, 'there cannot be a trade-off between the competitiveness of SMEs and the health & safety of workers, all actors should work together to promote growth and jobs' (Health and Safety Authority, 2011).







## **Chapter 8: Results**

### **8.1 Introduction**

The preliminary results and the final results (presented here) were triangulated to extract the key themes. These case study results, the themes and the overall result of the study are presented here. The preliminary results chapter demonstrated the insufficient levels of OHS compliance currently and the many issues acting as barriers to compliance in Irish food and drink manufacturing SMEs. This supports the requirement for a system or a solution specific for SMEs to assist them with regulatory compliance in a sustainable cost effective manner. This chapter presents the results in practice following the development, implementation and running of the Safe Food Safe people safety system, designed to enhance OHS compliance in food and drink manufacturing SMEs. The effectiveness and practicability of Safe Food Safe People (SFSP), the aligned safety system in enhancing compliance and to reducing the regulatory burden for SMEs was measured using inspections conducted against internationally recognised standards pre and post intervention with SFSP. The cost of compliance was measured using the Standard Cost Model pre and post intervention (for a period of 6 months) and the results compared. The results following the inspections conducted and the application of the standard cost model pre and post intervention with SFSP are presented in this chapter for the micro, small and medium-sized enterprises. As Safe Food Safe people was designed specifically for SMEs, it was not implemented in the large enterprise and therefore there are no results for this enterprise presented here.

### **8.2 Case Study One Medium-Sized Enterprise**

#### **8.2.1 Occupational Health and Safety and Food Safety Inspection**

Inspections were carried out pre and post intervention with Safe Food Safe People. The inspections were conducted against internationally recognised standards, health &

safety against OHSAS 18001:2007 and food safety against FSSC 22000:2009. A description for the medium-sized enterprise is presented in Table 8.1.

*Table 8.1 Medium-Sized Enterprise Background and Description*

Enterprise Type (NACE Rev 2)	10.1 Processing and preserving of meat and production of meat products
Product Produced	Fresh Whole Turkeys and Cooked Turkey Slices & Crowns
Number of Employees	A local employer of 65 full time permanent staff and 5 part-time, with an additional 50 temporary staff employed during the busy festive season.
Workforce	Culturally diverse employing Irish, Polish and Lithuanian employees. Employees range in age from 20 to 60.

### **Pre Intervention OHS Medium-Sized Enterprise**

Operative did not have job task OHS training and were operating machinery with moving parts, equipment with blades and hot ovens. The emergency stop buttons had not been tested and preventive maintenance was behind schedule or had not been recorded. There were a number of operatives working while assuming awkward postures – organisation of work flow to reduce manual handling and risk of musculoskeletal injury is required with many operatives crossing back and over to machines unnecessarily. Heavy lifting with incorrect postures, no mechanical aid in the slicing area – ‘because it is high risk’.

Noise levels while not measured were found to be high in the raw area (when machines and equipment were in use it was necessary to raise one’s voice to be heard), hearing protection was not used or available if required by a member of staff. Accidents are not reported to the HSA or logged in house.

Other hazards noted were:-

- There is nitrogen generated and CO<sub>2</sub> stored on site internally.
- Very labour intensive with operative standing for long period of time carrying out repetitive tasks – weighing slices on a weighing scale.
- Long hours of work
- Small space per worker.

### **Post Intervention OHS Medium-Sized Enterprise**

The medium enterprise followed the Safe Food Safe People safety system and redesigned existing safety management documents. Job tasks had been re written to include OHS and Food Safety (FS) instructions with relevant hazards and control measures identified. All of the operatives had received training in their relevant job tasks and had signed off on the procedures.

Records had been redesigned to include OHS and food safety checks. These checks were being carried out at the correct determined frequency, mostly daily. Information is now recorded in real time.

Manual handling refresher training has been provided with and health & safety practices are audited internally with a view to trend analyses informing continuous improvement.

Noise has been measured and appropriate hearing protection provided.

Accidents, incidences and near misses are now logged to measure safety performance in OHS and FS. The entire process was reviewed and a hazard analysis conducted to include OHS and food safety hazards. The hazards were identified, the risk estimated and controls implemented. The work flow and the flow of people was reorganised to minimise manual tasks such as carrying etc. The process is more effective and designed to better fit the employees. Operatives were rotated more regularly from one job to another to reduce standing time and also to reduce the time periods carrying out repetitive tasks.

### **Pre Intervention Food Safety Medium-Sized Enterprise**

Food safety was managed with a food safety manager and a number of operatives trained to carry checks and record findings. There were a number of machines with 'old dirt' i.e. not dirty due to work in progress. A number of soap holders did not have soap and fixtures such as the soap, towel & sanitiser holders were very dirty. The cooked meat area (high risk area) was clean – which is to be expected. However, the soap and towel holders were dirty.

All checks required on the floor had been recorded with no issues found. The final product label on a number of packets of meat was illegible – therefore traceability was lost.

Records, manuals etc. are all up to date with internal audits and preventive

maintenance both behind the schedule devised by the food safety manager.

### **Post Intervention Food Safety Medium-Sized Enterprise**

In addition to the OHS improvements the changes in the work systems, the documented management system SFSP and the enhanced level of control and verification resulted in an improved level in food safety compliance. A new cleaning and housekeeping schedule and procedures were designed with food hygiene and safety and OHS improved. All records are currently up to date and completed in real time.

### **Final Comments Medium-Sized Enterprise**

The owner reported that the overall safety performance of the enterprise had improved. With regard to OHS this was measured by the owner in the reduction of incidences (in particular cuts and trips) and complaints from staff had ceased. The enhanced food safety performance was evident from the cleaning swab microbiological results and also from the documentation which up to date and completed in real time. A training programme has been devised with some training completed. On-site operatives proficient in oral and written English have been selected and have agreed to translate a basic food safety and an OHS course. All languages have been accounted for. The simple safety series which is available in 11 languages was used to help with this. Employees were encouraged to and were now participating in the monitoring and implementation of safety measures. Although OHS has improved, the owner continues to claim that a reportable accident will not be reported to the HSA, 'any accidents will be dealt with internally where possible'.

## **8.3 Case Study Two Small-Sized Enterprise**

### **8.3.1 Occupational Health and Safety and Food Safety Inspection**

Inspections were carried out pre and post intervention with Safe Food Safe People. The inspections were conducted against internationally recognised standards, health & safety against OHSAS 18001:2007 and food safety against FSSC 22000:2009. A description for the small-sized enterprise is presented in Table 8.2.

*Table 8.2 Small-Sized Enterprise Background and Description*

Enterprise Type (NACE Rev 2)	Manufacture of bakery and farinaceous products
Product Produced	Ready Meals and Baked Goods
Number of Employees	Culturally diverse with Irish, English, Brazilian and Polish employees. 43 full-time permanent employees, contracted maintenance workers.
Workforce	Employees range in age from 18 to 45

### **Pre Intervention OHS Small-Sized Enterprise**

Numerous hazards were identified during the inspection such as; hot ovens, overloaded sockets, equipment with moving parts, machines and equipment with blades. One operative was witnessed cleaning the slicer with a cloth while the slicer was on and the blade was moving! All of the equipment was fit for purpose but not organised, the equipment was poorly placed and hazardous e.g. operatives in the kitchen had to walk a distance with hot liquids and hot food to get to a workbench. Also, two single ovens were at head height with operatives reaching for hot food. Operative while encouraged to work safely had not received training on the OHS hazards associated with their relevant job tasks. Another example of hazardous working was the operative working the compactor and strapping machine without any training. A number of operatives did not have English and were instructed using translation by other members of staff from the same country. The cleaning operative worked on their own after everyone had gone home and had not received training in the use of chemicals. Accidents and incidents were not recorded – ‘this would be an admission of accountability’. The owner stated that they would not report a reportable accident.

The company had been audited by the HSA on one occasion but have never forwarded a reply to the audit and have never had a follow up audit.

Although management were aware of health & safety and the requirements, no one had received formal training. Manual handling training has been provided for all employees.

### **Post Intervention OHS Small-Sized Enterprise**

All of the identified hazards have been documented, risk assessed and controls are in place. The control measures have been validated and verified.

Operatives have been trained in the hazards pertinent to their relevant job tasks and to the process generally.

The work organisation has been changed to protect worker safety and enhance productivity.

The ovens have been removed and placed at counter level to reduce risk of burns and spills and also to reduce manual handling risks.

A number of operatives have been trained in the workings of and the safe use of the compactor.

Instructions and procedures have been communicated to non-national members of staff by other staff members from the same country. In addition to this the documents are also being translated professionally in the relevant languages.

Accidents and incidences are now logged and investigated in house.

### **Pre Intervention Food Safety Small-Sized Enterprise**

Food safety checks were historical with some not recorded. This was more evident in the bakery than in the area processing the readymade dinners. The ceiling had grease marks and a dirty cloth was in close proximity to baked goods. Two operative were observed smoking outside in their protective clothing and they did not wash their hands on return to work. Operatives had not received training in food safety, food hygiene, personal hygiene or HACCP. The course was booked after the inspection. The company were using the catering guide to food safety as they also had a catering and retail aspect to their business, the guide is specific to retail and catering and therefore many food safety hazards and prerequisites were not documented or controlled. A formal documented system for the processing area was not available.

### **Post Intervention Food Safety Small-Sized Enterprise**

The hygiene policy and safety procedures were put in to action. All of the unsafe practices ceased. A smoking area was provided for operatives with a wash hand basin installed at the nearest entrance to the building. Operatives were trained in food safety

and hygiene. The owner has booked a HACCP course, both he and the manager will attend.

A new safety management system was designed and implemented in accordance with Safe Food Safe People.

### **Final Comments Small-Sized Enterprise**

A review of the process was conducted and an aligned system to manage OHS and food safety was designed. The new safety management system involved:

Conducting a hazards analysis, all of the health & safety and food safety hazards were documented, the risk analysed and controls devised and implemented.

Operating procedures, job task instructions, system management procedures were re written with OHS and FS hazards, risks and controls documented. Records and checks were also amended to include OHS and FS.

Work flow was discussed with employees and has been reorganised.

The new aligned safety management system if followed correctly is designed to meet regulatory requirements while designed in as simple a format as possible for the enterprise in question. Similarly to the owner of the medium enterprise, the small business owner does not intend to report reportable accidents or dangerous occurrence to the HSA. The work rate and flow have increased, the number of incidents has reduced. It takes less time to meet the requirements in both OHS and food safety than it was taking to meet some of the food safety requirements and very few of the OHS requirements.

## **8.4 Case Study Three Micro-Sized Enterprise**

### **8.4.1 Occupational Health and Safety and Food Safety Inspection**

Inspections were carried out pre and post intervention with Safe Food Safe People. The inspections were conducted against internationally recognised standards, health & safety against OHSAS 18001:2007 and food safety against FSSC 22000:2009. A description for the micro-sized enterprise is presented in Table 8.3.

*Table 8.3 Micro-Sized Enterprise Background and Description*

Enterprise Type (NACE Rev 2)	10.3 Processing and preserving of fruit and vegetables
Product Produced	Jam Production
Number of Employees	4 employees in total, 3 full-time permanent and 1 part-time temporary.
Workforce	Two Irish and Two Brazilian

### **Pre Intervention OHS Micro-Sized Enterprise**

There was no formal health & safety management system available. The owner considered the business to be too small and the number of hazards to be minimal to require an OHS system. Training in manual handling was provided. Hazards observed at the time of the inspection were, slip (pools of water and spilt jam) & trip (cluttered work space) hazards, manual handling (incorrect lifting of heavy boxes with finished jam product), Cuts (broken glass jars), Burns (hot oven & hot jam), repetitive tasks and awkward postures (potting, lidding, labelling & packing the jam). Fire extinguishers were not available, an evacuation plan had not been considered. The company have not been visited by the HSA. The owner stated that they would not report a reportable accident.

### **Post Intervention OHS Micro-Sized Enterprise**

The enterprise now has formal safety system designed specifically to reflect the size of the business while at the same time controlling the hazards & risks and meeting requirements. Operational hygiene and housekeeping procedures are now in place and are in practice. A clean as you go policy was introduced and is very effective. Training has been arranged for all operative in OHS and manual handling. A fire safety & evacuation plan have been implemented and tested and the enterprise now have fire extinguishers.

### **Pre Intervention Food Safety Micro-Sized Enterprise**

Food safety was implemented as a means to do business with supermarkets. A very

informal system and therefore the listing the non-compliances found during the inspection against the FSSC 22000 requirements were numerous. Two specific food safety hazards with a real risk to the safety of the product were noted;

- The oven used to sterilise the glass jars is not calibrated and the owner could not demonstrate whether or not the required sterilisation temperature is reached when sterilising the jars. Whether or not the oven is reaching the temperature as per the setting on the dial/button is not verified/validated. It was the same issue with the temperature probe used to take the temperature of the jam.

- Glass control has not been identified as a hazard (prerequisite) and the product is sold to the consumer in glass jars. There is no glass breakage procedure in place. Jars have been broken during production previously.

### **Post Intervention Food Safety Micro-Sized Enterprise**

A formal documented management system is now in place aligned with OHS.

The imminent risk to product safety has been reduced as controls are now in place.

The oven was calibrated and two calibrated probes are available. The probes are used to verify the oven temperature as well as the temperature of the jam.

