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Declaration

‘I declare that this dissertation that I have submitted to Dublin Business School for the award of Master of Business Administration is the result of my own investigations, except where otherwise stated, where it is clearly acknowledged by references. Furthermore, this work has not been submitted for any other degree.’

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Abstract

The main purpose of this research is to identify the prevailing issues in Ireland construction industry and strategies of risk management adopted for addressing the risks involved in the construction projects and it also determine the current scenario of Ireland construction industry for determining the areas of improvement. Different method has been applied for accumulating the data such as survey and interview method. For the survey, 50 employees working in different construction organisations are selected, and 5 project managers are selected for the interview process. Both internal and external risks and challenges encountered that are affecting the quality and timely completion of the projects in Ireland, as the major internal factors are poor planning and execution, stakeholder issues and conflicts, adequate project team, and lack of financial and human resources. However, there are different effective and significant risk management strategies are identified that can be helpful in improving the construction projects such as early identification of risks, use of risk rating method, contingency policies, optimal utilisation of resources.
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Chapter 1: Introduction

1.1 Background

The construction sector is highly exposed to the risks and uncertainties due to dynamic and complex project environments. The construction industry is vulnerable to technical, socio-political, business, and project-oriented risks that create the need to employ effective risk management and risk mitigation strategies (Bromiley et al., 2015; Cagliano, Grimaldi and Rafele, 2015). In this relation, cost overruns, delay in project completion, operational deficiencies and quality issues are identified to be some of the prominent risks associated with the construction industry. Construction projects are distinct in nature; wherein risks can stem from the various numbers of factors such as technical factors, physical factors, financial factors, organisational factors, environmental, and socio-political factors (Bromiley et al., 2015; Cagliano, Grimaldi and Rafele, 2015).

A risk is deemed to be an integral element of the construction projects as no project is completely free from occurrence of risks; hence, it is necessary to analyse risks associated with the project and adopt suitable tactics to deal with the identified risks for eliminating the likelihood of project failure. Risk management is defined as the procedure, in which risks are identified, assessed, and appropriate course of actions are determined for averting the risks (Smith, Merna and Jobling, 2014).

Risk management is the central area of consideration for construction project managers. In this regard, the present research is focused on exploring issues in Ireland construction industry with respect to risk identification, analysis and risk management practices. Financial factors play a major role in intensifying risk in construction projects and time and quality related issues also commonly occur while managing construction projects.
In the similar manner, Cagliano, Grimaldi and Rafele (2015) asserted that risk in the construction project is a multi-faceted concept that focuses on managing the risk involved in the completion of varied construction project activities. The study accentuates that in a construction project, there are varied activities that are interrelated on the completion of other construction activities and in light of this, it becomes significant importance to manage the risks associated with different construction activities. Moreover, a systematic approach to risk management mainly focuses on three main stages that include risk identification, risk analysis and evaluation, and risk response (Cagliano, Grimaldi and Rafele, 2015). Furthermore, Iqbal et al., (2015) explored that the construction industry is one of the most dynamic and challenging business that requires construction managers to effectively manage the risk associated with the construction projects so that the project can delivered within the stated deadlines and meet the intended cost targets. Exploring the systematic approaches to risk management in the construction projects, the study accentuates that risk management requires construction managers to make informed decisions by identifying, assessing, and focusing on the major risk associated with the construction projects. Moreover, in order to minimize the potential damages that occurs through uncertain aspects in the construction projects, it is important in every construction project to manage the risks through different stages of the project (Iqbal et al., 2015).

In addition to this, Zou, Kiviniemi and Jones (2017) noted that in the construction projects, it is important to identify, analyse, respond, and monitor the project risks by establishing proper communication and developing a direct relationship between the construction project objectives and the risk management strategies that are employed in
managing the construction projects. The strategic utilization of the information and communication technology help construction managers to incorporate the safety risk planning through proper communication, collaboration, and cooperation of different departmental members within the construction projects (Zou, Kiviniemi and Jones, 2017).

Hence, the research is undertaken for examining the current risk management strategies employed in Ireland construction industry for identifying the limitations of current practices and the impact of risk factors on performance and efficiency of construction projects. In addition to this, the research is based on proposing suitable strategies for effective risk management to ensure the accomplishment of projects in the construction industry.

The chapter includes rationale and scope of the chosen research subject, context of the research, aim and objectives, research questions, hypotheses and layout of the work to illustrate the systematic process of answering the research questions and proving the hypotheses.

1.2 Aims and Objectives

**Aim**

The research aims to identify the issues prevailing in Ireland construction industry and risk management strategies adopted for addressing the risks involved in the construction projects. The study evaluates the present scenario of Ireland construction industry to further determine the areas of improvement and impact of identified risks on the practices of the construction sector. The objectives of the work are provided below:

**Research Objectives**

- To evaluate the need and significance of risk management in the construction sector
- To analyse the challenges or risks encountered by Ireland construction Industry
- To examine the impact of identified risk factors, particularly impact of the risk of theft
in project funds on the practices of Irish construction sector.

The main question and sub-question for the study are as follows:

*Research Questions*

R.Q.1 What is the present situation of Ireland construction Industry and what is the impact of risks on the practices of the construction industry?

R.Q. 2 What are the strategies of risk management for the better outcome in Ireland construction industry?

R.Q 3: What is the role and importance of risk management strategies in the successful completion of construction projects?

R.Q 4: What are the major challenges encountered by the Irish construction industry?

R.Q 5: what extent is there a need for improvement in management and execution of construction projects in Ireland construction industry?

R.Q 6: What are the main construction project risks faced by the companies in Ireland construction industry?

R.Q 7: What is the importance of risk management in executing construction work of Ireland construction industries?

The formulated research questions highlight the focal area of the study so that proper outcomes can be produced in alignment with the research questions. The research questions facilitate in directing the study in a particular direction and guide the researcher in examining the present scenario of Ireland construction industry, examine key risk factors, impact of risk factors and risk management strategies adopted by Irish construction industry. Overall, the research questions and objectives play a pivotal role in investigating the chosen subject in a systematic manner.
Research Hypotheses

The construction industry is exposed to varied risks, wherein financial risks or funding related issues are prominent areas or risk emergence. Thus, on the basis of secondary information, the research hypotheses for the study are formed as follows:

- There remains a strong and positive relationship between under-funded projects and risks.
- Secondly, it can also be stated there is a relationship between risks in the construction industry of Ireland and lack of experience of the project managers and team members.
- There is a strong relationship in the lack of planning and risk occurrence in Ireland construction industry.
- The theft in the project funds is directly proportional to the initiation of risks in construction projects.

1.3. Context

Ireland witnessed a deep recession in the context of construction projects and the diminution of project finance transactions. The Irish government and banks are limiting their capital spending as agreed with the European Central Bank and International Monetary Fund (The Law Review, 2017). Commercial construction projects and residential construction projects suffered from a huge decline in the recession period. Therefore, the risks are magnified in the construction industry that has increased the chances of project failure (The Law Review, 2017). It is noted that lack of adequate knowledge, lack of experience and poor planning in the construction projects have worsened the situation in Ireland construction industry. It is published in the report of the Law Review that more than 20 hazardous incidents have took place in the Irish construction industry between the years 2009 to 2017, which signifies the vulnerability of the industry to the risk factors leading to project failure. On the other side, it is claimed that a lack of financial resources and the inability to identify
and manage risks threatened the sustainability of the construction sector (The Law Review, 2017). Therefore, it is essential to implement sustainable measures and employ suitable courses of actions for facilitating continual learning in the project to avoid and eradicate risk factors.

In the viewpoint of Chen et al. (2015), individual commitment and fulfilment of job responsibility by team members and stakeholders significantly contribute to the identification and management of risks. Risk management is considered to be the responsibility of every stakeholder and by means of open and clear communications project risks can be handled at an appropriate time. Effective risk management also requires organisational commitment and support from the higher authorities as managing certain risks require approval from higher officials other than the project manager. On the other hand, it is stated by Bing et al. (2005) that critical success factors for risk management are outlined as, organisational commitment, open communication, individual responsibility, recognition of value and need of risk management, scale risk efforts and continuous learning and adaptation. Overall, the undertaken work sheds light on the limited concern of the Irish government for the construction industry. Additionally, the research evaluates the way through which financial risks can be minimised in Ireland construction industry.

1.4 Research Rationale

The selected research topic is specifically centred on the evaluation of issues and risks prevailing in the Irish construction industry, the impact of identified risks on operations and sustainability of the industry. The research also pays prominent attention to the resolution of the identified risks by proposing a set of suitable strategies for enhancing sustainability and improving growth prospects of the Irish construction industry. The research will outline robust measures that can be considered for adequate management of the construction projects.
by project managers. Risk management is a critical concept in the field of construction due to the volatility of the construction industry and the involvement of various stakeholders from the project initiation to the project completion. Quality, cost, time, and scope are prime parameters that ensure the success of construction projects (Zavadskas, Turskis and Tamošaitiene, 2010). However, on-site accidents and the shortage of capital largely affect the timely completion of construction projects in Ireland that leads to create quality concerns. Other than this, lack of commitment from senior management intensify the risk factors and create difficulties in the attainment of project goals (Zavadskas, Turskis and Tamošaitiene, 2010). Hence, this research will highlight the areas of improvement in the management of Irish construction projects by analysing its current practices and measures adopted for alleviating risks.