All of the hazards have been identified, risks assessed and controls established. Food safety is now documented, addressed and in practice.

### **Final Comments Micro-Sized Enterprise**

The owner and workers now have a better understanding of safety requirements, safety practices and the value of safety compliance. The process was reviewed and Safe Food Safe People methodology applied. A very basic but very effective system is in place which if followed correctly meets the OHS and food safety regulatory requirements. As with the medium and the small enterprise owners, the micro business owner also reported that a reportable accident or dangerous occurrence would not be reported to the HSA.

## 8.5 Summary of Field Notes and Quotes/Comments

A comparison of the pre and post intervention with Safe Food Safe People inspection results demonstrate that all three of the case study enterprises have an enhanced level of OHS compliance. All of the enterprises have now identified and risk assessed the hazards, implemented controls and are actively monitoring OHS in addition to food safety on a daily basis. All of the enterprises now have a working and a documented OHS and food safety system. Aligning the two safety systems in one has dramatically improved compliance with OHS regulatory requirements enhancing the safety of the workers. The results of the evaluation also confirm the suitability and practicability of the aligned safety system for SMEs. The level of compliance did not differ between the three case study enterprises. The level of compliance in the micro-sized enterprise was found to be equal with that achieved in the medium-sized enterprise.

The problems reported by small business owners with regard to regulations, methods of improving communication and consultation with the regulators suggested by small business owners and a summary of the field notes and comments are presented in Figure 8.1, Figure 8.2 and Figure 8.3 respectively.

**Some of The Problems Identified by Small Businesses:**

- 'Enterprises are busy'
- 'Poor access to finance'
- 'Authorities are losing sight of the basics of safety'
- 'Too many regulations'
- 'Retailers are leading the regulators'
- 'Lack of flexibility and advise'
- 'Regulation is killing small business'
- 'Complex and difficult to comply'
- 'Inconsistent requirements'
- 'Large requirements, small business'
- 'What about the bottom line and safety!'
- 'Too many departments involved in the sector'
- 'No practicality'
- 'How much do the regulators actually know about our business sector'
- 'Regulation is killing our business sector in particular SMEs'
- 'Regulation is complex and it is difficult to comply'
- 'Lip service is used by the Government when consulting with representatives of the sector'
- 'Regulation is put in place without much thought for small business'
- 'Decisions are made by people unfamiliar with the workings of the industry'.

*Figure 8.1 Problems Reported by Small Businesses with Regard to Regulations*

**How Businesses think Consultation and Communication with them could be Improved:**

‘Consult with businesses directly

‘Talk to small people’

‘Inform us using local newspapers for example the Farmers Journal’

‘Enterprise Ireland’

‘Newsletters’

‘Chamber of Commerce’

‘By involving small business owners and not safety consultants in drafting regulations’

‘Consult with trade’

‘Open days with the Government department’

‘Company visits’

‘Don’t know but more of an effort is needed’

‘Conferences’

‘Talk to small business owners’

‘Radio or TV’

‘Food industry magazine free for all food and drink businesses’

‘So efficient in demands and checks for compliance, not so efficient in informing businesses of requirements and how to achieve compliance! The Farmers journal or supplement monthly to local papers’.

*Figure 8.2 How Consultation and Communication could be improved*

**Comments on an aligned Safety System as Method of Assisting SMEs with OHS compliance and the Cost of Compliance:**

‘We would like to be compliant with all governing legislation however, with the number of regulations and requirements this is very difficult to achieve as a small business’.

‘I would like to be compliant but with a safety system addressing the core legislative requirements only’.

‘Access to finance and an actual simplified system for SMEs would assist compliance’.

‘An aligned system is a system he would invest in and if it was recognised by the authorities that would be a bonus. Food and drink manufacturing SMEs are suffocated by regulatory requirements and the requirements are increasing all the time. A sensible compliance option based on the practicalities of small business is required and will be welcomed.’

The regulations are complex and compliance is a very costly business. An aligned safety system is a great suggestion, however, such a system would have to be recognised by the regulatory bodies before SMEs would adopt it. A recognised National safety system specifically designed for small business is long overdue’.

However, it must be noted that there were two enterprises who were not in favour of an aligned safety system or any system!

‘The cost of regulation is such that as a business owner I am willing to take a chance and not bother with formal OHS. My employees have plenty of experience and the accidents we have had resulted in minor injuries. I haven’t had a visit from the Health & Safety Authority (HSA) so I will continue as I am until I am told to do otherwise by the authority’.

*Figure 8.3 Field Notes & Quotes/Comments*

## 8.6 Standard Cost Model Results

The quantitative results measured using the standard cost model are presented here which determine the success of Safe Food Safe People (SFSP) in reducing the cost of compliance for small businesses. The costs of compliance pre and post intervention with SFSP are detailed demonstrating where the cost have been reduced are detailed for each enterprise.

The medium-sized enterprise had an old OHS system which they were still using which allowed a cost comparison to be attained by comparing the cost of compliance before and after implementation with Safe Food Safe People safety management system. A breakdown of the compliance costs is presented in Table 8.4.

The small-sized enterprise did not have a formal OHS system employed however, there were a number of OHS checks and procedures in place, accounting for the small reduction in costs. However, as was the case in the micro enterprise, the introduction of a formal OHS management system did not increase the compliance costs. Compliance costs for running both food safety and OHS management systems remained the same as they were for running the food safety management system alone. The breakdown of the compliance costs is presented in Table 8.5.

It should be noted that savings were not made in the micro-sized enterprises, the breakdown is presented in Table 8.6. This is because the enterprise were not compliant with OHS and did not have an OHS management system. However, the business owner reports that following the implementation of OHS management, running both food safety and OHS management systems did not add any extra cost to compliance.

*Table 8.4 Breakdown of Compliance Costs Medium Enterprise Pre and Post Intervention*

Medium-Sized Enterprise <b>Description</b>	Cost (€) Pre SFSP*	Cost (€) Post SFSP**
	<b>€39,450</b>	<b>€24,950</b>
Statutory Audits	1,750	1,750
Taxation Compliance	750	750
Testing for verification purposes	1,200	1,200
Waste Management	7,500	7,500
<b>Product Compliance</b>	<b>7,500</b>	<b>4,000</b>
<b>Independent Internal Audits</b>	<b>2,500</b>	<b>1,250</b>
<b>Resulting Administrative Costs</b>	<b>1,500</b>	<b>500</b>
Staff Training	1750	1750
<b>Safety Manager Costs</b>	<b>15,000</b>	<b>6,250</b>
<b>Total Cost</b>	<b>€39,450</b>	<b>€24,950</b>
<b>Comments:</b> The medium-sized enterprise reported a saving of €14500. SFSP implementation resulted in a reduction in the number of hours required for product compliance, internal auditing and a reduction of work hours for the safety manager. Complying with OHS and Food Safety requirements using one management system has increased awareness and compliance with OHS and with food safety regulatory requirements. In addition savings have been made which can be reinvested into the company for continuous improvement.		

\*Cost measured over a period of 6 months pre intervention with SFSP, January to June 2014

\*\*Cost measured over a period of 6 months post intervention with SFSP, October 2014 to March 2015

*Table 8.5 Breakdown of Compliance Costs Small Enterprise Pre and Post Intervention*

Small-Sized Enterprise	Cost (€) Pre SFSP*	Cost (€) Post SFSP**
Description	<b>19,000</b>	<b>18,600</b>
Statutory Audits	2500	2500
Resulting Administrative Costs	500	500
Regulatory Compliance	<b>15,300</b>	<b>14,900</b>
Customer Audits	500	500
Resulting Administrative Costs	200	200
<b>Total Cost</b>	<b>€19,000</b>	<b>€18,600</b>
<p><b>Comments:</b> The small-sized enterprise reported a saving of <b>€400</b> in relation to regulatory compliance. The enterprise did not have a formal OHS system employed and therefore it was anticipated that the costs would remain the same for both OHS and food safety compliance as they had been for food safety compliance only. The initial hazard analysis and risk assessment for OHS incurred a minimal additional cost, however, the enhanced level of compliance with OHS and the formally documented safety management system resulted in a slight reduction in the regulatory compliance cost as the enterprises deducted the time they spent on the few health &amp; safety checks that they carried out.</p>		

\*Cost measured over a period of 6 months pre intervention with SFSP, January to June 2014

\*\*Cost measured over a period of 6 months post intervention with SFSP, October 2014 to March 2015

*Table 8.6 Breakdown of Compliance Costs Micro Enterprise Pre and Post Intervention*

Micro-Sized Enterprise <b>Description</b>	Cost (€) Pre SFSP* <b>€13,300</b>	Cost (€) Post SFSP** <b>€13,300</b>
Statutory Audits	1000	1000
Resulting Administrative Costs	300	300
Regulatory Compliance	6500	6500
Customer Audits	1200	1200
Resulting Administrative Costs	300	300
Staff Training	500	500
Waste Management	3500	3500
<b>Total Cost</b>	<b>€13,300</b>	<b>€13,300</b>
<b>Comments:</b> The micro-sized enterprise reported that running the aligned safety system had not changed the cost of regulatory compliance. Therefore the cost of compliance with OHS and food safety concurrently had not incurred an additional cost. The enterprise did not have a formal OHS system employed and therefore it was anticipated that the costs would remain the same for both OHS and food safety compliance as they had been for food safety compliance only.		

\*Cost measured over a period of 6 months pre intervention with SFSP, January to June 2014

\*\*Cost measured over a period of 6 months post intervention with SFSP, October 2014 to March 2015

## **8.7 Safe Food Safe People Safety System Results**

The cost of compliance pre and post intervention with Safe Food Safe People (SFSP) demonstrates that an aligned safety system considering the needs of SMEs in the design can successfully reduce the cost of compliance. Compliance with OHS and food safety in one management system costs less than running two separate management systems. The results also demonstrate that implementing the aligned safety management system into a company where a food safety management system is already in place does not create an additional cost. The cost of implementation of SFSP would be outweighed by the savings made once the new aligned system is running, savings in the form of enhanced compliance and a reduction in paperwork, time and compliance costs. Table 8.7 provides a summary of the compliance costs as reported by the participating enterprises, medium, small and micro-sized.

*Table 8.7 Summary Regulatory Compliance Costs in Participating Enterprises*

Enterprise Size	Impact of Safe Food Safe People on Regulatory Compliance and the Regulatory Burden in the SMEs
Medium-Sized Enterprise	A very positive result with saving of €14,500. The system is easy to manage and it now takes the safety manager less time to monitor and verify safety compliance. The existing safety system was out of date and the new aligned safety system eliminates the cost of sourcing and paying a consultant and the cost of running a standalone health & safety system in conjunction with a food safety management. The main benefit of SFSP is that we are meeting our requirements and are not afraid of having an OHS inspection.
Small-Sized Enterprise	Safe Food Safe People is a much more practical approach to small business regulatory compliance. The system has saved €400 in running costs of OHS records and has not added any substantial cost. We are now fully compliant with OHS and food safety regulatory requirements and it is not costing us anything extra financially.
Micro-Sized Enterprise	The system is of great benefit and suits our needs in addition to enhancing regulatory compliance with OHS. The cost of compliance with both OHS and food safety using SFSP does not cost any more than the cost of compliance with food safety only.
<b>Comments:</b> The case study participants commented on the ease with which both food safety and OHS could be managed in one safety system without any additional cost. However the main benefit identified by the participants was the fact that they were now compliant with OHS or their level of compliance was enhanced.	

\*Cost measured over a period of 6 months, January to June 2014

\*\*Cost measured over a period of 6 months, September 2014 to March

## 8.8 Identification of Themes

A summary of the main themes or problems associated with regulation and regulatory compliance in SMEs and the corresponding subthemes extrapolated from the review of the current situation in food and drink manufacturing SMEs with regard to regulatory compliance and the results of the effectiveness of SFSP in achieving enhanced compliance at a reduced cost are detailed here.

### 8.8.1 Burden of Regulation

The regulatory burden as a theme or a barrier to regulatory compliance was expressed by the majority of small business owners and also reported as a major expense to business by the large enterprise. The main problems in relation to regulations governing the industry are listed here:

- Cost of compliance – audits, reporting, testing, consultancy etc.
- Time required to manage and comply with the different regulations.
- The number of regulations.
- The complexity of the regulations.
- The inconsistency in the requirements demanded by the regulating agencies.
- The number of audits and inspections.
- Inconsistent interpretation of regulation across regulating/enforcement agencies.
- The inflexibility and the stringency of the regulation and the enforcement of the regulation is problematic.

### 8.8.2 Perception of Hazards and Safety

Another factor having a negative impact on compliance with OHS regulations in food and drink manufacturing SMEs is the awareness and view of business owners with regard to hazards and risks in their businesses. More than half of the participating businesses viewed food and drink manufacturing in small businesses as ‘hazardous by nature’. Others did not regard it as particularly hazardous and occupational health and safety management was deemed to be a requirement for ‘larger companies or hazardous industries’.

- The small business owners believed that because their enterprises were small the risk of accidents/incidents, injury and ill health was reduced. This belief was expressed with regard to both OHS and food safety legislation.
- The owners also believe that the industry sector is hazardous by nature and the operatives are aware of this. The risks were underestimated and employers believed that their employees were not exposed to any dangerous hazards.
- Food Safety was prioritised as it was regarded as a legal requirement, a customer requirement, a requirement to obtain a licence to trade and also because it is rigidly enforced.
- Both OHS and food safety were regarded by the majority of enterprises as an obstacle to growth, making it very difficult to make a profit.
- OHS and food safety regulations were described as being far too rigid for small business and say that the cost falls disproportionately on small business.
- Business owners who did not have a formal OHS management system in place most often referred to manual handling training as compliance with their OHS training requirement. Training in other hazards, emergency procedures, equipment etc. was not referred to. Some business owners believed that by training operatives in manual handling practices they were compliant with the OHS training requirement.

### 8.8.3 Communication & Awareness

Food and drink manufacturing SMEs for the most part were found to be unaware of their regulatory requirements with regard to OHS. The business owners stated that this was primarily due to a lack of communication and consultation from the regulatory bodies.

- A number of small businesses were unaware of their OHS requirements. One third of those surveyed said regulations were not clearly communicated to them by the regulator.
- More than 20 enterprises visited did not know where to access information on OHS. Three micro enterprises believed that OHS regulation did not apply to them due to their size.
- A number of small business owners believed that by completing all requests and by implementing corrective action for all non-conformances following a food safety inspection that they were compliant with the regulatory requirements. The business owners believed that by following the instructions of the enforcement agency they would achieve compliance ‘we are compliant, we do exactly what we are told by the vet’.
- With the exception of two of the enterprises visited who did have an OHS management system, the owners stated that they managed safety at the request of their insurance company. These systems were documented systems only and not comprehensive. All but one of these systems were generic and not specific to the enterprise.
- It was reported that changes to the regulation and new regulations (food safety and OHS) were not communicated in a timely fashion and sometimes depending on the enforcing officer/inspector, they were not communicated at all.
- Two thirds of the business owners visited did not understand the documented management systems (OHS and food safety systems) in place in their

businesses. This was because they had been designed and implemented by an external consultancy company. However, these businesses believed they were compliant with regulatory requirements by having documented management systems in place.

### 8.8.4 Enforcement

The level of enforcement has a major impact on the level of compliance within food and drink manufacturing SMEs. Compliance with food safety regulation was prioritised as it was rigidly enforced. None of the enterprises visited had ever had an OHS inspection from the Health & Safety Authority (HSA). The majority of enterprises in particular micro-sized enterprises were willing to take a risk with regard to OHS compliance, 'if we happen to have an inspection we will deal with it then'.

- According to the majority of business owners, food safety is prioritised because the strong level of enforcement. Representatives from the governing body conduct unannounced inspections regularly.
- Food safety was formally managed in all but one (a micro-sized business) of the enterprises visited. Food safety management was both documented and observed in practice in the all but one of the enterprises.
- Food safety was also managed and prioritised as in order to trade a licence must be obtained from the food safety governing body. This licence is reviewed annually and a licence to trade can be revoked at any stage during an inspection should a risk to food safety be noted.
- The majority of enterprises agreed that their business would suffer if there 'wasn't a commitment to food safety'.

### 8.8.5 Understanding of Regulatory Requirements

The message from food and drink manufacturing SME owners/managers is that regulations are too many in number and are far too complex. The complexity, the time

and the resources required to achieve compliance for SMEs act as a deterrent.

- Generally, business owners were not aware of or did not understand the health & safety systems and/or food safety systems in place in their premises as they had been designed and implemented by a consultant. There were incidences where records were filled solely to ‘keep the EHO or the Vet happy’. The requirement for keeping the records was not understood and often regarded as a ‘waste of time’.
- Those who were aware of their requirements (health & safety and food safety) reported that for the most part they did not understand the requirements and therefore compliance was problematic or expensive as external expertise was required.
- In addition, a number of business owners reported that they ‘don’t need to’ understand their management systems, once they do as asked by the enforcement officer they can ‘work away’.

#### 8.8.6 SME Characteristics

Small business characteristics documented in the literature and confirmed during this study such as a lack of resources and time, informal management systems etc. continue to act as a barrier to regulatory compliance in food and drink manufacturing SMEs.

- Participating food & drink manufacturing enterprises stated that they have ‘too much’ regulation to content with. It is too complex and in order to comply they must employ external expertise which is too expensive.
- All of the participating enterprises are time constrained with limited resources. Access to finance is insufficient and they do not have money to invest in regulatory compliance, a cost that is reported by the majority of business owners to have increased in the past two years.

- The benefits of safety and consequences of poor safety were not comprehended:
  - ‘Enterprises are too busy for bookwork’
  - ‘Small enterprises large requirements’, there is a disproportionate burden falling on SMEs
  - ‘Poor access to finance’, there is no money available to invest in compliance or continuous improvement.

The full list of small business comments is documented in section 9.5

#### 8.8.7 Concerns & Questions Raised by the Food and Drink SMEs

- ‘The requirements are the same for SMEs as they are for large businesses, with the same amount of paperwork required. The Government are reportedly focusing on the growth of small business and reducing obstacles for growth, however, we the businesses on the ground struggle to survive.’ The small business reported that, an average of 50 hours as a percentage of the total hours worked weekly is spent on complying with regulations. This is at a cost of approximately 25 to 30% of the total business costs per annum for SMEs.
- Legislation, regulations and guidance notes are available on the international web, the main governing bodies have websites, however, small business owners find the websites difficult to navigate and SME owners state that they difficulty interpreting the regulations and in some cases the guidance documents.
  - ‘How are we supposed to know how to interpret the regulations?’
  - ‘How do we know we have interpreted the regulations correctly?’
  - ‘We do not have time to study regulations or to read complex guidance notes’.
- ‘Interpreting the regulations is one aspect, how are we supposed to know what we need to have in place to meet requirements? The regulations are interpreted

differently by different people, e.g. different enforcement officers within the same agency have different interpretations and require different tests, records etc.’

- ‘Business owners are accountable for the safety of workers and product, we are expected to meet requirements with little consultation. Small businesses cannot afford to employ external expertise, do not have time to spend researching on the internet and do not have the resources to train staff. Surely training to a certain level should be provided’
- ‘The training courses available are often complex and not easy to follow’
- ‘The number of regulations and the requirements are growing in number all of the time, it is getting more and more expensive to ensure compliance’.

In summary there are many factors impacting on OHS compliance in food and drink manufacturing SMEs.

1. A perceived burden of regulation due to;
  - Cost of compliance – audits, reporting, testing, consultancy etc.
  - Time required managing the system.
  - The number of regulations.
  - The complexity of the regulations.
  - The inconsistency in the requirements demanded by the regulating agencies.
  - The audits and inspections.
2. Perception of hazards and safety for example;
  - The small business owners believed that because their enterprises were small the risk of accidents/incidents, injury and ill health was reduced. This belief was expressed with regard to both OHS and food safety legislation.
  - The owners also believed that the industry sector is hazardous by nature

and the operatives are aware of this.

- Food Safety was prioritised as it was regarded as a legal and a customer requirement, also as a requirement to trade.
- Both OHS and food safety were regarded by the majority % of enterprises as an obstacle to growth, making it very difficult to make a profit.
- OHS and food safety regulations were described as being far too rigid for small business and the cost falls disproportionately on small business.

3. Communication issues or influences such as;

- A number of small businesses were unaware of their OHS requirements.
- A number did not know where to access the information on OHS.
- Many believed OHS regulation did not apply to them.
- Those who did have an OHS management system for the most part managed safety at the request of their insurance company. These systems were documented systems only and not comprehensive. All but one of these systems were generic and not specific to the enterprise.
- It was reported that changes to the regulation and new regulations (food safety and OHS) were not communicated in a timely fashion and sometimes depending on the enforcing officer/inspector, they were not communicated at all.

The application of Safe Food Safe People in food and drink manufacturing SMEs yielded the following results:

1. The successful alignment of OHS and food safety in one management system enhancing OHS compliance and worker safety in the participating enterprises;
  - The medium-sized enterprise now has a fully documented and working OHS management system. The hazards and the risks have been identified and controls are in place and are monitored.
  - Both the small and the micro-sized enterprise did not have a health & safety system in place prior to the intervention. Both enterprises are

now actively managing health and safety and this can be observed in practice.

2. Safe Food Safe People reduced the perceived ‘regulatory burden’ for the SMEs by reducing the cost of managing safety two separate management systems (OHS and food safety) in all of the enterprises. The aligned safety system enables the management of both food safety and OHS requirements using one management system. The aligned approach of Safe Food Safe People enabled the successful application of the system within the varying sized SMEs.

A breakdown of the results following the application of Safe food Safe People in the participating enterprises is presented in Chapter 10, Validation.

Small food and drink manufacturing business owners in Ireland as with SMEs globally report issues and barriers to regulatory compliance. All of the participating enterprises regard the current level of regulation and the current format as a negative influence on business. The level of compliance with regulation in the sector depends on enforcement, the size of the enterprise, the small business owner’s perception of regulatory compliance and the extent of their knowledge. The Irish food and drink manufacturing are not any different with regard to the barriers and drivers for regulatory compliance. The main difference with the food and drink sector is the additional competing influence of food safety regulation.





## Chapter 9: Discussion

The aim of the thesis was to enhance compliance with OHS and hence worker safety in food and drink manufacturing SMEs in Ireland through the development of safety management system designed specifically to meet their needs. The literature and the preliminary results of the study demonstrated that the level of compliance with OHS in Irish food and drink manufacturing SMEs and SMEs generally is unsatisfactory. Although there are many external influences on regulatory compliance the main obstacle to OHS compliance reported by small food and drink business owners the burden of the regulation itself or the regulatory burden. The regulatory burden is described by the participating small businesses as an unsustainable cost which is growing all of the time. This unsustainable cost is said to be due to; the number of regulations governing the food and drink sector, the requirements of the governing regulations, the overlap in reporting requirements and the complexity of regulations. Compliance with regulation is said to suffer due to these costs, the inflexibility of these regulations and the poor level of communication. As businesses with constrained resources, the time and the finance required to achieve compliance with current regulations is not feasible. While food and drink SME owner-mangers focus on the associated burden of regulation as a barrier to their compliance, the findings suggest that there are a number of factors impacting on regulatory compliance in the sector such as perception, enforcement, communication etc.

More than half of the participants in the study reported having a moderate level of compliance with regulatory requirements generally and a low level of compliance with OHS regulatory requirements. More than 75% of the participants employ external expertise to assist with regulatory compliance. The existing level of OHS compliance is very low and is unsatisfactory. These findings concur with those of Masi and Cagno (2015) who in their recent study on barriers to OHS intervention reported regulation, resources and information as the main barriers for SMEs.

The level of and the number of regulations governing the sector were described by participants as far outweighing any proposed benefits of compliance. Although, a number of participants agree that regulation does enable small firms to access new markets, the majority are not aware of the benefits of regulation. Several SME owners

fear the future with regard to regulation ‘where the cut off point for new regulations is’ and find that the requirements are getting more and more complex making it impossible for SMEs, small and micro-sized enterprises in particular to compete. The majority of participants describe a rise in the cost of regulatory compliance over the last two years mainly due to the introduction of new regulations and an increase in the complexity of existing regulations. A number of business owners expressed their wish to be compliant, however, with the current level and complexity of regulation it is impossible. Therefore a reduction in the regulatory burden and consultation with SMEs may encourage business owners to comply with OHS and regulation generally. A greater level of compliance will assist with the opening of new market opportunities for the enterprises and enhance worker safety.

Food safety regulation was regarded as a priority in the majority of participating enterprises. This is very obvious when the percentages reported for low level of compliance are compared, 56.60% reported a low level of compliance with OHS regulation while only 4.40% reported a low level of compliance with food safety. The level of enforcement, the requirement to register with a local food safety enforcement agency and the requirement to have an approved formal food safety management system/HACCP system before being permitted to trade were provided as the reasons food safety compliance was prioritised. One of the quotes provided during the fieldwork demonstrates the reasoning for food safety compliance over all of the regulations governing the industry sector, ‘food safety has to be managed in order to stay open/keep trading’, more than 75% of the enterprises visited agreed that their business would suffer if ‘there wasn’t a commitment to food safety’. The necessity for food safety compliance is not questioned by the industry but OHS compliance is, this may be due to the level of enforcement of food safety. Food and drink SMEs undergo regular inspections to assess and monitor the food safety risk and the licence to trade is reviewed annually.

There was a definite gap noted in the communication and consultation between the authorities and regulators and the small businesses. Many small business were unaware of the benefits of compliance for business and the authorities. One third felt that regulatory requirements are not clearly communicated and just under one third felt that changes in regulation are ‘rarely’ or ‘never’ announced in a timely fashion. Most businesses feel that the government does not take account of the requirements of their

business sector in negotiating at EU level. It would appear that the regulators are also unaware of the small business requirements, despite more than 600 initiatives introduced to assist small business with regulatory compliance, compliance remains problematic. Here is a breakdown in communication between the regulators, the authorities and the small businesses. For most business owners, regulation, in particular OHS regulation is described as ‘the ruination of business’, ‘barrier to growth of business’ and ‘over the top with new rules which cost more money at every turn’. The food and drink SMEs understood the requirement for regulation, recognising that compliance enables new market opportunities and encourages process and product innovations that contribute to higher levels of performance. The existence of regulation is not the problem, it is the number and the complexity of regulations that these business are reporting as burdensome. Currently, the cost of complying with governing regulations from the view point of small business owners is impeding their advancement and for many it is crippling their profits. Enforcement is a driver for compliance, however, current enforcement does not aid the businesses in understanding regulation and compliance methods as many ‘just do what the vet (regulator) says’.