The research will identify factors that obstruct the successful completion of construction projects in Ireland. A limited number of secondary sources are available on the risk management strategies in the construction sector, and scarce data are available regarding the Irish construction industry. Thus, this research will include extensive primary research through qualitative and quantitative approaches for enriching the existing literary database and generating novel information in the sphere of risk management in construction projects. It is recognised from a brief review of the existing literature that the Irish construction industry is witnessing major challenges due to lack of funds and support from the government.

This study will present realistic and accurate information about the factors that generate risks in construction projects and the impact of those risks on the performance of the projects. The study will shed light on the impact of different factors such as funding, experience and planning to highlight the importance of such factors on project completion along with exhibiting the need to incorporate effective risk management strategies. The
research will present meaningful information regarding risk management strategies that can be taken into consideration for better management of construction projects. Further, the study presents an elaborated account of the importance of risk management in the construction sector that can serve as valuable sources of information for academicians seeking to conduct an investigation on a similar subject area.

This research has exhibited the specific and relevant information about the prevailing issues in Ireland construction industry and strategies of risk management adopted for addressing the risks involved in the construction projects. This research has explored several authentic studies for incorporating the crucial information about the challenges and risks facing by Irish construction industry and it also includes key recommendations for the Irish construction organisations, in which different risk management strategies are suggested to the organisation for overcoming the prevailing challenges and risks.

A layout of the Research

The complete research is divided into different chapters for progressing with the research problem and answering the research questions in an organised way. The layout for the undertaken study is illustrated below:

Chapter 1: Introduction

This chapter consists of an overview and background context of the Irish construction industry along with information concerning the need and importance of risk management strategies in the construction industry. The chapter includes research questions, aim, key objectives and main hypotheses formulated on the basis of the gathered information. In addition, the significance of the study, its contribution to the academic field and importance for industrial practitioners is also provided in the chapter. In addition to this, the chapter also provides details related to the organization of the research.
Chapter 2: Literature Review

The chapter helps in providing the necessary theoretical base to the research work and help in developing researchers’ understanding of the existing knowledge related to the research subject. The different literary themes are formulated on the basis of objectives and questions of the study for analysing the relevant and reliable literature including books and peer-reviewed articles for preparing a foundation for primary research. This chapter highlights the key trends and practices prevailing in the literature relating to the chosen topic by comparing and contrasting viewpoints and opinions of several scholars.

Chapter 3: Research Methods

The chapter helps in providing the necessary framework for the application of method that helps in addressing the research objectives. In this relation, the chapter encompasses research tools, research design, data collection and data analysis tools utilised for answering the research questions. The section also includes justification of the use of specific research instruments such as survey and interview. In addition to this, the chapter also provides details related to the ethical considerations that form the part of research work and help in improving the research validity and authenticity.

Chapter 4: Presentation and Analysis of Primary Data

The chapter help in transforming the collected data into structured and meaningful form and help in obtaining the research findings. In this chapter, data gathered from the survey and the interview is evaluated and presented in detail. Overall, the chapter consists of an analysis and presentation of primary data by the use of a suitable data analysis approach.

Chapter 5: Conclusion and Recommendations

This chapter summarises the findings obtained from the analysis of the gathered data. The chapter presents the key results obtained in the research in alignment with the research
objectives. Along with this, appropriate recommendations are provided regarding improvement in industrial practices and conduction of future research.

Chapter 6: Personal Reflection

This chapter mainly helps in reflecting the overall experience and learning gained from the development of overall research. This chapter helps in presenting the key challenges confronted in developing this research work and learning about key methods and approaches.
Chapter 2: Literature Review

2.1 Introduction

The study aims to explore the issues prevailing in the construction industry of Ireland with respect to risk management and investigate risk management strategies that can be employed for mitigating risk factors. A literature review is carried out in order to accomplish the research objectives, build a base for the primary research and determine key trends prevailing in the secondary source (Boote and Beile, 2005). This chapter comprises of different viewpoints and perceptions of prominent scholars concerning risk management in the construction industry for preparing a comprehensive review of the literature. The chapter compares the opinions of various authors for critical analysis of the available information.

Various themes are prepared in alignment with the aim and objectives of the study such as the significance of risk management strategies for the construction industry in which theories and concepts of risk management are discussed in detail. Further, the review proceeds to the exploration of the current scenario of Ireland construction industry with respect to issues, causes and practices to recognise the deficient areas. Furthermore, the impact of various risks is examined on the Irish construction industry and theme concerning strategies for effective risk management in the construction industry of Ireland is also included. A conceptual framework is prepared on the basis of a comprehensive review of literary sources, and a summary is provided at the end of the chapter for illuminating gap in the secondary sources and highlighting the scope of primary research.

2.2 Significance of Risk Management Strategies for the Construction Industry: Theoretical Underpinning

According to Winch (2010), risk management strategy is a coherent and sequential process of recognising, evaluating and managing risks. Quality, cost, schedule, and scope are
the key areas of consideration for the project managers as these risk factors largely affect the project outcome and success of the project. In a similar context, it is mentioned by Bromiley et al. (2015) that risk management is an ongoing process; wherein risks need to identify, controlled and eliminated in regular intervals for ensuring anticipated outcomes. However, it is not possible to completely alleviate the risk factors, but effective risk management can contribute to reducing the risks and enhancing the quality and efficacy of construction projects.

As per the perspective of Windapo and Cattell (2013); KarimiAzari et al. (2011) and Smith, Merna and Jobling (2014), in the contemporary construction industry of every country is confronting huge challenges in ensuring the growth and development and not because of increasing competition but because of the increasing number of incidents. In the construction business, accidents with the workers on-site are a major problem for every organisation to control and eliminate. The accidents are construction sites are increasing due to lack of supervision, improper planning, work pressure on workers, untrained workers, and lack of upgraded machinery. In this relation, risk management strategies play a key role in reducing the number of on-site accidents. The construction business is complex as compared to other businesses; thus, it is vital for the project managers to adopt potential risk management strategies that can be helpful in handling the upcoming risks. In the construction business, the main purpose of risk management is to properly design, monitor the operations, effective planning, and control the situations that can create risks. With the help of appropriate risk management, an organisation can be able to identify the possible hazards, can assess to the risk, and develop efficient measures for the control and manage the risks. In addition, it is important for the project managers to follow a systematic process of risk management that include identification of the hazards, assess to the consequences, development of risk control
measures, and reduce the effect, and residual risks, in order to prevent the incidents. The flow chart presented in the below figure includes the complete process of risk management in construction businesses:

**Figure 1: Risk Management Process for the Construction Businesses**


Construction project risks are divided into four categories namely, contractual and technical risks, financial risks, site condition, and external risks and managerial risks (Bromiley *et al.*, 2015). Further strategic risks, operational risk, and compliance risk also pose challenges in front of the construction industry. Financial risks or funding related challenges are identified as the root cause of project failure in the construction industry (Eriksson and Westerberg, 2011). On the contrary, it is explained that financial risks include lack of clarity concerning the allocation of responsibilities in payment, the absence of guidelines for partial payment and the shortage of funding (Eriksson and Westerberg, 2011).
Hence, it is necessary to adopt risk management strategies to reduce the chances of failure and ensure the success of the project. It is essential for the organisations to determine internal and external sources of risks for formulating and applying a robust risk management plan (Carter and Smith, 2006). Key theories related to risk management are discussed as follows:

**Decision Theory**

Decision theory is related to the logical and mathematical attributes of decisions taken under uncertain conditions. The theory stresses upon computing the consequences or implications of uncertain decisions for making optimal choices and eliminating the probability of uncertainties (Bowen, Govender and Edwards, 2014). In this relation, it is argued by Eriksson and Westerberg (2011), decision theory emphasises on the way decisions are made and explains the impact of multiple decisions, and the way uncertainties are managed via decision-making authorities. The theory advocates the consideration of initial conditions and the overall course of action for effective decision making in regard to the problem. Hence, while initiating the construction project, it is beneficial to outline uncertainties, determine consequences of the decisions, and examine the impact of multiple decisions relating to project milestone for reducing risk factors during the course of the project (Eriksson and Westerberg, 2011).

**Agency Theory**

Agency theory emphasises on resolving issues existing within the different agents due to conflicting goals and differing objectives (Whipple and Roh, 2010). It is stated that unaligned goals result in generating risks that hinder the progress or growth of the project. Agency theory is extensively utilised in risk management for dealing with issues that arise due to differences in the expectations and objectives of main agents or key stakeholders of the business (Whipple and Roh, 2010). On the other side, it is emphasised that varying interests
of shareholders as principals and executives of the company as agents create issues in project completion, thereby increasing the risk factors by Bowen, Govender and Edwards, 2014). Hence, it is necessary to align the objectives, goals, and expectations of agents and principals to eradicate risk factors that arise due to conflicting interests. In this relation, it is essential for key stakeholders within the construction companies to align their goals and interests and alleviate the risks that generate due to varying interests of shareholders, team members, project managers, suppliers, and other stakeholders (Whipple and Roh, 2010).

**Contingency Theory**

The contingency theory indicates that there is no specific approach to lead the organisation or to execute a project as the success of the project and efficiency of operations is dependent on the internal, as well as external factors (Bromiley et al., 2015). The optimal decision making is dependent on the ability to assess the external situations and internal factors influencing the task (Bromiley et al., 2015). In a similar aspect, it is suggested that construction project managers and leaders can also adopt suitable leadership and managerial practices for responding to the immediate situation for reducing the adverse outcomes of poor decision making and decrease operational risks (Smith, Merna and Jobling, 2014).

It has been analysed from the critical discussion of decision theory, contingency theory, and agency theory of risk management that effective decision making, aligning goals and interests of agents, considering the needs and concerns of stakeholders and evaluating internal and external conditions contribute in enhancing the probability of success of the project via reduction of risk factors.

**2.3 Current Scenario of Ireland Construction Industry: Issues, Causes, and Practices**

It is reported in the annual review of Aecom Ireland that the construction industry will witness the growth by 14% in the year 2018 (RTE, 2018). However, this figure cannot be
regarded as impressive considering huge demand for the commercial and residential construction in the market. The industry witnessed a sharp decline in 2012, but it has seen consistent growth since then, but the productivity and overall is still below the benchmark and norm established in the construction sector (RTE, 2018). On the other hand, it is observed that the construction industry of Ireland is encountering a solvency crisis. It is mentioned that approximately 42 Irish construction firms gone in the state of liquidation at the beginning of the year (O'Connor, 2018). It is described that the construction industry is facing challenges due to the lack of flexibility in government contracts, thereby enhancing the risk of receivership and liquidation in the sector (O'Connor, 2018).

It is evaluated that despite an increase in the demand of construction projects in Ireland, growth prospects of the industry are hindered by the internal risk factors and challenges posed by the external market conditions such as rigid contracts, and lack of funding (Carter and Smith, 2006). In contrast, it is examined that on-site accidents, missed deadlines, and cost overrun are some other prominent challenges prevailing in the Irish construction industry (Eriksson and Westerberg, 2011; O'Connor, 2018). Hence, there is a requirement to employ effective risk management tactics for early identification, assessment, and mitigation of risks for further supporting the sustainable growth of the sector.

2.4 Impact of Various Risks and Risk Management Strategies on the Practices of the Construction Industry

Risk management is closely interlinked to the successful completion of the project as poor risk management practices directly influence the quality, cost and scheduling aspect of the construction project that results in project failure (O'Connor, 2018). Operational risks, financial risk, procurement- contractual risk and technical risks are some of the common risks that occur in the course of construction projects that lead to degrading the efficacy and
chances of success of construction project (Eriksson and Westerberg, 2011). On the other hand, it is explained that operational risk comprises of issues relating to procurement, actual engineering, and execution while technical risks arise due to use of technologies involved in the project. Moreover, financial risks are related to funding, inadequate allocation of financial resources and equity financing (Shelbourn et al., 2006). It is critically analysed that all the above-mentioned risks need to be identified, examined and addressed for ensuring that goals of the construction project can be achieved.

It is explored in the literature that the Chinese construction industry utilises risk rating procedure and questionnaire method for conducting a survey with project managers and contractors for effective risk analysis and management. It is also pointed out that majority of risks are of concern to most project participants; hence, more focus needs to be given to risk reduction instead of risk transfer (Carter and Smith, 2006). On the other side, it is found out regarding the United States (US) construction firms that contractors focus on proactive management of risks and sharing of risks with the owner (Karunasena, Rathnayake, and Senarathne, 2016). It is assessed that risk transferring does not contribute in increasing efficacy of practices of construction project firms; therefore, substantial emphasis should be given to timely risk assessment and reduction.

Lack of planning, lack of expertise, conflicting expectations of stakeholders and shortage of funding are highlighted as the prominent source of risk generation in construction project management (Koks et al., 2015; Bromiley et al., 2015). Risk management and value management are key project management tactics that support aspects of cost, time, quality and change in the construction industry (Koks et al., 2015). In contrast, the importance of stakeholders’ responsibilities is emphasised in the literature by highlighting that clients, designers, government and project team members required to work in collaboration for
dealing with potential risk and manage the risk factors on an appropriate time. Proper integration of all the stakeholders, open communication and timely management of risk factors contribute toward carrying out the project activities in a safe and efficient manner (Karunasena, Rathnayake, and Senarathne, 2016). It is examined from the review of several secondary sources that risk management plays an integral role in eradicating risk factors from the construction projects, wherein individual responsibility of stakeholders and collaboration and open communication between project team members are of prime importance.

Systematic management of project risk has a crucial impact on the success of projects as strong relationship is observed between the degree of risk management efforts and the chance of project success (Bromiley et al., 2015). However, risk management also involves various variables such as cost management, scheduling, procurement management, quality management, scope, management integration, information management and human resource management (Cagliano, Grimaldi and Rafele, 2015). It has been evaluated that adequate balance of information management, human resources, quality aspects, cost and time management facilitate in the completion of construction projects with utmost efficacy.

With regard to the assessment of the impact of various risk management strategies on the construction industry, it has been revealed from the study of KarimiAzari et al. (2011) that there are various risks that a construction project face. One of the risks is a delay in the completion of the project, which results in an increase of overall cost that is estimated during the planning phase. For this risk, time management and proper scheduling method is adopted as a risk management strategy. This has shown that with the help of an appropriate risk management strategy adopted in the construction industry, risks can be avoided or mitigated to a great extent. Thus, it can be stated that with the help of risk management strategies in the construction industry, benefits can be gained, such as completion of the project within the
deadline and the budget estimated. Further, when the overall project is a success through risk management strategies, companies operating in the industry are enabled to fulfil the requirements and expectations of the stakeholders in a proper way.

In a similar manner, it has been stated by Taroun (2014) that risk management strategies are an essential part in the construction industry as while undertaking a construction project, there are varied resources that are utilised, in order to accomplish the project within the allocated resources. Through the incorporation of risk management strategies, an organisation can protect its resources by ensuring optimal utilisation of the resources and also that the resources are not used overly. Further, the study has revealed that other than protecting the resources with the implementation of risk management strategies, an organisation can be aware of risks prior to avoid them and take essential steps to protect the project and accomplish it.

From the study of Pinto, Nunes and Ribeiro (2011), contradicting views has been identified as the study have shown that adopting risk management strategies is beneficial in the construction industry; however, it can lead to certain complex situations. Due to this, it can be stated that the incorporation of risk management strategies can be disadvantageous. One of the major disadvantages is that it can create complex calculations for the managers while handling the project. For example, due to the adoption of risk management strategies the calculation of time scheduling can become complex due to the consideration of all the aspects in the future. This can impact the overall performance of the project. There can also be situations where the managers may find it difficult to implement the strategies due to their nature; thus, there must be a high understanding of the risk management strategies before implementing them. In this manner, the study has stated that while adopting the risk management strategies, situations must be analysed properly, and effective decisions must be
taken that can help in enhancing the performance of the organisation.

2.5 Strategies for Effective Risk Management in the Irish Construction Industry

The domain of risk management involved structured approaches for analysis of threats and risks posed to the projects (Cagliano, Grimaldi and Rafele, 2015). It has already been identified that the Irish construction industry is functioning under the uncertain and challenging business environment that creates the need to adopt better risk management strategies to support sustainable growth and development of the industry. It is recognised that Irish construction industry is facing challenges related to rigid government contracts, lack of support from the authorities and scarcity of funds which are influencing quality and success of the construction projects in an adverse manner (Koks et al., 2015). In addition to this, internal factors such as poor planning and execution, stakeholder issues and conflicts are pointed out to be some of the major factors affecting the quality and timely completion of the projects. However, Ireland construction industry has experienced substantial growth after 2012, but there is the need for significant improvement in construction project management practices employed in the industry considering the issue of liquidation and poor funding (O'Connor, 2018; RTE, 2018).

In addition to this, Bal et al., (2013) explored that risk management strategies need to provide a synchronised and cost effective way that can help in promoting the sustainable use of construction materials and help in avoiding the uncertainties associated with the construction accidents, causing legal issues, and failures of the project. In addition, the study also accentuates that the in the construction project activities, risk can occur at any of the project stages and the risk management strategies forms significant importance for the successful completion of the construction projects. In order to efficiently manage the risk associated with financial losses in the construction projects, proper management is required
that possess both theoretical and practical meaning in the construction realm. In a similar context, Rafindadi et al., (2014) mentioned that risk associated with complex construction activities have a significant impact on construction work progress and may lead to loss of human lives. In such condition, it is essential to employ project manager at construction sites who posse’s significant corporate experience and the necessary engineering judgement to effectively resolve the issues by devising risk mitigation strategies.