In addition to the burden of the regulation, SME food business owners stated that there are inconsistencies in the interpretation and enforcement of regulations. A number of business owners reported that some companies in the industry sector are undergoing more inspections than others and that inspection frequency is not based on process risk as it should be. Other stated that there were inconsistencies in interpretation of the regulations between enforcement officers and also between enforcement officers within the same governing body. ‘One fella (inspector) wants one thing (procedures/controls/checks), he gets moved to another area and his replacement decides that we are not doing it (in compliance) right and changes things (system/controls/checks) again, each time it cost me money, I don’t know when I’m right or when I’m wrong. It is very difficult to be compliant, the inspectors don’t seem ‘to be sure themselves’.

It is widely believed in the industry that the regulations are not enforced proportionately or fairly throughout the business sector. The SMEs who are for the most part disgruntled with the governance of their sector, state that the differing

interpretations reduces their confidence in the function of regulation. The current governance was described as meaningless and as a 'tick the box' effort on the part of the inspectors. Many of the requirements were said not to have a positive impact on safety. These inconsistencies have a negative effect on the levels of regulatory compliance in the sector, so much so that food and drink manufacturing SMEs are calling for standard. A small business standard recognised by the authorities for the sector.

It is clear from this study however, that the enforcement of regulation does yield a higher level of compliance. The level of enforcement of food safety regulation was found to be greater than for OHS and subsequently the level of compliance with food safety regulation is also higher. None of the enterprises participating in this study had been inspected by the Health & Safety Authority. A higher level of enforcement and communication with the enterprises not solely in the form of inspections would create an awareness and assist with the level of OHS compliance. However, the complexity of the regulations and the inconsistencies in interpretation should be reviewed. Improved consultation with SMEs and a determined frequency of unannounced OHS visits in food and drink manufacturing SMEs may enhance the level of compliance and also the level of awareness. This lack of understanding and the varying interpretations of regulations are resulting in food and drink SME owners missing out on the benefits of regulatory compliance and hence regulatory requirements.

Food and drink manufacturing SMEs have an unsatisfactory level of OHS compliance resulting in an unsafe workplace for many workers. Although the study reports many influences on regulatory compliance in the food and drink manufacturing SMEs. These business report regulation and the resultant burden in the form of cost and time as the main barrier to OHS compliance. The reports from these SMEs with regard to regulation is reflected in the literature with many studies reporting regulation as a barrier to compliance. The issue is also recognised by the Governing bodies e.g. the European Commission, the Health and Safety Authority etc. with many interventions, initiatives and tools introduced with the aim of reducing the perceived regulatory burden for small business. More than half of participating enterprises, indicated health and safety as a priority area for intervention due to the perceived burden and the increasing focus on the area of OHS compliance by the authorities.

The findings from this study demonstrate that despite the numerous Acts, strategies

and tools introduced by the European Commission in a bid to assist SMEs with regulatory compliance and to reduce the regulatory burden such as the Small Business Act for Europe 2008, the Impact Assessment, and SME Test, OHS compliance continues to be unsatisfactory. Small businesses report an increase in the cost of compliance. Those who were found to be compliant with OHS accounted that compliance was at the request of a customer or an insurance company. The flippant remarks with regard to regulatory compliance such as ‘we just do enough to keep the authorities happy’ were common place within micro-sized enterprises in particular. Less than one in five firms felt that the Government takes account of the requirements of their business sector when negotiating at EU level. There is also a negative perception of the efficacy of European regulations in facilitating innovation, with less than one in four firms believing that European regulation helps to break down barriers to expansion and innovation. Almost half of the participants, 46% of firms, believed the views of the sector are rarely or never taken into account.

The gap in communication and the failure of European initiatives in assisting SMEs with regulatory compliance is best demonstrated when the message of the flexibility afforded to SMEs in the implementation and enforcement of regulations is examined. With this new approach to legislation, the law is based on the ‘reasonably practicable’ principle. On the food regulation 1<sup>st</sup> of January 2006 Directive 93/43/EEC was replaced by Regulation (EC) No 853/2004 and brought into effect in Ireland by European Communities (Hygiene of Foodstuffs) Regulations 2006 (S.I. No. 369 of 2006). This regulation retains the HACCP requirement but introduces a degree of flexibility. Flexibility in enforcement with regard to SMEs such as the flexibility allowed in the implementation of HACCP and when enforcing HACCP compliance and the flexibility afforded under the regulation on how food information is provided to consumers. These flexibilities and others were introduced as part of the Regulatory Fitness and Performance Programme (REFIT) initiative (European Commission, 2013, European Commission, 2014d). The flexibility in HACCP implementation must be decided by the SME owner and flexibilities in enforcement are decided upon by the enforcement agencies while ensuring compliance meets the ‘reasonably practicable’ principle of the law. The flexible approach afforded by the REFIT initiative has resulted in the responsibility of compliance being placed solely with the business owner. Flexibility in enforcement has resulted many different interpretations of the

regulation. The level of flexibility afforded is not defined which can lead to different interpretations of the legislation by the SME owners and is also the reason for the differing interpretations by the authorities.

The law with the new flexibilities or simplification afforded has in fact further complicated matters for the small business owner who now must ensure that they have done everything practicable to ensure the safety of the product produced. Therefore when choosing the option a business owner must be certain that the food safety management system implemented will be effective in ensuring the safety of their product. This terminology is confusing for many business owners as what exactly they are required to do in order to achieve this is not defined. Therefore, simplification of or flexibility in meeting the requirements is lost for small business. None of the participating enterprises visited as a result of this thesis were aware of the measures introduced to assist them with compliance which again demonstrates the unsatisfactory level of communication between the authorities and the SMEs.

A report which examined the effective application of Regulatory Fitness and Performance Programme (REFIT) in Member state countries found that there were 'significant examples where Member States do not use simplification options offered by EU legislation or burden is added through national regulation in areas not directly covered by EU rules' (European Commission, 2014d). The report, revealed that 'this was the case, for instance, in the area of food safety, where optional lighter regimes for small establishments are not always used'. The study demonstrates that if the lighter regimes are not correctly communicated to the small businesses the level of regulatory compliance will suffer as a result. The REFIT initiative will not enhance the regulatory performance or the economic performance of SMEs if they are not made aware of the initiative. In terms of communication with the regulator, participants criticised the level of consultation generally but in particular in relation to the introduction of new regulations. 'Government departments need to improve consultation with businesses, improved consultation may enhance regulatory compliance'. Consultation with industry with regard to regulations is now a legal requirement as defined in the Regulatory Impact Analysis (RIA) introduced by the European Commission. However, the impact of this has not been realised by the SMEs.

In 2013 the Health and Safety Authority (2013a) documented that, 'the cost of compliance for business has been reduced through the development of simple and user-

friendly tools to assist businesses, particularly small businesses, in meeting their legal requirements' in the 2013-2015 Strategy. However, the food and drink manufacturing SMEs participating in this study state that in their businesses the cost of compliance has increased over the past two years, and more than half of the enterprises have a low level of compliance with OHS. According to the participants, the cost of regulatory compliance for SMEs in this sector threatens their survival and has a negative impact on the economy in the form of stagnant growth. For many the cost of compliance was reported as outweighing the cost of non-compliance. It was found that the smaller the enterprise the higher the cost of compliance. The present regulatory format and the approach to simplification of requirements has not made a significant impact on the cost of compliance for Irish food and drink manufacturing SMEs, in particular the small and micro-sized businesses.

The current perception of OHS and the requirement for OHS training in the food and drink manufacturing SMEs is worrying, with comments from small business owners such as:

- 'Safety is already part of the job and doesn't need to be managed',
- 'We are a very small company and therefore operatives are aware of safety',
- 'Operatives know that they must be aware of their safety',
- 'Formal meetings are not required',
- 'We have an informal structure, employees feel free to speak out if they have issues with safety and welfare',
- 'We have a close team of workers, formal OHS meetings are not required',
- 'We meet every day in the workplace and discuss any issues then'.

Business owners do not regard their industry as particularly hazardous and underestimate the risk to themselves and their employees. Many food and drink manufacturing business owners visited failed to investigate accidents, failed to record accidents and outcomes and failed to report accidents to the HSA. Small food and drink business owners, stated that accidents were to be expected in their industry sector. This could be described as 'negative learning' as defined in Hasle *et al.* (2009) it 'refers to a process in which the outcome of learning is the opposite of what was hoped for in the learning process'. The feedback from the food and drink business owners also highlighted a reluctance to approach the Health and Safety Authority because of the

fear that it might stimulate a visit. None of the small business owners had ever reported an accident to the authority, whereas the large enterprise had reported a ‘few’ and had a reporting procedure in place. Only one enterprise out of 30 enterprises visited answered ‘yes’ when asked if they would report a reportable incident/accident (reportable to include an employee absent for more than 3 days, not including the day of the injury OR not absent for more than 3 days but could not perform normal work for more than 3 days).

Cagno *et al.* (2013) in their concluding notes, pose the question, ‘What OSH-factors or OSH-related factors (and respective interrelationships) are more relevant in the design of interventions in SMEs? What kind of interventions are likely to be more effective?’ According to the results of this study, the answer involves a combination of factors, many of which have already been identified in the literature. For an intervention to be effective it must be designed in conjunction with the SMEs, it must consider the needs of SMEs in the design, it must be practical and the practicability measured in practice, SMEs must be made aware of the tool and the benefits of the tool for the SMEs must be demonstrated. Finally a tool with potential to enhance compliance while saving an SME money can be very effective. Incorporating this in the approach to and the design of the tool for this thesis resulted in a successful and effective OHS intervention for food and drink manufacturing SMEs.

Food & drink manufacturing or processing has been recognised as an industry sector requiring specific OHS guidance in the United Kingdom since the 1990’s with the setting up of and introduction of the joint HSE/recipe for safety initiative to reduce the high injury rate in the food and drink manufacturing industries. This initiative and the introduction of the ‘Food & Drink Manufacturing Forum’ has led to a reduction in accidents, injuries and illness in the sector, with a 56% drop in injury rate between 190/91 and 2011/12 (Richard Morgan, 2013).

Due to the reported complexities of regulation and the complex nature of SMEs such as pressures on time, resources and profit, the low level of OHS awareness, good occupational health practice not being realised. With the food and beverages sector expected to be one of three sectors (Engineering, Medical Devices) to perform above average going forward and with SMEs accounting for the majority of businesses in the sector, this cannot continue (Forfás Expert Group on Future Skills Needs, 2013). To enhance the economic value of the food and drink manufacturing SMEs and the

competitiveness of the industry on the international market, the burden of regulation must be addressed and the lines of communication opened. Enhancing compliance in SMEs will improve worker protection and thereby reduce costs due to incidents and injuries and associated costs.

It is clear from the outcomes of this study that compliance with OHS in SMEs continues to be a problem. Within the food and drink manufacturing SMEs this problem is amplified due to the additional requirement to comply with food safety legislation. The SMEs in this industry sector prioritise food safety compliance to the detriment of OHS compliance and worker safety. With food and drink manufacturing SMEs using the majority of their limited resources on food safety compliance and evident lack of awareness of, or indifference to OHS requirements, worker safety is at risk. This risk and the lack of compliance results in a cost for the SMEs, the food and drink manufacturing sector and the broader economy. It is estimated the total costs of work-related accidents and ill-health in Ireland amounted to ‘2.5% of GDP in 2012’ (Health and Safety Authority, 2013b). In 2011 alone, it was estimated that over 590,000 working days were lost due to occupational accidents and a further 596,000 days were lost due to work-related illness (Health and Safety Authority, 2014b) cited in (Russell *et al.*, 2015). The Health and Safety Authority data shows ‘a substantial increase in the percentage of injuries involving more than 21 days absence from work. Between 2004 and 2008 the percentage rose from 10% to 19% and reached 21% in 2013’ (Russell *et al.*, 2015).

The small and the micro-sized enterprises were found to be the least compliant. Many were found to be struggling with food safety compliance and had not considered OHS requirements. As micro-sized enterprises account for the majority of SMEs in Europe and in Ireland at more than 80%, it stands to reason that they also likely to account for the majority of SMEs in food and drink manufacturing. The European Commission and the Irish Government are committed to assisting the growth of existing SMEs and to encouraging start-up businesses as a means of securing the future of the economy. This commitment is evident from the many reports, strategies, tools and programmes developed and introduced to reduce the regulatory burden and the cost of compliance. However, the results of this study suggest that the approach to the design of regulations, tools and programmes for SMEs must involve consultation and communication with the small business for whom the intervention is intended. Eakin

*et al.* (2010) concluded traditional social structures and processes, such as OSH regulations, consultation services, and professional practices, often do not suit conditions in smaller enterprises. They found that small business regarded assistance as often too technical, to be too expensive, or in too-limited supply. Irish food and drink manufacturing SMEs regard regulation and initiatives as stringent and complex, they are unaware of initiatives, the differing interpretation of the requirements is confusing and expensive, they are unaware of the benefits of regulation and/or standards and because of the unsatisfactory level of consultation and communication, for the most part, comply with OHS regulation if and when it is enforced or requested by a customer and/or insurance company. As suggested in the literature, in particular in the findings Hasle and Limborg (2006) and Sinclair *et al.* (2013) and the models designed as a result of their studies, for an intervention to be successful the complete intervention must be studied. Based on these findings an intervention for small business must;

- Consider the special characteristics and needs of small business, and involve the SMEs and the intermediaries at the design stage,
- Be implemented in practice in the small businesses for whom the intervention was designed,
- Be tested in practice within the small businesses,
- Evaluate the effectiveness of the intervention in achieving the aim of the intervention.