Furthermore, Banihashemi et al., (2017) also discussed that in order to minimise the impact of risk involved in the construction projects, it is important for construction project managers to draw lessons from the past risk management and failures and then propose appropriate mitigation measures at the construction sites. According to Carvalho and Rabechini Jr (2017) strategically implementing sustainability in the construction projects help in overcoming the project risks that cause significant project delays. Highlighting the importance of eliminating wastes in the construction project, the study noted that eliminating construction waste through adopting lean project management practices help in generating resources and energy that can be efficiently utilised in the context that help in improving the successful completion of projects by meeting the social, as well as, environmental benefits.

As per Taroun (2014), occupational risks, financial risks, contractual risks, project risks, stakeholder risks, environmental risks and competition risks prevail in the construction industry in which financial risks include low sales growth, increase in the rate of interest, economic issues and increased supply prices. In this relation, various risk management strategies can be employed by the construction industry to attain better outcomes and promote sustainability of the industry such as early identification, risk treatment, risk awareness, risk reduction and development of new business strategies. Early identification of risks enables the construction industry to remain vigilant and form effective decision during
crisis situations.

Use of risk rating method helps in categorising potential risks on the basis of their likelihood of occurrence that help project managers to employ appropriate measures for risk management. In this series, risk awareness enables the construction industry to remain aware of cost and schedule risks that contribute to the effective management of resources and comply with the set schedule (Issa, 2013). On the contrary, harvesting knowledge, taking advantage of new opportunities, forming new business strategies, contingency policies and protecting resources are key beneficial strategies that enhance the growth of the construction companies and improve the success rate of construction projects (Issa, 2013; Goh, and Abdul-Rahman, 2013).

Risk management plans and policies enabled the Irish construction industry to protect their resources amid unplanned expenses and unidentified financial risks (Bing et al., 2005). Moreover, the use of risk management techniques eradicates unanticipated expenditure through addressing schedule and the budgetary risk that ensure stability and earnings for the Irish construction industry. Construction companies can prevent contractual penalties via estimating the timeline for the construction and optimal utilisation of resources that lead to stabilisation in earnings. Proper implementation of risk management approaches not only support smooth conduction of the projects but also save time, cost and resources incurred in the process, thereby increasing profit generation for the construction businesses (Goh, and Abdul-Rahman, 2013). However, there is a requirement for immense improvement regarding managing funding challenges, environmental risks and on-site injuries in the Irish construction industry as investigated in the literature (Goh, and Abdul-Rahman, 2013).

It is highlighted from the critical assessment of the secondary sources that qualitative analysis and quantitative analysis are exceedingly used for risk assessment in construction

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projects in which qualitative analysis methods are ranking, direct judgement, descriptive analysis and comparing options. Further, quantitative analysis encompasses probability analysis, sensitivity analysis, scenario analysis, and simulation analysis (Kikwasi, 2012). Overall, the use of proper risk assessment tactic eliminates the possibility of risk occurrence during project execution.

From the study conducted by Hoyt and Liebenberg (2011), it has been analysed that the construction industry and its projects are prone to high risk, which make the project managers to focus on these risks so that their organisation can enhance its performance. With respect to the type of risk, analysed, the pertinent strategy must be adopted to reduce the impact of the risk or to mitigate the risk completely. One of the strategies that must be focused upon by the construction project managers is to reduce the risk in the overall construction project so as to gain high performance and satisfy the stakeholders. This benefits the organisation by gaining an advantage in the competitive environment.

It is analysed from a critical assessment of pertinent literary sources that risk management strategies need to be incorporated in alignment with the risk factors ranging from delays, quality concerns, contractual issues, poor estimation, poor scoping, ambiguous objectives, incomplete information, and insufficient time.
2.6 Conceptual Framework

A conceptual framework is prepared based on the main themes of the literature and key elements derived from the elaborated review of the relevant secondary sources. It is highlighted in the framework that adoption of concepts and theories of risk management such

Figure 2: Conceptual Framework

(Source: Issa, 2013; Goh, and Abdul-Rahman, 2013; Carter and Smith, 2006; Eriksson and Westerberg; 2011)
as decision theory, contingency theory, and agency theory can contribute to adequate management of risk factors prevailing in the Irish construction industry. The framework also highlights the component of the impact of risk management strategies and types of risk in the construction industry. The framework denotes the primary constituents of risk management strategies in the Irish construction industry.

2.7 Summary and Literature Gap

It is summarised and deduced from the exploration and investigation of multiple secondary sources that risks and uncertainties are inherent in construction projects that directly the main four parameters of project success namely, cost, quality, scope, and schedule. Various types of risks are faced by the construction industry such as operational, technical, contractual, financial, and environmental risks. Apart from this, poor stakeholder management, conflicting interests, lack of planning and inadequate information management are other prominent sources of risk generation.

It is concluded from the examination of current scenario of the Irish construction industry that shortage of funds, strict provisions of government contracts, lack of flexibility in operations, lack of support from the government and incidents of on-site injuries hindered the progress of the construction industry along with creating challenges for sustainable development. However, early risk identification, risk assessment, and risk awareness approaches are adopted by the sector, but there is a requirement to introduce and implement effective measures for driving the success of the construction industry. Scarce data is available in the literature regarding Ireland construction industry, risk factors and its current practices concerning risk management. Hence, there is a vast scope for primary research to gain an accurate perspective of risk management strategies in the Irish construction industry. Primary research will be helpful in producing novel information and extract data regarding
the exact situation of the Irish construction industry in the adoption of risk management tactics.
Chapter 3: Research Design

3.1 Introduction

The principal purpose of this chapter is to provide a rationale behind the use of specific research tools and describe different research methods available to the researcher for pursuing the research problem, addressing research questions, testing the hypotheses, and meeting research objectives. The researcher requires choosing appropriate data collection tools, research philosophy and approaching so that reliable, accurate and valid answers can be obtained about the current scenario, challenges and risk management strategies employed within the Irish construction industry. Each research project has unique benefits and pertinent aim, so it is essential to choose the most suitable method that contributes in extracting the most suitable results (Sekaran and Bougie, 2016; Creswell, and Creswell, 2017). In this relation, the chapter covers the theoretical perspective that includes the elaboration of epistemology and philosophical stance followed for performing the work. In addition, the chapter consists of various sub-sections such as research design, research approach, sampling technique, data collection tools and analysis procedure and research ethics. Moreover, the scope of the current research and its limitations are also described and examined in the end with the summary of key points.

3.2 Theoretical perspective

In this research, epistemology theoretical perspective is incorporated, and pragmatism research paradigm is utilised for meeting research aim and answering research questions (Creswell, and Creswell, 2017). Ontology and epistemology are two main theoretical perspectives of viewing the research philosophy, wherein ontology relates to the real or true nature of the reality while epistemology concerns itself with several methods of acquiring the knowledge and understanding the nature of information or knowledge along
with exploring sources of knowledge (Sekaran and Bougie, 2016).

Through epistemology, the researcher classifies what constitutes and what does not constitute pertinent information and knowledge. Epistemology comprises of several contrasting philosophies such as positivism, interpretivism and pragmatism. This philosophical approach considers the researcher's viewpoint and opinion regarding acceptable knowledge and credible sources that constitute the information (Morgan, 2014). Positivism and interpretivism are two contradictory philosophies in which positivism philosophy asserts that only observable phenomenon should be considered for collecting reliable information and facts. Positivism philosophy emphasises on the law like generalisations, the objectivity of information and causality (Mackenzie and Knipe, 2006). On the contrary, the interpretivism philosophy under epistemology relies on the social phenomenon and subjective meanings concerning the research problem (Creswell, and Creswell, 2017).

The interpretivism philosophy gives attention to details and reality behind certain situations, perspectives of different individuals and motivating actions behind the situation. Overall, positivism and interpretivism philosophy can be differentiated on the basis of objectivity and subjectivity respectively (Morgan, 2014). Moreover, the undertaken work seeks to extract facts and figures about risk management challenges and practice in the Irish construction industry so that exact scenario can be portrayed from the information (Mackenzie and Knipe, 2006). Apart from this, the research questions and objectives require deep investigation about factors influencing risk management strategies and their effectiveness within the Irish construction sector. Hence, there is a requirement to focus on both the objective, as well as the subjective aspect of the study to produce adequate results in alignment with the research problem (Sekaran and Bougie, 2016). The pragmatism philosophy under epistemology facilitates the researcher to focus on either subjective
meanings or observable phenomenon or integrate both the facets for gathering acceptable knowledge in the light of research questions (Bryman and Bell, 2015).

3.2.1 Selection of Pragmatism Philosophy

The main reason for adopting pragmatism philosophy for analysing the current situation of Irish Construction Sector, challenges and relevant strategies is that the philosophy suggests the researcher with a unique approach, where it is not important to follow a single approach to conduct the study, rather different approaches can be applied so as to get to the multiple realities that may exist. For addressing the research questions of this study, two philosophies are relevant that are different in nature and provides the researcher with access to different knowledge. The main benefit of adopting pragmatism philosophy in this study is that it provides the researcher with access to the application of a combination of different methods of data collection and data interpretation. In this manner, it can be stated that the pragmatism philosophy is applied within this study as it enables the researcher in integrating varied perspectives for proper data interpretation (Bryman and Bell, 2015).

For analysing the current trend of Irish Construction Sector and the challenges that the sector face, different methods are used in this study for answering the main questions developed, which is possible due to the adoption of pragmatism philosophy. Lastly, another reason for choosing pragmatism philosophy in this study is that it has helped in overcoming the lacking areas of each method adopted in this study for collection and interpretation. Overall, it can be inferred that the selected philosophy is suitable for the accumulation of objective and elaborated information, and it helps in producing well-rounded results.

3.3 Research Methodology

Qualitative methods, mixed methods, and quantitative methods are three broad categories of research method in which qualitative methods are centred on subjective
assessment of the research problem while quantitative methods are based on logical analysis. The mixed method approach supports the integration of qualitative tools and quantitative tools in the study (Bryman, 2015). Overall, the current study includes both qualitative and quantitative tools as justified under the research philosophy and theoretical perspective section.

In the current study, the justification of using mixed methods based on the subjective assessment is that through mixed methods adopted; a researcher can analyse the information in breadth and depth, where each entity of the research focused is considered to gain the results. In addition to this, to analyse the current scenario of Irish Construction Sector, challenges faced, and the strategies adopted, mixed methods can be applied to gain appropriate information. It can be stated that in this study, through the collaboration of qualitative and quantitative methods of research, weaknesses can be offset by the researcher, regarding each method of research. With the incorporation of mixed methods in this research, the most advantageous aspect is that the researcher has been enabled to choose various methods under qualitative and quantitative research (Brannen, 2017). Thus, it can be referred that with the adoption of mixed methodology in this study, various advantages have been gained.

### 3.3.1 Research Approach

In this study, the deductive approach has been applied as it helps the researcher to derive specific information in the field of study and move from general dimensions of the research problem to the particular dimensions of Irish construction industry and the adoption of risk management strategies within the sector (Brannen, 2017; Flick, 2015). The deductive approach is appropriate for this research study as it emphasises on the accumulation of knowledge. There are two research approaches available to the researcher namely, the
deductive and the inductive approach in which the inductive approach advocates the formulation of new concepts and theories concerning the research topic and produce generalised data (Bryman and Bell, 2015). On the other side, the deductive approach enables in framing logical hypotheses based on exploration and review of the existing literature along with collecting relevant information to verify the suitability and applicability of pre-determined theories (Bryman, 2015). Hence, the use of the deductive approach is appropriate for framing and testing of hypothesis in relation to the Irish construction industry. The selected research approach also contributes in producing specific results in relation to the Irish construction sector which further facilitates in answering research questions and determining the interrelationship between main research variables (Brannen, 2017; Flick, 2015). The link between under-funded project, lack of experience of workers, lack of planning and the theft in project funds with project risks can be easily determined with the use of the deductive approach.

The selection of deductive approach is justifiable in this study as, with the use of deductive approach, a link has been established in the study, to check whether the results gained are based on general circumstances or not. Further, in the present study, certain hypotheses have been established, based on the study propositions. Through the incorporation of the deductive approach in this study, conclusions are easily derived based on the study propositions (Bernard and Bernard, 2012). With respect to the identification of the current scenario, challenges, and strategies in the Irish Construction Sector, the deductive approach has helped in this study to test the hypotheses based on the observations made through data collection.
3.4 Research methods

Data Collection Tools and Techniques

Data collection is the most crucial stage of the research process as without incorporation of appropriate data collection techniques; it is not possible to produce relevant data and fulfil core objectives of the study. The selection of data collection tactics is government via the choice of research methods and the source of information. It is mentioned in the previous section that the study utilises quantitative research methods in combination with qualitative research methods; thus, data collection tools are employed in alignment with research methods. There are two sources of collecting qualitative information and numerical information namely, primary sources, and secondary sources (Brannen, 2017; Flick, 2015). Primary data reflects information that is extracted for the first time to address the distinct objectives and specific research questions of the study under consideration (Mackenzie and Knipe, 2006). In contrast, secondary data depicts information which is retrieved from the published academic sources and prominent scholarly articles and relevant literature. In this study, both primary and secondary has been procured through suitable research methods and data collection techniques (Bryman, 2015).

In order to justify the selection of both primary and secondary methods for the purpose of collecting relevant information, it can be stated that primary is an advantageous method because it benefits the researcher by gaining the information of the real world. With respect to the Irish Construction Sector, the researcher has gathered real-time information through the participants in this study, which has led towards the authenticity of the results. This is because; primary information is up to date, as well as gathered through the real experiences. On the other hand, a secondary method is chosen because, it is important to compare the primary findings through the literary findings in the study, to state the reliability.
There are various types of data collection techniques present under the primary method and secondary for the collection of information. Some of the common techniques under the primary method include survey, interview, experimentation, and observation method. These some common techniques can be applied as per the subjective assessment was undertaken in the study. On the contrary, under secondary methods, some common techniques are systematic review and case study. In the current study, for primary data, survey questionnaire method is chosen, while to gather secondary information, the literature review has been conducted (McCusker and Gunaydin, 2015).

Survey questionnaire method is employed for gathering exact information about the current scenario and issues concerning the use of risk management strategies in the Irish construction sector. The survey is conducted with employees working with different construction companies in Ireland. Survey method falls under the category of quantitative methods, and interview method is extensively used for performing qualitative research studies (Nardi, 2018).

The survey is prepared as per Likert scale, and it includes close-ended questions with due consideration to the research objectives and the main aim of the study to collect valid information from the participants. In addition, interview method is also used to carry out an in-depth analysis of Irish construction industry and explore the factors adversely influencing risk management practices and implementation of risk management strategies of the sector (Nardi, 2018; Brannen, 2017). The interview is conducted with project managers engaged in different construction companies in Ireland. Moreover, secondary methods are integrated into this study with survey and interview method, and desktop research is employed for review and examination of academic sources and literature relating to the significance of risk.
management practices for the construction sector (Flick, 2015).

**Description, Justification, Advantages, and Weaknesses relating to Chosen Methods**

Survey method is chosen for data collection because it enables the researcher to cover a wide area of the sample population and accumulate quantifiable information that proves to be useful for hypothesis testing and examining the link between different research variables. One of the key benefits of the survey is coverage of many participants from the population for the data collection. However, this method provides quite precise or limited information about the research problem that further limits the applicability of outcomes (Creswell, and Creswell, 2017; Nardi, 2018). The survey provides original data and accurate information, but it does not help the researcher in conducting a detailed analysis of the subject area (Nardi, 2018). The survey is suitable for presenting a clear picture of risk management strategies and the current scenario of the Irish construction industry with respect to risk management in a limited time frame.

Interview method facilitates in collecting detailed viewpoints of the selected participants and enriches the quality of results due to the inclusion of multiple perspectives of knowledgeable respondents. However, the data generated through interview method and its quality is dependent on the knowledge and experience of respondents and quality of outcomes can be adversely influenced due to biased opinions of interviewees (Sekaran and Bougie, 2016). An interview method is a time-consuming approach. Overall, the interview is appropriate for collecting ample information from the personal experiences and real-time knowledge held via respondents. A survey is carried out by taking prior permission from the employees, and they are given the time period of fifteen days to respond to the survey (Dang and Pheng, 2015; Smith, 2015).

Focus group method, observation method, case study method are other popular
methods of data collection in academic research projects, but these methods are not considered suitable for the present study as they do not possess the ability to meet the requirements and objectives of this study (Dang and Pheng, 2015; Smith, 2015).

**Sampling Strategy and Sample Size**

Sample size signifies the number of respondents included for data collection in the research study. There are two sampling techniques for selecting the respondents from the sample population namely, probability sampling technique and non-probability sampling. The probability sampling technique upholds the authenticity and quality of results by eradicating any chances of inclusion of bias in responses (Smith, 2015). On the contrary, the non-probability sampling technique does not provide equal probability to the sample population which increases the probability of bias in results (Taylor, Bogdan and DeVault, 2015). In this research, the survey is carried out with 50 employees of various construction companies of Ireland and the participants are selected via the probability sampling strategy.

The random sampling technique is majorly utilised for choosing participants under the probability sampling strategy; thus, random sampling strategy is employed for conducting the survey and eliminating any kind of bias from the results (Denscombe, 2014). Probability sampling strategy ensures fair selection of participants to carry out the data collection process, but the use of random sampling strategy under probability sampling is a highly time-consuming process (Etikan, Musa and Alkassim, 2016). The justification for adopting random sampling strategy under probability sampling method can be given as random sampling strategy is a best suitable method for choosing a population that is of interest and also suitable according to the nature of the research work. One of the main advantages of incorporating random sampling method in a study is that it helps in eliminating bias from the study, which can be a major limitation of the research work. Thus, to select the sample of 50 participants
for the survey, the population of employees has been chosen from the different construction companies that are operating in Ireland. This is because the employees are a beneficial population that can provide an insight regarding the Irish Construction Companies and the challenges that they are facing in the current scenario. Through the application of random sampling strategy, the employees are selected without any bias based on their gender, age, caste, colour, and culture. In addition to this, a sample of 50 employees has been a selection from the overall population because this sample size is appropriate in providing a relevant and adequate amount of information about the construction sector and the challenges.