‘Safe Food Safe People’ an aligned safety system was designed based on the findings in the literature, following a review of existing interventions and the results of a review of the current situation in practice in the food and drink manufacturing. The system was designed and developed with the aim of enhancing OHS compliance in these small businesses and hence improving worker safety in the sector. The safety system aligned OHS with food safety requirements in existing food safety management systems. The safety system was successfully tested in industry. Safe Food Safe people enhanced OHS compliance without adding further complexity or cost for the participating businesses.

Safe Food Safe People informed by and tested in industry using case study

methodology addresses compliance with safety requirements, the complexity of regulations and guidance documents and the cost of compliance for food and drink manufacturing SMEs. The system has been validated through the employment of validated methodologies to frame the problem, by using validated and existing guidance and regulation to inform the design and content, and finally by testing and demonstrating the suitability and effectiveness of the system for the SMEs using expert reviews and practical applicability in industry. OHS and food safety requirements are addressed in the SFSP management system by following the sequential format of HACCP. Each HACCP step and HACCP principle is applied and detailed one at a time for OHS and food safety requirements in the main document. A reference document following the same structure, describes the requirements and how to achieve compliance with each requirement by providing actual examples and illustrations. Kitching *et al.* (2015) found that carefully designed regulation and insightful business support programmes might enable governments to achieve their regulatory policy objectives, while also opening up new market opportunities for small businesses. The adaption of Safe Food Safe People as a baseline for a small business safety standard to assist Irish food and drink manufacturing SMEs with OHS compliance is a solution which could enable the government to achieve their regulatory policy views and enhance worker protection.

Food safety compliance is regarded as a requirement for doing business in food and drink SMEs. The owner-managers comply with food safety requirements as a matter of course. By aligning OHS with food safety requirements in a language understood by food and drink SMEs, health & safety will receive more attention and a similar standing in the sector.





## Chapter 10: Validation

### 10.1 Introduction

This thesis has presented the design, development and evaluation of an aligned safety system for the management of OHS and food safety concurrently for food and drink manufacturing SMEs. The safety system titled ‘Safe Food Safe People (SFSP)’ was designed with the aim of enhancing OHS compliance in the SMEs. In addition to enhancing the level of OHS compliance, the safety system has resulted in the reduction of the regulatory burden which is anticipated to reduce the cost of regulatory compliance for the small businesses. This chapter presents a validation of the Safety System, which includes the validation methods adopted from inception through to the measuring the effectiveness of the system in practice. According to Shannon *et al.* (1999) and Hasle and Limborg (2006), who describe the importance of evaluating workplace safety interventions, the external validity and the effectiveness and practical applicability of the system in practice respectively. Carson (1986) defines validation as “the process of ensuring that the model is sufficiently accurate for the purpose at hand” cited in (Robinson and Brooks, 2010). ‘An essential of effectiveness research is establishing the validity of the outcome measurement, which is the degree to which the concept under study is accurately represented by the means of measuring the outcome’ (Shannon *et al.*, 1999). To this end, Safe Food Safe People is validated by measuring the suitability, the effectiveness and the accuracy of the safety system for the purpose of enhancing OHS compliance and reducing the regulatory burden or cost of compliance for Irish food and drink manufacturing SMEs.

The study was carried in Small and Medium Enterprises (SMEs) in the food and drink manufacturing sector. For the purposes of the study and for validity the European SME definition was adopted presented in Figure 10.1 and the NACE Revision 2 Statistical classification of economic activities in the European Community was adopted as the definition for the industry sector and is presented in Figure 10.2:

Size	Number of Employees	Annual Turnover or Annual Balance Sheet
Medium	<250	≤ €50 million or ≤ €43 million Annual Balance
Small	<50	≤ €10 million or ≤ €10 million Annual Balance
Micro	<10	≤ €2 million or ≤ €2 million Annual Balance

Figure 10.1 SME Definition (European Commission, 2005).

NACE Group No.	NACE Activity	Industry Type
10.1	Processing and preserving of meat and production of meat products	Meat and poultry
10.2	Processing and preserving of fish, crustaceans and molluscs	Fish, crustaceans and molluscs
10.3	Processing and preserving of fruit and vegetables	Potatoes, fruit & vegetables
10.4	Manufacture of vegetable and animal oils and fats	Oils, Fats, margarine & all edible fats.
10.5	Manufacture of dairy products	Dairies, cheese making and ice cream.
10.6	Manufacture of grain mill products, starches and starch products	Cereals, cereal starches, flour and meal.
10.7	Manufacture of bakery and farinaceous products	Bread, pastry goods, cakes, rusks, biscuits, preserved pastry goods, macaroni, noodles, couscous etc.
10.8	Manufacture of other food products	Sugar, cocoa, chocolate, confectionery, tea, coffee, condiments, prepared meals, food preparations, dietetic food, dried foods, broths etc.
10.9	Manufacture of prepared animal feeds	Farm animals and pet foods
11	Manufacture of beverages	Distilling, spirits, wine, cider, beer, malt, soft drinks, mineral waters and bottled waters.

*Figure 10.2 NACE Definition Food and Drink Manufacturing (Eurostat, 2008).*

## 10.2 Validation of the Data Collection Approach

A number of data collection methods were employed to establish the current state of play with respect to the view of Irish food and drink manufacturing SMEs of regulation, to establish the impact of regulation on these enterprises and also to determine the current level of compliance with OHS. A mixed methods design was employed to best establish the current state of play and to inform and to inform the design of and to test a proposed solution. According to Creswell and Plano Clarke (2011) the research problems best suited to mixed methods as those in which;

- One data source may be insufficient
- Results need to be explained
- Exploratory findings need to be generalised
- A second method is needed to enhance a primary method
- A theoretical stance need to be employed
- An overall research objective can be best addressed with multiple phases or projects.

The mixed methods design used is a ‘convergent design’. This is a design in which qualitative and quantitative data are collected in parallel, analysed separately and then merged. The data collection methods used were:

1. Broad Analysis = Survey x 126
2. Detailed Analysis = Industry Assessments x 30
3. Focused Analysis = Case Studies x 4 (pre intervention for a baseline analysis and post intervention to measure the effectiveness and success of the intervention).

### **Survey**

A survey was distributed nationally to food and drink manufacturing SMEs to obtain a broad the analysis of the current position in the industry with respect to OHS compliance, regulatory compliance generally, the perceived barriers to compliance, the impact of regulation on business and suggested methods of enhancing regulatory compliance. A validated survey titled ‘Business regulation Survey’ was adapted to the study and employed. The Business Regulation Survey was designed and distributed by the Economic and Social Research Institute (ESRI) in 2007 on behalf of the Irish Government at that time as part of the ‘better regulation initiative’ (discussed in chapter 4). Following concerns expressed by business groups about the growing volume of regulation and its impact on business. The Government decided to measure the extent of this problem for business in Ireland establish their view of regulation and which areas of regulation pose problems in terms of compliance costs, including administrative burdens (The Economic and Social Research Institute, 2007). Permission to adapt and use this survey was sought and granted by one of the authors namely Professor Dorothy Watson. Once the survey was adapted to the needs of the

dissertation, Professor Watson reviewed the survey and confirmed its validity.

The survey was further validated in industry to determine the usability in small and medium-sized enterprises and to confirm that the feedback or responses were returning the expected data. 20 pilot surveys were conducted in a convenience sample of Irish food and drink manufacturing SMEs.

### **Industry Assessments**

The industry assessments were conducted to ensure that sufficient data was gathered and to get a more detailed analysis of the current position in the industry with respect to OHS compliance, regulatory compliance generally, the perceived barriers to compliance, the impact of regulation on business and suggested methods of enhancing regulatory compliance. The industry assessments consisted of an interview using the validated survey and a number of additional questions stemming from findings in the literature review, direct observation in the workplace of documented systems for OHS and food safety and direct observation of practice.

The recognised NACE classification of the food and drink industry was used to determine a validated sample for assessment. NACE Rev 2 breaks the industry down to 10 categories. A medium, small and micro-sized enterprise from each category was assessed to establish comprehensive valid data.

### **Case Studies**

Case studies were adopted to inform, test and validate the effectiveness of the resultant aligned safety management system. The case study framework employed is presented in Chapter 5, Figure 5.11.

The interview - employed the validated survey and a number of additional questions stemming from findings in the literature review. The inspections (OHS and Food Safety) pre and post intervention were carried out against the requirements of internationally recognised safety standards. Direct observation of practices was included in the inspections for both OHS and food safety. The internationally recognised safety standards are presented below:

OHS was inspected against – The British Standard Occupational Health and Safety Advisory Services (BS OHSAS) 18001 of 2007.

Food Safety was inspected against FSSC 22000 - Food Products Food Safety Certification System GFSI developed this standard by combining ISO 22000:2005 Food Safety Management Systems (covering requirements for any organisation in the food chain) with Publicly Available Specification (PAS) 220:2008 pre requisite programmes on food safety for food manufacturing.

The Standard Cost Model (SCM) was used to measure the cost of regulatory compliance pre and post intervention. The SCM is a framework for defining and quantifying administrative burdens for businesses. The standard cost model is a validated model designed to present the administrative burden arising from regulation per Ministry and country over a certain period of time, in a way that provides insight and allows for comparison of the figures. Although it provides an approximation of the actual costs of compliance with a regulation or law a key strength of the model is that it uses ‘a high degree of detail in the measurement of the administrative burdens. The model aims to be indicative rather than statistically robust’ (Business Regulation Forum, 2007). It was introduced by the International working group on Administrative Burdens and makes it possible to:

On a national level

- Obtain detailed insight into the administrative burden per regulation/law,
- Calculate the costs of alternatives to intended legislation and regulations, and their effects,
- Draw up fast, reliable reports on the development of an administrative burden over a period of time.

On an international level

- Benchmark systems and regulation across countries and identify best practice.
- Benchmark how EU directives are being translated in national regulations in different member states (International working group on Administrative Burdens, 2004).

The model, has become the most widely applied methodology for measuring administrative burdens internationally and can be applied in all countries and at

different levels. The method can be used to measure the burden of a single law, selected areas of legislation or all legislation within a country and it is therefore applied to the new aligned safety system. The SCM is used as a method of validating the cost effectiveness of the safety system through the measurement of the cost of compliance with regulation pre intervention and the cost of compliance with regulation post intervention. The costs were measured over a period of six months pre and post intervention with the safety system and the results compared. The model, the application and the results are presented in section 10.6.

To attain reliable results and to validate the adoption of case study methodology for this study, the employment of Yin's replication logic, 'case study tactics for four design tests' and 'case study protocol' were applied (detailed in chapter 6). The reliability of the design employed for the study was safeguarded in a number of ways:

Utilising a reliable research design, tested in accordance with Yins' model,  
Developing a case study protocol described by Yin as 'essential in a multiple case study',  
Informing and testing the developed theory through replication in multiple cases (Yin, 2009).

The case study tactics and the case study protocol were applied and replicated all case studies.

### 10.3 Data Analysis and Validation

The analysis of data was validated through the application of triangulation and convergence of data from multiple data sources. The analysis was based on the triangulation of three data sources

1. Surveys
2. Industry Assessments
3. Case studies

Triangulation of data within and between each data collection method used. The strategy has been described by Patton (1987) as a means of testing what people say

overtime, comparing observational data with interview data, as well as validating information obtained through interviews by checking program documentation. The data collected from the surveys, interviews, industry inspections and observations is triangulated and the content is analysed.

From each case study multiple sources of evidence are used and the data is converged to determine the facts. This is detailed utilising the diagram designed by (Yin, 2009) ‘Convergence and Non-convergence of Multiple Sources’. The method for the convergence of the data is presented in Chapter 5, Figure 5.5.

## 10.4 Safe Food Safe People Design Validity

Safe Food Safe People was designed based on existing and internationally recognised documents and methods. It is based on Hazard Analysis Critical Control Points (HACCP), the ‘Think Small First Principle’ of the Small Business Act for Europe (SBA) of 2008 (reviewed in 2013) and ISO Guidance for writing standards taking into account micro, small and medium-sized enterprises’ (SMEs) needs (detailed in chapter 7). These are applied to the design of the safety system as follows:-

- **HACCP** for the safety management system development and, in conjunction with the principles of prevention, for risk assessment design.
- **Think Small First Principle** considering complex nature of SMEs identified in the literature:-
  - Time Constraints
  - Lack of Resources
  - Lack of knowledge and awareness
  - Disproportionate burden of regulation
  - Complexity of legislation and food and drink manufacturing process requirements etc.
- **ISO standard** to ensure SMEs needs are taken into consideration in the design.

The system design was also validated by a number of experts to include standards experts, enforcement body representatives and industry experts (the end user for the proposed safety system).