A sample size of 50 participants is adequate for conduction of survey and collection of enough pertinent information. An interview is conducted with five project managers working in the Irish construction companies, and the sample size of five participants is appropriate for executing the interview. It can be stated that the main reason behind the selection of project managers working in Irish Construction Companies for the purpose of the interview is that the project managers are enough in providing descriptive information regarding the subject of the study. The reason behind selecting only 5 managers is that, to gather adequate information 5 managers are enough as primary information is also being gathered through the employees of the Irish Organisations.

The small sample size is used in the interview method as it is a time-consuming instrument for data collection (Taylor, Bogdan and DeVault, 2015). Non-probability sampling technique and purposive sampling strategy are applied for selection of interview participants to record their experiences and opinions and collect relevant information about risk management strategies, challenges, and issues with respect to the Irish construction sector. The reason behind the selection of non-probability sampling and particularly, purposive sampling is that the participants can be selected deliberately and as per the needs of the
researcher and the subjective assessment conducted. Under this technique, the sample, which is not required as per the study can be easily rejected, and relevant information can be gathered from the deliberate samples.

**Data Analysis Technique**

The thematic analysis technique is regarded to be suitable for deriving meaningful findings via assessment of qualitative information procured from the interview method in this study. In addition, the graphical presentation technique is appropriate for examination of survey data and computation of numerical information and statistics in the present study. Data analysis technique should be selected with proper consideration to the nature of data acquired from different sources to ensure meaningful and reliable findings (Fellows, Fellows and Liu, 2015). The graphical analysis technique is integrated with quantitative studies, and thematic analysis technique is integrated with qualitative studies. The present research includes qualitative information, as well as quantitative information. Therefore, graphical analysis methods are used for representing data in the form of charts, figures, and tables which increases the understandability of results for the readers. Additionally, the thematic analysis technique facilitates in forming themes and find key trends and patterns of information relating to the risk management practices incorporated within the Irish construction sector (Etikan, Musa and Alkassim, 2016; Dumay and Cai, 2015). Validity and reliability of results are ensured by using credible secondary sources and conducting a pilot survey with 5 participants before proceeding for the complete data collection process.

Justification of ensuring the usage of a thematic analysis technique and statistical analysis technique can be stated based on the type of data gathered in the study (Dumay and Cai, 2015). Since information is gathered through the survey questionnaire method in this study; therefore, there is a need for the researcher to analyse the quantifiable information.
through statistical means. Thus, the graphical method of analysis is important, which can be conducted in the form of graphs and charts. On the other hand, the thematic analysis technique is used in this study as data is also collected with the help of interview method. This has led to the generation of descriptive information in the study, which requires a descriptive method for the purpose of analysis. Thus, the selection of both the graphical method and thematic analysis method is justifiable in the present study.

3.5 Ethics

The researcher carefully followed ethical principles and gave due consideration to ethical aspects of the study relating to the confidentiality of data, the anonymity of participants, safeguarding of identities, prior permission and autonomy to the respondents during data collection (Mertens, 2014). The research complied with the Data Protection Act, and the researcher gave adequate flexibility and freedom to the participants during the research process to avoid any undue pressure on participants. Confidentiality of responses is maintained, and the clause of safeguarding of participants' identities is properly fulfilled through appropriate data protection measures. The respondent's personal information like their names, number, and address have not been used in this research, as this information is kept anonymous that helped in enhancing the confidence (Mertens, 2014). Consent from the project managers and employees are taken before proceeding for the interview and survey and practices related to improper use of data and plagiarism are averted. Moreover, the consent form incorporates relevant and detailed information about the topic, the purpose of conducting the research, and general and authentic information about the survey and interview questions. This helps the selected respondents in providing relevant and useful information in response to the questions. The research adhered to the university guidelines and ethical norms of performing academic research and consider the sentiments of
respondents while framing the survey and interview questionnaire (Denscombe, 2014).

3.6 Scope and Limitations

The research produces comprehensive results as it utilises both survey and interview method, but the results generated in this study are subjected to the Irish construction sector that reduces its relevance in the wider setting. The research encountered severe issues of time and resources in the data collection process, and financial constraints are also encountered during the execution of the study. The research includes limitations relating to specific results and financial and resource constraints that these limitations can be eliminated using a single data collection method such as either survey or interview (Flick, 2015). Future research can be conducted on the same research topic so that other aspects of risk management strategies can be covered with respect to the other industries across the globe.

3.7 Summary

In order to conduct a comprehensive study on the Irish construction sector with respect to the challenges, issues and risk management strategies adopted by the construction companies, qualitative and quantitative methods are utilised. The deductive approach is employed, the survey is performed with 50 employees of construction companies of Ireland, and a semi-structured interview is conducted with five project managers of different Irish construction companies for answering research questions and addressing objectives of the study. Conducting a survey and interview was found profitable for this research work because it provided key information, which was authentic, real and completely subject related. The pragmatism philosophy is applied in the study, and the statistical and thematic analysis technique is incorporated for evaluating quantitative survey data and qualitative interview transcripts respectively. The selected research methods and data collection tools are appropriate for answering the research questions, generate reliable results and maintain the
originality of the work.
Chapter 4: Data Analysis, Findings, and Discussion

4.1 Introduction

The present research is aimed to identify the issues prevailing in Ireland construction industry and risk management strategies adopted for addressing the risks involved in the construction projects. In addition, the study also evaluates the current scenario of Ireland construction industry in order to determine the areas of improvement and impact of identified risks on the practices of the construction sector. For addressing the aim of this research study, both the interview and survey method has been applied for collecting the data. The survey was conducted with 50 employees of different construction organisations and interview was 5 project managers. In this relation, for selecting a method of data analysis, several studies have been explored, which helped in comprehending and gaining detailed knowledge about different methods that can be used for analysis purpose. Furthermore, it is found that there are several methods can be implemented for interpretation of data such as graphical, thematic, and statistical method. In this context, in order to conduct an appropriate analysis of the collected data, the graphical method is adopted for analysing survey data, and interview data were interpreted through the thematic method.
4.2 Data Analysis

Graphical Presentation Method

Gender

Figure 3

In the present research study, the survey was conducted with 50 employees of different construction organisation. 82% respondents include both male and 18% were females, which helped in collected unbiased research data. Selecting both male and female was helpful in collecting authentic data for research.
Role in the related construction companies

In survey process, the selected respondents hold the different designation, as from the 50 respondents, 56% of the survey respondents are operations managers, and remaining 44% of the employees were a project team leader. Conducting a survey with these employees was beneficial in collecting relevant and detailed information about the research context.
Experience level

Figure 5

Every selected employee has significant years of working experiences in the construction industry, as from 50 employees, 28% employees have 2 to 3 years of experience, and 44% employees have 4 to 5 years of working experience. In addition, the remaining 28% employees have more than 5 years of experience. This survey was helpful in having subject related information because all the employees were experienced in the construction industry and it also helps in exhibiting the credible research outcomes.
Present scenario of the construction sector there is a vital need for adoption of significant risk management practices

![Diagram of Need for adoption of significant risk management practices]

Figure 6

In survey, the question related to that is there any need for adoption of significant risk management practices in the present scenario of construction sector and in regards to this, 36% selected respondents were showed their strong agreement by stating that it is vital to adopt significant risk management practices as per the present scenario of the construction sector. In addition, 42% of the respondents were agreed with the question; whereas, 4% respondents were neutral with respect to the question. Moreover, only 10% of the respondent was disagreed with the statement and said that there is no need to adopt the significant risk management practices in the construction section. Furthermore, with respect to the same question, the remaining 8% respondents have shown their strong disagreement and said that as per the present scenario of construction section, there is no need to adopt the risk management practices. Thus, it is found from the data findings that it is important to adopt
the effective risk management practices as per the current scenario of the construction sector.

Ireland construction industry has been exposed to varied critical challenges and risks

The survey respondents were asked that is the Ireland construction industry has been exposed to varied critical challenges and risk and in response to this survey question, the majority of the respondents that are 30% have shown their strong agreement, and as per their views, the Ireland construction industry is facing varied critical challenges and risks. In addition, from the total respondents that are selected for the survey, 46% respondents were agreed with the question and exhibited that there are several critical challenges are exposed by Ireland construction industry. Moreover, 8% of the respondent was present neutral response to this question and 10% respondent was disagreed with the question and expressed that the Ireland construction industry is not facing any critical challenges and risks and the remaining 6% respondent present strong disagreement with the question. In this relation, it is depicted from the data findings that Ireland construction industry has been exposed to varied critical challenges and risks.
critical challenges and risks.

**Major critical challenges or risks that pose a critical threat for the construction companies to affect their business**

![Critical challenges or risks that pose a critical threat for the construction companies](image)

Figure 8

In the survey process, a question was asked about critical challenges or risks that pose a critical threat for the construction companies and regarding this, all the respondents have presented different views. From the total number of respondents, 28% of respondents said that financial risks are the major challenge, which is affecting the timely completion of a project. In addition, 20% of respondents also presented their views that strategic risks are also found a major challenge for the construction companies. Moreover, the other 18% of the respondents said that operational risks also play a role in creating challenges that pose a critical threat for the construction companies. Furthermore, the remaining 34% of Dublin Business School 2019
respondents exhibited their answer that resources related risk can also create critical threats for the construction companies that can adversely affect the efficiency of a company. Thus, from the overall data findings, it is evaluated that there are different critical challenges or risks that can pose a critical threat for the construction companies such as financial risks, strategic risks, operational risks, and resource-related risks. These types of risks can have a negative impact on the construction projects and affect the brand image in the industry as well as in the market.

*Internal risk factors and external risk factors both have a significant impact on the overall growth and sustainability of the Ireland Construction Industry*

![Chart showing internal and external risk factors](image)

The selected respondents asked about the impact of internal and external factors on the overall growth and sustainability of the Ireland Construction Industry. In this relation, the respondents have provided real and credible answers, as from 50 respondents, 34% respondents have shown their strong agreement with the question and said that both internal and external factors have a significant impact over the sustainability and growth of construction industry of Ireland. Moreover, the other 42% of respondents also present their
answer in the form of agreement that the growth and sustainability of the Ireland construction industry can be affected due to internal and external factors. Furthermore, 10% respondents were neutral; however, the 6% respondents were disagreed with the question and said that there is no impact of internal and external factors over the growth and sustainability of Ireland construction industry. In addition, the remaining 8% of the respondents were not agreed with the statement, as they said that there is no impact of internal and external risk factors on the overall sustainability and growth of construction industry of Ireland. Thus, it is observed from the survey data findings that on the basis of responses of majority respondents, the growth, and sustainability can be affected due to the internal and external factors. As per the response of respondents, some of the internal and external factors can limit the growth and development of the construction business.

**Major internal factors that affect the quality and timely completion of the projects**

![Pie chart showing major internal factors affecting project quality and timely completion]

**Figure 10**

The respondents were asked that what the major internal factors that affect the quality and timely completion of the projects and in this relation, 26% respondents said that poor planning and execution is a major internal factor that can influence the quality and timely completion of projects.
completion of the projects. In addition, from 50 respondents, 22% respondents stated that stakeholder issues and conflicts are also considered as a major internal factor that can have a negative impact on the construction project quality and timely completion of the projects. Moreover, 34% of respondents expressed their views that adequate project team can also adversely affect the quality and timely completion of the projects. Furthermore, the remaining 18% of respondents have also presented their views that lack of resources is also major internal factors that can affect the construction projects and timely completion of projects.

The overall findings indicate that there are several internal factors that can equally affect the construction project quality and timely completion of the projects.

**Major external factors that affect the quality and timely completion of the projects**

![Figure 11](image)

The respondents also asked about the major external factors that can also affect the quality and timely completion of the projects and in response to this question, 18% of respondents said that strict government regulations are a main external factor that can restrict the operations of construction projects and it can negatively affect the quality and timely completion of projects. In the same context, 26% of the total respondents said that lack of
support from construction authorities can also have an adverse impact in the overall quality of the projects and it can also increase the completion time of projects. Furthermore, 32% of respondents have expressed that changes in the external business condition are also found as a major external factor that influences the timely completion and quality of the construction projects. In addition, from 50 respondents, the remaining 24% of respondents said that scarcity of funds is also an external factor, which can directly affect the quality of projects. Thus, it is affirmed from the data analysis that there are large numbers of external factors that can have a negative impact on the timely completion and quality of projects such as strict government regulations, lack of support from construction authorities, changes in the external business condition, and scarcity of funds.

Ways the risk issues and challenges affect the Ireland Construction Companies and their growth

The respondents were also asked about the ways that the risk issues and challenges affect the Ireland construction companies and their growth; every respondent has provided...
responses as per their perception and experience. In this context, 24% of the selected respondents for the survey said the disrupted quality, cost, and scheduling aspect of the construction projects are the risk issues and challenges that are adversely affecting the Ireland construction companies and their growth. Moreover, 40% of the respondents said that project failure situation is also affecting the growth and practices of Ireland construction companies. In addition, another 18% of the total respondents have also exhibited their views that threat to sustainability aspects of construction companies is also a risk, which is affecting the overall growth of the Ireland construction companies. Furthermore, the remaining 18% of the interview respondents said that the risk of the financial burden is also a challenge for the Ireland construction companies that negatively affect the organisational growth and quality of the projects. In this relation, it is depicted from the data findings that there are several ways that create risk issues and challenges for Ireland companies and their growth such as disrupted quality, cost, and scheduling aspect of the construction projects, project failure situation, threat to sustainability aspects of construction companies, and risk of financial burden.

*Significant and effective risk management strategies are there for improving the practices of Ireland construction industry*
In the last survey question, the respondents were asked about the significant and effective risk management strategies that can be useful for improving the practices of Ireland construction industry. In this context, 32% of the interview respondents have expressed their views that early identification of the risks can be helpful in improving the organisational practices of Ireland companies. Moreover, other 22% of the respondents also said that the use of risk rating method is the beneficial strategy of risk management that can help the Ireland construction industry to improve their practices. In addition, 20% of the total respondents who took part in the survey stated that contingency policies can also found effective for the Ireland construction industry to eradicate the problem of increasing incidents and enhance the working practices. Furthermore, as per the opinion of the remaining 26% of the respondents, optimal utilisation of resources is a significant and effective risk management strategy for Ireland construction companies to improve their working practices. In this context, it is found from the data findings that there are varied significant and effective risk management strategies that help the Ireland construction industry such as early identification of risks, use of risk rating method, contingency policies, and optimal utilisation of resources.
Thematic Analysis

Theme 1: Role and Significance of Risk Management Strategies for Successful Completion of Construction Projects

As per the views of Respondent 1, “in the recent years, the construction organisations are facing varied challenges in completing the projects on time such as shortage of skilled staff, lack of financial resources, and an increasing number of on-site accidents. These types of issues are affecting the completion of the projects. Thus, risk management strategies are important in order to handle these types of issues. With the help of effective risk management strategies, an organisation can minimise the impact of uncertainties on the completion of projects.” In a similar context, Respondent 2 and Respondent 3 have also presented their views that “The role of risk management strategies is crucial in construction projects because it helps in identifying and evaluating the existence and chances of risk occurrence and further help in mitigating the problems. The project managers are accountable for the development of effective risk management strategies that can benefit the projects. The risk management strategies are helpful in enhancing the overall efficiency of the projects, and it can direct the operations in the right direction.” In addition to this, Respondent 4 stated that “for minimising the chance of accidents in the projects, risk management strategies are considered important because it helps in identifying the major risks associated with a project. Further, with the execution of effective strategies, the impact of risk can be minimised or completely eradicated.”

In the views of Respondent 5, “the role of risk management strategies plays a crucial role in the construction work because the number of uncertainties is increasing, which is affecting the project quality and increase the completion time of the project. By developing effective risk management strategies, the project managers can handle critical threats and
ensure the quality of projects. There are five types of Risk management strategies such as identification of risk, analyse the risk, evaluate the risk, treating the risk, and monitoring and assessment of risk. These types of strategies are helpful in reducing the overall impact of risk on the project.”

It is depicted from the data findings that risk management strategies play an imperative role in completing the construction projects successfully. The project managers are responsible for managing all the possible risks that can arise in a project; thus, it is essential to formulate effective risk management strategies that can help in determining the potential risk and minimise the impact of risks on the project. In addition, the chances of occurring risks can be eradicated before occurrence if risk management is effective.

**Theme 2: Key Risks and Challenges that are faced in the Construction Projects**

Under this theme, the interview respondents were asked different questions were asked, as, in response to the second interview question, Respondent 1 and Respondent 2 have said that “Irish construction industry is confronting varied challenges such as climate change, on-site accidents, lack of adequate resources such as manpower, financial resources, and raw material. These issues are very common in the Irish construction industry, which is affecting the overall project efficiency and due to these issues, the construction organisations also fail in delivering the project on time to the customers.” With respect to the same question, Respondent 3 said that “the Irish construction industry is affected due to the several challenges and the major issue facing by the construction organisation is related to proper availability of financial resources. Due to lack of financial resources, the construction organisations are not able to maintain the quality of the project, and it leads to degradation in the brand image in the market.”

Respondent 4 and Respondent 5 said that “shortage of skilled labour is a major
challenge facing by the construction industry, as the organisations are not able to find trained and skilled labour who can work effectively. This issue is affecting the organisational operations and degrading the organisational performance, and it is also affecting the sustainability in the market adversely. Risk of climate change can also create a challenge for the construction organisations; unpredictable rain can damage the infrastructure and can increase the costing of a project.”