## **Expert Review**

Safe Food Safe People incorporates OHS and Food Safety management requirements and is designed specifically for small businesses, hence when compiling a list of experts to review the aligned safety system for food and drink manufacturing SMEs expertise in all of these areas was required to attain a comprehensive review. In addition to this, the views of the end user were also pertinent to the success of the system and therefore a number of food and drink manufacturing business owners and managers were requested to review the system. The panel of experts includes OHS experts, food safety experts, standards experts, small business experts, legislation experts and a sample of the end users. The remit provided to the expert review panel was: to comment on the suitability of design, layout and content for small businesses using the ISO Guide Checklist (Table 10.3) from the International Organization for Standardization (2013) 'Guidance for writing standards taking into account micro, small and medium-sized enterprises needs'. In addition experts were requested to review the system from their own area of expertise. The ISO checklist was employed to enhance the validity of the review as it provided a standardised method for the review of the aligned safety system and it is a component of an internationally recognised standard.

*Table 10.1 Expert Reviewers Profiles*

<b>Expert</b>		<b>Area of Expertise &amp; Years' Experience</b>	<b>Current Role &amp; Responsibility</b>
<b>1</b>	Business User 1 (Large Food Enterprise)	Food Safety and OHS 20+ years' experience	Group Operations Manager
<b>2</b>	Business User 2 (Large Food Enterprise)	OHS 30+ years' experience	Group OHS Manager
<b>3</b>	Business User 3 (Medium Food Enterprise)	Food Safety and General Management Food Manufacturing. 20+ years' experience	General and Technical Manager
<b>4</b>	Business User 4 (Small Enterprise)	Small business Management 25+ years' experience	Owner/Manager
<b>5</b>	Enforcement Officer/Inspector 1 Health & Safety Authority (HSA)	Occupational Health & Safety	Ergonomist/Inspector
<b>6</b>	Enforcement Officer/Inspector 2 Health & Safety Authority (HSA)	Occupational Health & Safety	Inspector
<b>7</b>	Enforcer/Inspector 3 (County Council)	Veterinary Public Health & Food Safety Legislation	County Council Veterinary Officer Public Health and Food Safety

Table 10.2 Expert Reviewers Profiles (Continued)

8	Standards Expert CEN-CENELEC <b>CEN</b> - European Committee for Standardization & <b>CENELEC</b> - European Committee for Electrotechnical Standardization	Standards, standards Development and Standardisation Process for Small Business. Managed the development of the CEN/CENELEC Guidance 17 for writing standards taking into account micro, small and medium sized enterprises' needs. The Guidance adopted by ISO in 2013.	Programme Manager – Innovation with CEN-CENELEC
9	Standards Expert National Standards Authority of Ireland (NSAI)	Food Safety, Environmental Safety, Legislation, Standard Development & Small Businesses	Standards Officer NSAI  Development of Standards
10	Advisor (Small Business Association)	Legislation Standards Small Business	Advisor to an employers' organisation 'The European Craft and SME Employer's Association (UEAPME)'. Which represents the interests of European crafts, trades and SMEs at EU level. 'The voice of SMEs in Europe'.
11	Standards Expert	Standards Project Management Legislation Small Business	Small Business Standards Project Manager at European level based in Brussels.
12	Standards Expert and a Food Safety Expert. A Member of the British Retail Consortium (BRC) standard development panel.	Providing professional training and coaching in standards & management systems.	Principle Director and Owner of an International Inspectorate Business.

*Table 10.3 ISO Guide Checklist (International Organization for Standardization, 2013)*

Preparation of New Work Item	Preparation of standard	Development of content	Structure and presentation of content	Final review
(5.2.1) Did you check the relevance of the standard for SMEs?	(5.3.1) Did you evaluate the cost of investment (technology, equipment, testing)?	(5.4.1) If the performance approach is used, is it understandable?	(5.5.1) Is the standard as short as possible?	(5.6.1) Did you suggest a transition period reflecting the implications of the changes?
(5.2.2) Did you check with all the stakeholders if there are special needs for SMEs?	(5.3.1) Did you evaluate the cost of training (staff)?	(5.4.2) Have you used descriptive explanations?	(5.5.1) If the standard is long, did you evaluate the possibility of dividing it into shorter standards?	(5.6.2) Did you evaluate the need for an implementation manual?
(5.2.2) Did you evaluate whether there are SMEs among the target groups?	(5.3.1) Did you evaluate the cost of implementation?	(5.4.3) Is the scope of the standard precise and complete?	(5.5.2) Is the structure of the standard easy to follow?	(5.6.2) Did you evaluate the need for an implementation manual?
	(5.3.2) Did you verify that all elements are available?	(5.4.4) Did you avoid strict testing regimes?	(5.5.3) Have you included supportive graphs, charts, etc. (when possible)?	
		(5.4.4) Did you evaluate testing costs?	(5.5.4) Have you used clear language understandable by all expected standards users?	
		(5.4.5) Did you identify simple, cost-effective ways of checking conformity to the requirements?	(5.5.4) Have you used clear language understandable by all expected standards users?	
			(5.5.5) Did you minimize the number of referenced standards?	
			(5.5.6) Did you provide clear information on the changes from the previous versions of the standard?	

The results for the completed check lists are presented in Table 10.4.

## Chapter 10

Table 10.4 Validation Results

Reviewer Question	1	2	3	4	5	6	7	8	9	10	11	12
(5.2.1)	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
(5.2.2)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
(5.2.2)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
(5.3.1)	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
(5.3.1)	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
(5.3.1)	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
(5.3.2)	Yes	Yes	Yes	Yes	Yes*	Yes*	Yes	Yes*	Yes*	Yes	Yes	Yes
(5.4.1)	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
(5.4.2)	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
(5.4.3)	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
(5.4.4)	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
(5.4.4)	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
(5.4.5)	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
(5.5.1)	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
(5.5.1)	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
(5.5.2)	Yes	Yes	Yes	Yes	Yes**	Yes**	Yes	Yes**	Yes**	Yes	Yes**	Yes
(5.5.3)	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
(5.5.4)	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
(5.5.5)	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
(5.5.6)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
(5.6.1)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
(5.6.2)	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
<p>Comments:</p> <p>Yes* - The experts when verifying the inclusion of all elements identified some amendments required due to updates in legislation such as new chemical symbols.</p> <p>Yes** - A number of experts suggested structural changes and therefore when verifying whether or not the structure of the system is easy to follow they replied 'yes' but provided a number of suggestions to further enhance the usability of the structure.</p> <p>As the system was designed specifically for SMEs the first three elements [(5.2.1), (5.2.2), (5.2.2)] were addressed when conducting the literature review and during the fieldwork. Also as one of the objectives was to reduce the cost of compliance for SMEs a comprehensive evaluation with regard to implementation costs, training costs etc. was incorporated in the system design.</p> <p>The experts agreed that the design, structure and contents of the new aligned safety system, Safe Food Safe People;</p> <ul style="list-style-type: none"> <li>➤ If implemented correctly can achieve the aim of enhancing OHS compliance in SMEs.</li> <li>➤ Is comprehensive and addresses the requirements of OHS and food safety management.</li> <li>➤ Is suited to the needs of small business.</li> </ul>												

## **Responses from Review in Context**

The response from the review validated the design, structure and content of the aligned safety management system, Safe Food Safe People. The experts confirmed the validity through confirmation of the criteria below.

The system was found to;

- be relevant for SMEs,
- have the cost of training (staff) evaluated,
- be as short as possible, when the expected use of descriptive explanations is considered,
- include sufficient supportive graphs, charts etc.,
- use clear language understandable by all expected standards users,
- identify simple, cost-effective ways of checking conformity to the requirements.

In addition;

- the special needs for SMEs were adequately checked with all stakeholders,
- the scope of the system was found to be precise and complete,
- the structure of the standard was easy to follow,
- the need for an implementation manual had been correctly evaluated.

## **10.5 Amendments of Safe Food Safe People**

Based on the feedback from the expert review of the aligned safety system a number of amendments were required. The amendments were primarily in relation to the structure and the layout to assist the end user with the exception of an update required on the chemical symbols used in ‘cleaning procedure example’. There were no content changes suggested.

## 10.6 Validation of the Proposed Aligned Safety Management System

The safety management system was validated both qualitatively and quantitatively. The qualitative evaluation demonstrates the validity of the system for practical application in food and drink manufacturing SMEs to successfully enhance the level of compliance with OHS requirements. The quantitative evaluation validates the capacity of the aligned safety system to reduce the cost of compliance with safety regulations through the alignment of the management systems. The validity of Safe Food Safe People safety system and the adoption of aligned systems as a method of reducing the cost of compliance for SMEs is presented here. Validation of the dissertation aim is presented in table 10.4, validation of the dissertation objectives are presented in Table 10.5 and a validation of the proposed contribution to knowledge is presented in Table 10.6.

*Table 10.5 Validating the Aim of the Dissertation*

<b>Aim of Thesis</b>	<b>Validation Method(s)</b>
To enhance compliance with OHS in food and drink manufacturing SMEs in Ireland. To this end a user friendly, cost effective, sustainable system was devised, the system was designed from theory and defined and validated in industry.	Qualitative – Case Studies and Inspections (OHS & Food Safety) and Industry Review measured the effectiveness of the system in assisting the SMEs to achieve compliance with OHS.

*Table 10.6 Validating the Dissertation Objectives*

<b>Objectives</b>	<b>Validation Method(s)</b>
To design a system suitable for SMEs	Qualitative – Expert Review and Industry Review.
To design a cost effective system for SMEs	Quantitative – Standard Cost Model.
The measure the practicability of the aligned system	Qualitative – Case Studies and Inspections (OHS & Food Safety).
The measure the success of the system in the reduction of the regulatory burden and the cost of compliance for SMEs	Quantitative – Standard Cost Model.

*Table 10.7 Validating the Proposed Contribution to Knowledge*

<b>Contribution to Knowledge</b>	<b>Validation Method(s)</b>
OHS and food Safety regulatory compliance can be achieved using an aligned safety system	Qualitative – Expert Review, Industry Review and Case Studies and Inspections (OHS & Food Safety).
OHS and food safety requirements can be managed using an aligned safety system.	Qualitative – Expert Review, Industry Review, Case Studies and Inspections (OHS & Food Safety).
Two individual safety management systems can be aligned to achieve enhanced safety compliance at a reduced cost.	Qualitative and Quantitative – Expert Review, Industry Review, Case Studies and Inspections (OHS & Food Safety) and the Standard Cost Model respectively.

The qualitative review included a measurement of the effectiveness of the aligned safety system in the enhancement of OHS compliance in the food and drink manufacturing SMEs. An evaluation of the level of both OHS and food safety compliance in the form of an inspection was conducted in all four case study enterprises prior to the implementation of the aligned safety system. The inspections employed internationally recognised standards (detailed in chapter 8) to measure the level of compliance with OHS and food safety in the enterprises. As discussed above data was collected with respect to the documented systems and the systems in practice. Following the implementation and running of the system for a period of six months a second inspection or a post intervention inspection was conducted to measure the level of compliance with OHS and food safety regulatory requirements.

The quantitative validation or evaluation of the aligned safety system employed application of a Standard Cost Model. The model and its application in the validation of Safe Food Safe People safety management is detailed in the next section.

### **Validation of the Effectiveness of Safe Food Safe People in Achieving Satisfactory Compliance with OHS**

The aim of Safe Food Safe People to enhance the level of compliance with OHS in food and drink manufacturing SMEs was realised. This was validated by measuring the level of OHS compliance pre and post implementation and running of the aligned system. A full OHS and food safety inspection was conducted in each case study company before and after the implementation of the aligned safety system. The results of the inspections were documented and compared, these are detailed in chapter 8. A summary of the improvements documented are presented here;

- The level of compliance was enhanced in the medium-sized enterprise and the small and micro-sized enterprises now have a working OHS management system,
- All of the enterprises have a relevant and comprehensive hazard analysis with the risk identified and controlled measures in place,
- The work flow has been improved in each enterprise and employees are trained in OHS and in the safety aspects of their job tasks.
- Proactive OHS management was observed in practice in all of the case study enterprises.

In addition to the inspections carried out, the enterprise owners/managers were requested to comment on the aligned systems after a period of six months running the new system. These comments are presented in the following section.

### **Food and Drink Manufacturing Industry Review**

Through the employment of case studies, the proposed safety management system was tested in industry to obtain end user feedback as a method of validation. Safe Food Safe People was designed specifically for SMEs and therefore it was not tested in the

large enterprise but was reviewed by the management. The author assisted the micro and the small-sized enterprise with implementation of the aligned safety system as true to the prevalent nature of small business, time constraints and resources were an issue for them. The medium-sized enterprise implemented the aligned safety system without any external assistance.

*Table 10.8 Food and Drink Manufacturing Industry Review Comments*

Enterprise Size	Comments on Safe Food Safe People Safety Management
Large-sized	‘I can see the theory and system working for companies of all sizes. This is the direction that regulatory bodies should take in the future’.
Medium-sized	‘It is about time someone has come up with a common sense approach to help SMEs with regulatory compliance.’
Small-sized	The Food Safety Authority should give this practical system serious consideration, it needs to be rolled out to help all SMEs with compliance’.
Micro-sized	This is the approach that has to be taken across the board for this industry. Assisting small business owners with compliance in this way frees up time and resources. Time and resources are badly needed in order to market our product and expand the business.

### **Reduction of the Regulatory Burden and the Cost of Compliance**

As discussed above, The Standard Cost Model is used for measuring the burden of regulatory compliance for businesses imposed by existing and proposed regulation using a quantitative methodology. The main aim of the model is to ensure that existing regulations and new regulations do not impose excessive administrative compliance costs on businesses. The model can be used to measure the cost of compliance with a single law, selected areas of legislation or to perform a baseline measurement of all legislation in a country. The cost is calculated by calculating the cost involved for each information obligation. An information obligation is ‘a duty to procure or prepare information and subsequently make it available to either a public authority or a third

party. It is an obligation businesses cannot decline without coming into conflict with the law. Each information obligation consists of a number of required pieces of data – or messages – that businesses have to report’ (International working group on Administrative Burdens, 2004). In the case of food and drink manufacturing businesses and governing regulations, the pieces of information contained in an information obligation can vary depending on the nature of the business i.e. the product manufactured. An example of some of pieces of information typically contained in an information obligation for food and drink manufacturing would be, test results, verification of compliance (check sheets/records), other measurements etc. The cost element stems from product compliance, regulatory compliance, training, waste disposal, cutting fees, laboratory testing, calibration of equipment etc.

The cost for each information obligation is calculated using the model in Figure 10.3.

### ***Figure Removed for Copyright Reasons***

#### *Figure 10.3 Relationship between the Different Components of the Standard Cost Model*

For the purposes of this study the model was applied to calculate the cost of compliance with OHS and food safety management pre Safe Food Safe People (SFSP) implementation (two documented systems managed separately) and as one aligned safety system post SFSP implementation. The cost of regulatory compliance with OHS and food safety was calculated over a period of 6 months pre and post implementation of SFSP to facilitate comparison of data. A summary of the results presented in Figure 10.4 validates the ability or the effectiveness of the aligned safety system to reduce the cost of regulatory compliance or the regulatory burden for Irish food and drink manufacturing SMEs.

Large-Sized Enterprise	Cost (€) Pre SFSP*	Cost (€) Post SFSP**
	<b>€58,000</b>	<b>€58,000</b>
Comments: Safe Food Safe People was designed for SMEs and therefore was not suitable to implement in the large enterprise. However, the managers expressed an interest in the theory underlying the safety system and have started the process of aligning their safety systems. The managers of the large enterprise also provided expert reviews on the safety system.		
Medium-Sized Enterprise	Cost (€) Pre SFSP*	Cost (€) Post SFSP**
	<b>€39,450</b>	<b>€24,950</b>
Comments: The medium-sized enterprise reported a saving of <b>€14500</b> over a period of 6 months. Details of exactly where and the savings were made are presented in the Results chapter, chapter 9. The figures also validate the Safe Food Safe People Safety System.		
Small-Sized Enterprise	Cost (€) Pre SFSP*	Cost (€) Post SFSP**
	<b>€19,000</b>	<b>€18,600</b>
Comments: The small-sized enterprise reported a saving of <b>€400</b> over a period of 6 months. Details of exactly where and the savings were made are presented in the Results chapter, chapter 9. The reduction was calculated as the cost of the hours spent by an operative to complete the OHS checks which were very few. The figures also validate the Safe Food Safe People Safety System as the cost of running two management system OHS and food safety is the same as it was for running just one safety management system, food safety.		
Micro-Sized Enterprise	Cost (€) Pre SFSP*	Cost (€) Post SFSP**
	<b>€13,300</b>	<b>€13,300</b>
Comments: The micro-sized enterprise reported that running the aligned safety system had not changed the cost of regulatory compliance. Therefore the cost of compliance with OHS and food safety concurrently had not incurred an additional cost over the 6 months. The figures validate the Safe Food Safe People Safety System as the cost of running two management system OHS and food safety is the same as it was for running just one safety management system, food safety.		

*Figure 10.4 Validating the Success of Safe Food Safe People in Reducing the Cost of Regulatory Compliance*

\*Cost measured over a period of 6 months pre intervention with SFSP, January to June 2014

\*\*Cost measured over a period of 6 months post intervention with SFSP, October 2014 to March 2015.

Validated methods were used to determine the requirement for a new approach to compliance with regulation in food and drink manufacturing SMEs, to inform the development of an aligned safety system and the testing and measurement of the effectiveness of the proposed system as a solution in assisting SMEs with OHS compliance. The feedback on Safe Food Safe People safety management was very

positive. Industry end users and regulatory/enforcement body representatives agreed that such a system is a welcomed advancement as a solution to enhanced OHS compliance and a reduction in compliance costs generally. Safe Food Safe People safety management and the underlying theory that aligned safety management can lead to enhanced compliance had been demonstrated. The aim of this dissertation to design a system to enhance OHS compliance in Irish food and Drink SMEs was successfully achieved. It is anticipated that the inclusion of quality, environmental requirements etc. will be addressed in future studies based on the underlying theory of alignment and with a focus on small business requirements.

## **Chapter 11: Conclusions, Contribution to Knowledge & Further Research**

### **11.1 Conclusions**

The research aim was to enhance compliance with occupational health & safety regulatory requirements in food and drink manufacturing SMEs and reduce the human and financial cost of unsatisfactory OHS compliance. This was accomplished by determining the nature and the scale of the problem with regard to OHS compliance; and identifying what these businesses believed would assist them in achieving regulatory compliance. This was achieved by conducting a comprehensive review of the literature and a survey to review the current situation in the food and drink SMEs. Results from this determined that compliance with OHS was unsatisfactory primarily due to the number and complexity of governing regulations and a perceived 'regulatory burden'. It was established that due to the burden of regulation business owners are strategic in their approach to compliance, hence, food safety compliance is prioritised due to the level of enforcement.

Food and drink manufacture is important to the continual growth of Ireland's economy. The sector incorporates more than 30 different food and drink manufacturing industry types and SMEs account for the majority of enterprises in the sector. The sector differs from others with respect to regulation, businesses in the food and drink sector must comply with food safety regulation in addition to OHS, environmental, company law etc. Without food safety compliance an enterprise in this sector will not be licenced to process or manufacture food by the authorities. As a result food safety regulation is viewed as a priority by food and drink manufacturing business owners to the detriment of OHS. Unsatisfactory compliance with OHS in food and drink manufacturing is amplified due to the focus on food safety and the number of small businesses in the sector. Safe food is a priority and the safety of the worker and people in the industry can be left to chance. For moral, legal and economic reasons this cannot continue.

Although the focus on food safety regulation can be an obstacle for health & safety

compliance, the focus on food safety management can also be used to benefit OHS compliance. The acceptance and almost culture of compliance with food safety requirements was used as a solution to the problem of insufficient OHS compliance in these SMEs. As both food safety and health and safety management are based on the systematic analysis of hazards and risks, it was found that OHS requirements aligned very well with existing food safety management systems based on HACCP. Aligning OHS safety requirements with food safety (pertinent to a food and drink enterprise receiving a licence to trade in the first instance) and designing the system to meet the needs of SMEs resulted in enhanced worker safety and a reduction in compliance costs. By shadowing or ‘piggy backing’ on an approved existing management system it anticipated that an enhanced focus on OHS will follow.

Regulation is a reality and a requirement. In food and drink manufacturing regulation is essential as both the production process and the final product can impact on the safety of people. Small food and drink manufacturing business owners for the most part state that they would like to be compliant with governing regulation but find that the current system places a disproportionate burden on them when compared with their large counterparts. Due to the current regulatory requirements, time pressures and a lack of resources they are forced to focus on maintaining operations and hence food safety compliance takes priority. Aligning OHS requirements with food safety requirements takes the needs of SMEs into account and enables food and drink SME owner-managers to manage two bodies of regulation using one management system, thereby reducing costs.

The theoretical perspective which links the regulatory burden with compliance and economic advancement is valid. A reduction in the regulatory burden for SMEs would reduce the cost of compliance and release resources which could be invested in continual improvement and OHS compliance leading to economic advancement. However, a reduction in the regulatory burden should not result in SMEs being excluded from the scope of proposed legislation. The implementation of better regulation initiatives should be prioritised as exemptions may produce broader negative repercussions which could outweigh any benefits. Preparation for emerging risks and intervention rather than reducing employer responsibility and accountability will be more beneficial to the worker, to the enterprise and to the economy.

Insufficient compliance with OHS regulation and regulation generally can result in a great economic cost to the company and ultimately even closure. Unsatisfactory compliance in the form of accidents, incidents, business closures etc., in addition to the human cost also hampers economic advancement and impacts negatively on the Irish and the broader European economy. As both food safety and OHS safety regulation are required for the safety of people in food and drink manufacturing, the alignment of the safety requirements for the SMEs in this sector using one safety management system provides a validated, workable and sustainable solution.

### 11.2 Contribution to Knowledge

This study contributes to knowledge in a number of ways which are listed here. However, the main contribution is the successful enhancement of safety compliance and worker safety in Irish food and drink manufacturing SMEs through the alignment of OHS with existing food safety management systems. Enhanced worker safety in the leading indigenous industry which has a high multiplier effect and projected exports to a value of €19 billion by 2025.

The thesis presents and provides;

- Empirical Data for food and drink sector OHS compliance.
- The food & drink manufacturing owner/manager perspective with regard to OHS regulatory compliance.
- A tested framework to systematically navigate SMEs through all OHS factors for enhanced compliance.
- A user centric & right-sized solution, fitting with OHS problems and SME requirements.
- An SME specific system from outset through dissemination methods to application.

And most importantly;

- A cost effective method of enhancing regulatory compliance in small businesses applicable to other sectors. A method of drawing attention to a

disregarded or less regarded body of legislation by ‘piggy backing’ on an area of regulation which is complied with more successfully.

A need of providing information about why an intervention worked or not has been identified in the literature. Authors have suggested that the circumstances under which an intervention works, and in which context are important for future developments and the enhancement of compliance. There is a disconnect between OHS theory and practice in SMEs. This study has assisted in bridging the gap, rather than competing influences on compliance, align them, ‘piggy back’ on the regulatory compliance adhered to by the majority.

The principle contribution of this thesis to knowledge is an aligned safety system designed specifically to meet with SME needs and the theory of alignment as a method of improving OHS regulatory compliance and hence worker safety. This research designed and tested a management system specifically for food and drink manufacturing SMEs. The system in the layout, structure, presentation of content, inclusion of examples etc., considers the small business characteristics as identified in the literature and during the field work. In addition to listing the requirements the aligned system assists small business compliance with requirements by demonstrating how compliance can be achieved. Using illustrations, examples, procedures and step by step instructions OHS and food safety requirements are listed and methods of compliance are described.

The research proposes a new method of enhancing compliance with OHS and protecting the worker in the food and drink manufacturing element of the food and drink production chain. An area where OHS compliance has not been addressed previously in a similar manner. The new tool was developed by identifying the existing methods or aspects of existing methods and solutions which enabled or disabled compliance with regulations as determined by the small business owners and by researchers. These findings were used as performance specifications to achieve a better solution in addition to the alignment of OHS and food safety requirements to eliminate repetitive elements in the requirements. A system based on Hazard Analysis Critical Control Points (HACCP), the ‘Think Small First Principle’ of the Small Business Act for Europe (SBA) of 2008 (reviewed in 2011) and ISO Guidance for writing standards taking into account micro, small and medium-sized enterprises’ (SMEs) needs.

**HACCP** for and internationally recognised and valid risk assessment and safety management system.

**Think Small First Principle** in order to consider the complex nature of SMEs:-

Time Constraints

Lack of Resources

Lack of knowledge and awareness

Disproportionate burden of regulation

Complexity of legislation and of the resultant tools to assist compliance.

**ISO standard** to take SMEs needs into consideration in the system design i.e. a user friendly design with examples and illustrations used to aid understanding.

The aligned system results in an SME achieving compliance with two safety systems by managing one documented system. The paperwork is effectively halved. By halving the paperwork, the personnel required, the time and the resources required are also halved. By aligning OHS and food safety management systems and running them concurrently, they can function together but remain independent to an extent. For example, a non-conformance in the OHS sense may not affect the food safety of the process and will therefore be dealt with in a different manner independently of food safety system and vice versa.

The research takes a new approach to the traditional integration of management systems, firstly by aligning the systems rather than integrating them and secondly by demonstrating that there are more shared elements to both OHS safety and food safety than unshared. The safety systems can be aligned at all stages with the same safety requirements repeated in both systems, one system protecting the worker safety and the other system protecting product safety and hence the safety of the consumer.

### 11.3 Research Challenges

During this research, a number of challenges were encountered that delayed the completion of the work. The greatest challenge faced was the development of the database. In order to conduct a broad based survey on Irish food and drink manufacturing SMEs and to ensure a representative sample in the absence of any suitable databases, a database had to be compiled. There were databases available for

manufacturing enterprises and also for specific food and drink manufacturing industry types such as cheese, artisan etc. However, the manufacturing database included all types of manufacturing and enterprises of all sizes. The databases specific to food and drink manufacturing were too small and were not representative of the industry sector. Consequently distributing the survey took up to 6 weeks more than planned.

To establish of the number of food and drink manufacturing SMEs in Ireland proved difficult: having contacted all of the enforcement agencies, authorities, associations, and Government bodies/Departments relevant to the food and drink industry and/or SMEs the number of SMEs was still difficult to ascertain. None of the groups contacted to include the Minister of State for Small and Medium Enterprises (SMEs) at that time, Mr John Perry were aware of the total number of SMEs involved in food and drink manufacturing in Ireland. The search subsequently took up to 4 weeks and the number of SMEs in food and drink manufacturing was not ascertained.

The SMEs in the food and drink manufacturing industry testament to the prevailing nature of SMEs the time commitment required for the implementation of the system was a barrier. Therefore, the availability of enterprises for the industry assessment and for the case studies was limited. The concept was of great interest however the SMEs could not commit to allocating the time required to implement the system fully and correctly. Therefore the system was designed and implemented for two of the three SMEs by the author. The medium-sized enterprise implemented the system without intervention. Identifying SMEs to partake in the research and implementing Safe Food Safe People in two of the enterprises resulted in an additional 8 weeks of field work.

In addition to this it was difficult to get the small businesses to participate in the research. Although the responses to the survey were fruitful the response rate was low at just over 20%. This is inevitably due to the characteristic nature of small businesses documented in the literature and observed over the course of this study. One business owner rather than filling the survey took the time to send a compliant via email, detailing his upset at 'receiving yet another survey'! The following email from a participant encapsulates the issues faced by SMEs with regard to research participation. 'Thanks for the acknowledgement and best wishes on your study submission. About this time of year, I would receive about 5 – 15 emails from students

with requests for survey assistance and so, as a food producer, putting this time aside to complete surveys isn't always there. I do try and assist students as I know what it was like when I was doing a masters but the influx of requests means that I can't get around to everyone and I'd say that this is a difficulty in getting a response from producers generally'. Identifying businesses for the industry assessments was also a challenge, however the biggest challenge was getting SMEs to participate as case studies. The four case study companies were identified and agreed at an early stage in the research, however, prior to the commencement of the field work one of these businesses pulled out of the study. Another enterprise was contacted and participated in the study. It is interesting to note that of all of the enterprises who selected 'yes' that they would like to be contacted for a follow up study, only one SME replied when contacted and actually participated.

The buy in for the companies involved in the industry assessments and in particular the case studies was the anticipated advantages of the aligned safety system. The companies were interested in a system that had the potential to save them time and money while at the same time assisting them with safety compliance. The small and the micro-sized company were also happy to participate as they were assured a complimentary safety management system. The implication of the issues attaining SMEs to participate for this study was time, SMEs pulling out of the research added a number of weeks at the fieldwork stage.

### **11.4 Research Limitations**

The research was potentially limited by a number of reasons. For instance:

The interviews could have been used to further extrapolate the owner-managers understanding of what is understood by communication, regulatory burden etc. The interviews could have been better employed to gain an understanding of how all of the factors influencing compliance could be reviewed to impact more positively on regulatory compliance in SMEs.

The focus of this study was the SME owner-managers only, attaining the perspective of the workers would have enriched the findings. However, due to time constraints and the difficulties in gaining access to the SMEs the workers were not included in the

scope.

Though the results from the application of the Standard Cost Model were favourable demonstrating a saving or no added cost following the alignment of OHS with food safety requirements. It should be noted that the figures were provided by the SME owner-mangers. The reliance on data provided by the businesses themselves and from a small sample of businesses can create a risk of over estimating the burden and hence the monetary benefits of the aligned system.

In addition to the thesis being delayed due to construction of the survey database and the search for the total number of Irish food and drink manufacturing SMEs, these issues also present as a limitation. The total population for the survey (Business Regulatory Compliance Overview) could not be established and although a database of over 600 SMEs was constructed a more representative sample could have been obtained had a figure for the total population been available. The response rate to the survey could be viewed as another limiting factor at 23%. With SMEs accounting for greater than 98% of businesses in Ireland and the total number of SMEs in food and drink manufacturing unknown it was feared that the response rate may not be representative. To counteract the uncertainty of the representative sample and the low response rate industry assessments were conducted with the sample size selected based on a validated classification of the food and drink manufacturing sector. The sample size used was based on the validated classification of the food and drink manufacturing industry, titled NACE Rev 2 which divides the sector into 10 categories. Assessments were conducted in a medium, small and a micro-sized enterprise for each category resulting in 30 assessments conducted nationwide.

In addition to the unattainability of the total population, data and statistics specific to Irish food and drink manufacturing was not available. The Health & Safety Authority and the Central Statistics Office when presenting relevant statistics, group the data for all manufacturing types together under the NACE Rev 2 Group 'C' (Table 2.3, Chapter 2). Group C encapsulates data for the manufacture of equipment, nuclear fuel, chemicals, food and drink to name a few. Food and drink manufacturing is not identified as a separate entity, hence data regarding OHS compliance and/or non-compliance for the sector is unavailable. The study therefore, concludes that the Irish

food and drink manufacturing is a hazardous sector based on data from the United Kingdom where the Health and Safety Executive report specifically on the sector.

OHS in the work environment of Irish SMEs, in particular the food and drink industry in Ireland, has attracted very little academic study to date. A comprehensive search of the literature returned 5 studies relating to the industry of which only one paper had studied small businesses. OHS was not mentioned or referenced in any of the five papers published. However, this research may to some extent address the gap and bring to light the requirement for further research in the area of OHS.

Despite efforts to include a representative from the Food Safety Authority of Ireland (FSAI) for the expert review, they were unwilling to participate in the research. Food safety expertise was obtained however, a County Council Veterinary Officer reviewed the safety system, Safe Food Safe People.

Food and drink manufacturing SMEs if dealing with the multiples such as Tesco, Sainsbury etc. have to meet requirements exceeding those in the legislation and in the existing standards. The scope of the requirements for the multiples can often incorporate every aspect of the business from employment law through to the safety requirements this may impact negatively on the uptake of SFSP for a number of SMEs. However, with some adjustment the SFSP system design can incorporate all requirements and in the future may work to assist businesses in complying with standards and requirements beyond OHS and food safety. The underlying theory of SFSP i.e. the alignment of requirements for food and drink manufacturing SMEs in one standard may be adopted in the future.

Due to the diversity of the food and drink manufacturing sector (which contains more than 30 different industry types) standardising the Safe Food Safe People (SFSP) system for the industry sector may prove difficult. Variations of the SFSP may be required as in addition to the baseline legislation for food and drink manufacturing, different industry types in the sector can be governed by additional specific legislative requirements. However, as this study demonstrates that by aligning the regulatory requirements compliance can be enhanced, SFSP or the underlying theory can be adopted as a baseline for any standard or any industry type.

Based on the nature and characteristics of food and drink manufacturing SMEs, the small business owners or representatives may require training on the implementation of the safety system. This may be viewed as a cost and impact negatively on the uptake of SFSP but the savings which can be made using the aligned system can be demonstrated to counteract this.

In order to adapt the system to small businesses, examples, illustrations and diagrams were used as per the elements/guidelines of the ISO standard for writing standards taking into account micro, small and medium-sized enterprises' needs. The result of adding detail in order to reduce the complexity and enhance comprehension of regulatory requirements is a system containing two documents, the management system/standard and the reference document. As small businesses characteristically have little time to give to compliance, reading two new documents may be challenging. However, it is anticipated that by demonstrating the time and the monetary savings to be made while at the same time enhancing compliance levels, small businesses will come on board with the alignment of safety systems. If the safety system SFSP proves to be too time consuming, the idea or theory of aligning the regulatory requirements in one documented system will result in a positive outcome for the SMEs, for the inspectors and for the workers and consumers alike.

### **11.5 Recommendations and Future Research**

Compliance with health & safety regulation in the food and drink manufacturing SMEs is insufficient. Food safety compliance is prioritised to the detriment of OHS and hence the safety of workers in the sector. Small business owners do not see a business case for OHS reporting a disproportionate burden of regulation translating into an unsustainable cost.

According to Cagno *et al.* (2013) following an economic evaluation of OHS and its way to SMEs, the message that 'safety pays and rewards' has been realised by large businesses. This message needs to be realised by SMEs to enhance compliance with regulation. At present it is not reaching small businesses, and has not reached food and drink manufacturing SMEs in Ireland. These SMEs continue to report complex regulation as a barrier to regulatory compliance and regard compliance as expensive

and as falling disproportionately on small business.

Regulatory bodies by evaluating the effectiveness of future SME and burden reducing initiatives in practice, can demonstrate the expected benefits in monetary terms for the end user. Demonstrating these savings to small businesses across other industry sectors and the other stages of food and drink production when promoting safety may encourage the engagement of small businesses in safety compliance and regulatory compliance generally. Cagno *et al.* (2013) based on an evaluation of the various existing approaches to economic evaluation conclude that economic evaluation of 'OHS needs more multidisciplinary research'. They suggest that, OHS professionals must become better versed in the common language of "business and finance", aimed at demonstrating that workplace safety and health precautions do have an economic value for businesses. SMEs may be more willing to comply with OHS if the benefits of doing so were demonstrated in monetary terms. If the cost of compliance for each OHS strategy or intervention was shown in monetary units to outweigh the cost of non-compliance, small businesses would be interested. The quantitative evaluation of Safe Food Safe People (SFSP) using the Standard Cost Model demonstrates the economic value of compliance with safety using an aligned safety management system. The approach to economic evaluation of strategies and tools designed to aid small businesses with regulatory compliance in Ireland if conducted, is not disseminated to the SMEs on the ground. An OHS inspection pre and post intervention with SFSP determined the effect on compliance and the application of the Standard Cost Model determined the effect on the regulatory burden in monetary terms. This approach would be useful for all interventions proposed for SMEs, as the benefits of proposed interventions in practice could be demonstrated in monetary terms.

Lean thinking was applied at the design phase of the aligned system: duplication in OHS and food safety management systems were identified as wasteful and the duplication was removed through the alignment process. This approach extends lean thinking beyond the supply chain and the manufacturing process to the design and management of the overall management system. The approach details the savings to be made by preventing 'waste' in the form of duplication within OHS and food safety management systems in an attempt to comply with the requirements. By removing the duplication, Safe Food Safe People provides a 'leaner', more cost effective, value added approach in the form of an aligned system which if implemented correctly will result in safety compliance.

The Safe Food Safe People (SFSP) safety system could be developed further to assist small business with regulatory compliance by reducing the administrative burden and freeing up resources for investment in people and product safety. For example, guidelines for the application of lean principles at the supply chain and manufacturing process could also be detailed and incorporated into Safe Food Safe People, adding more value to the management system.

With the International Standards Organisation (ISO) standards for quality and for environmental safety being reviewed and updated and the introduction of an ISO standard for OHS being developed, all three following the same structure, this is a good time to look at the possible alignment of these systems. A future version of SFSP may include safe food, safe people and lean systems or safe food safe people and quality management. With the enhanced level of compliance achieved through the alignment of OHS with food safety, the alignment of other systems would further assist small businesses.

In addition to the Safe Food Safe People a guidance document was designed and although this acts as a guide for the implementation of the aligned safety management system, a training programme may be useful. Mindful of the demographic in the food & drink sector, with varying levels of education, varied literacy levels and a large number of non-nationals employed, this training programme would have a greater impact in a pictogram format. This manner of training being inclusive for all in the industry would translate the OHS message, enhancing the level of OHS compliance in practice within the food & drink manufacturing sector and protecting the worker.

An aligned auditing system for Safe Food Safe People could be designed based on the ISO 19011:2011 international standard covering management system audits titled 'Guidelines for auditing management systems' and the Global Food Business Manager (SGS) white paper titled 'A Single Food Audit System'. The availability of a standardised auditing system synergising the safety requirements for SMEs and based on an application of Safe Food Safe People would further reduce the costs and thereby enhance the level of regulatory compliance and the protection of workers.

Throughout the course of this work it was identified that the small business owner-managers were for the most part unaware of the initiatives and guidance available from

national bodies such as the Health & Safety Authority, the National Standards Authority of Ireland and the Food Safety Authority of Ireland. This breakdown in communication was also demonstrated by the Food Safety Authority of Ireland and the Information Society Statistics for Enterprises 2013 following the distribution of surveys (Food Safety Authority of Ireland, 2011, Central Statistics Office, 2013). The majority of governing bodies, the authorities and the support bodies primarily use the internet to disseminate information to businesses, using it as the main method of informing businesses of regulations, regulatory updates, guidance documents, business matters. Following the results of this study the effectiveness of the internet as a medium for communication with SMEs in food and drink sector should be measured.

Also as many interventions are lost and do not reach or have an impact on businesses for whom they were designed, dissemination of Safe Food Safe People to Irish food and drink manufacturing SMEs is important. However, in order to achieve a good uptake of the system by the small businesses it will have to be recognised by the standard bodies. The small business participants in this study have called for a standard to reduce the differing interpretations of the legislation reported by them as having a negative impact on compliance in the sector. This may be achieved by working with the National Standards Authority of Ireland and the Small Business Standards Association in Europe using the theory of alignment and SFSP as a baseline.

This thesis has presented Safe Food Safe People safety system in which OHS is aligned with the existing HACCP and food safety management systems in Irish food and drink SMEs. Providing a user centric tool that allows the navigation of OHS regulatory requirements in a language understood by the SMEs minimising further cost to the businesses. By adopting this methodology OHS and food safety can be managed using one management system rather than two systems enhancing compliance and thereby worker safety. As food safety compliance is prioritised in food and drink manufacturing businesses, aligning OHS with food safety management systems using HACCP has the potential of giving OHS the same standing as food safety in the sector. “The simple fact remains that it’s far more cost effective to prevent an accident happening in the first place than to deal with the consequences afterwards ” (Health and Safety Review, 2014).





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