Under a similar theme, the selected respondents have provided answers for interview question 4, which is related to the main construction project risks faced by the companies in Ireland construction industry. In response to this question, Respondent 1 and Respondent 2 have presented their views that “the Ireland construction industry is considered as a major contributor in the development of the economy of the country. However, the Ireland construction organisations are facing varied challenges such as strict government regulations, scarcity of funds, shortage of skilled employees, and less support from the authorities. These issues are creating problems for organisations to maintain their sustainability in the market.”

With respect to the same question, Respondent 3 said that “in Ireland, there is very less number of skilled people who can effectively work in construction organisations. The construction organisations are facing problem in finding trained and skilled people who have experience and knowledge about construction work. For completing the construction work efficiently, it is important to recruit skilled employees. Another risk is related to the lack of financial resources that slow down the process of completing the projects, and it can also affect the commitment of the organisations.”

In the same context, Respondent 4 and Respondent 5 said that “the Ireland construction industry is huge; however, varied risks are associated with it, which is affecting the growth and sustainability of the businesses. Government penalties due to the delay in delivering the
project to customers are also a risk for the construction organisations because its decrease in the profits of the organisations and it also degrades the goodwill in the market. The problem is related to the lack of expertise, planning, and funds are also creating risk for the construction organisations to deliver projects on time to the customers.”

In response to the interview question 6, Respondent 1 and 2 said that “The on-site accidents are also increasing in Ireland due to improper risk management strategies. It is found that due to these issues, the organisations can face problems in completing the construction projects on time.” In a similar context, Respondent 3 said that “On-site accidents with workers are common issues, and sometimes the issue of death of workers also arise, which slow down the working process and finally affect the completion of the project. The accidental issues are increasing due to ineffective formulation of risk management strategies, as the project managers are not focused towards implementing the strategies as per the current situation of the sites that affect the work process.”

With respect to the same question, Respondent 4 and 5 have expressed their views that “There are certain risks also associated with the construction business such as the cause of death of workers can also have an adverse impact on the overall productivity of the project, and it can cause huge financial loss. It can be said that delay in completing the projects is a major risk that increases the costing of an organisation and decreases the overall profits and it happen due to ineffective formulation of risk management strategies.”

Theme 3: Need for Risk Management Practices and Improvement in the Irish Construction Sector

Under this theme, interview question 3 and 5 have been asked from the selected respondents. In response to the question 3 the need and improvement of Irish Construction Sector, it has been stated by Respondent 1 and 2 stated that “In the current scenario the Irish
Construction Sector is facing the issue of flexibility, which is leading the organisations in the sector towards solvency. This is despite the productivity of the sector. This shows a major need for the organisations in the sector to improve their management and execution of the projects, so as to avoid liquidation and enhance their flexibility. By making changes in the management, aspect of flexibility can be implemented that can lead to the success of the companies in the Irish Construction Sector.

From overall views gathered through the respondents, it can be inferred that the Irish Construction Sector in the present time is facing various challenges, despite the effectiveness of the organisations. The organisations lack flexibility in the management and execution of the projects. In addition to this, they lack funding for appropriate construction. Thus, there is a high need for improvement in the Irish Construction Sector.

As per Respondent 3, 4, and 5, “The Irish Construction Sector, various incidents have been faced by the organisations. This includes accidents on the site, overrun of cost and also delay in the completion of the construction projects. This shows that the Irish Construction Sector lacks effectiveness. Thus, with the help of proper management and timeline development, the sector can improve. Thus, it can say that the Irish Construction Sector needs a high improvement in its management of construction projects.”

In response to the question 5, which is about the importance of risk management in executing construction work of Ireland construction industries, Respondent 1 and 2 expressed their views that “In Ireland, the number of projects and its demand is increasing in the construction sector. However, it has been observed that the factor of lack of funding is hindering the growth of the organisations in the Irish Sector. Therefore, I believe that there is a need for improvement in the Irish Construction Sector by the government and it is important for the organisations of Ireland to execute the risk management strategies in more
appropriate manner. This can be done easily by improving the funding requirements in the construction sector.”

In a similar manner, Respondent 3 and 4 stated that “In some of the cases, organisations in the Irish Construction Sector faces issue in managing the expectations of the stakeholders and also lead to delay in construction. Thus, there is a need for improvement in the sector, along with support from the government, to make the sector efficient. Government support can help in improving the policies and execution of the construction projects to a great extent, which is beneficial in improving the overall performance of the Irish Construction Sector better. Moreover, the implementation of effective risk management strategies is also crucial for the enhancement in the construction projects.”

Lastly, Respondent 5 stated that “Every construction sector requires the organisations operating to be effective by improving their planning and expertise, to fulfil the expectations of the stakeholders. This helps in gaining success and competitive advantage for a long period. In addition to this, it is also beneficial to improve the risk management strategies so that the risk can be assessed and mitigated in an effective manner. The Irish Construction Sector is effective; however, there is a need executing the risk management strategies in more effective manner, with respect to planning, execution, and risk assessment. Thus, the organisations must adopt measures to improve the sector and gain success.”

It can be inferred from the data that in the Irish Construction Sector, issues are faced by the organisations regarding accidents on site, cost overrun, and delay in projects. This has led to the result that the Irish Sector is not effective. Thus, to meet the expectations of the stakeholders and improve their effectiveness, it is important that the organisations in the sector take effective measures and execute the appropriate risk management strategies to gain success and competitive advantage.
**Theme 4: New Risk Management Strategies that can be helpful for Improvement in the Key Practices of Ireland Construction Sector**

Under this theme, the seventh interview question was asked to the interviewees, which was related to the new risk management strategies that can be helpful for improvement in the key practices of Ireland construction sector. In this relation, Respondent 1 expressed that “it is important for the construction organisations to develop different effective risk management strategies in order to overcome the risks and challenges encountered in the working practices. Training plays a significant role in the construction organisations, as the projects managers are required to provide effective training to the employees who are not skilled and untrained. This would be helpful for the organisations to enrich the efficiency of the employees and encourage them to work with complete efforts.” In relation to the same question, Respondent 2 and Respondent 3 have said that “There are different risk management strategies that can be helpful in managing the risks such as early identification of the risks, risk awareness, and reducing the impact of risks. In addition, proper monitoring of all the activities and practices of employees can also be helpful for the management to determine the major risks that can affect the completion of the project. Proper planning by the project managers is also crucial in order to minimise the possibility of project delay.”

Respondent 4 stated that “Reducing the level risk is important for the construction organisations, as the organisations can use risk assessment method, which will be helpful in categorising the potential risks after identification. With the help of a risk assessment strategy, the project managers can assess the level of particular risk and can reduce the impact of that risk. Moreover, training is equally important for employees, as it would be helpful for the employees to improve their skills and abilities that lead to the decrement in the chances of on-site accidents.” In relation to the same question, Respondent 5 presented the views that
“Monitoring is a most effective strategy of risk management, as it is important for the site supervisor and project manager to keep an eye on each activity of the workers. It can be helpful in identifying the loophole in the working practices and can solve it in the minimum time period. In addition, the supervisors can also guide and assists the workers on each step, which can be helpful for the organisations to reduce the chance of on-site accidents.”

From the overall data findings, it has been depicted that there are varied risk management strategies are available that can be utilised for eradicating the problem of increasing incidents and challenges in the Ireland construction industry. The different strategies are proper planning, identification of risk, analysing the level of risk, regular monitoring of working practices, providing training to workers, and proper guidance and assistance from supervisors and project managers. With the use of these strategies, the overall problem of increasing risks and challenges in the Ireland construction industry can be properly solved.

4.3 Discussion

It has been discussed from the interview findings that risk management strategies form increased significance in the construction sectors as the construction projects have increasingly seen a higher number of on-site accidents due to the negligence of the safety measures or the inappropriateness of the application of strategic risk management strategies. It has been discussed from the interview findings that in order to handle complex large construction projects, it becomes significant importance to construction managers to overcome the uncertainties associated with the risks and safety issues at the construction projects. The literature also supports that with the significant growth in the number of construction projects across the world higher number of employees are working in complex construction activities and employing competent risk management strategies forms crucial for
the completion of construction projects (Cagliano, Grimaldi and Rafele, 2015). It has also been discussed from the interview findings that construction project managers have the responsibility to implement risk management strategies that prove beneficial in reducing the risk factors that otherwise affect the project outcomes and success. Similarly, it has also been deduced from the interview findings that Ireland construction industry has been exposed to varied challenges and risks and the risk associated with the projects are posing critical threats for the construction companies affecting the business functioning, sustainability, and growth. The literature also supports that with respect to the agency theory risk management in the construction project is essential in context to meeting the interests of the shareholders and also fulfilling the expectations levels of the project stakeholders (Hajmohammad and Vachon, 2016).

Moreover, it has been analysed from the interview findings that eradicating risk factors in the construction projects of Ireland requires construction project managers to adopt suitable leadership and risk management practices. It has also been discussed from the findings that managing the multi-faceted risks in the construction project requires project managers to implement risk management strategies that include risk identification, risk evaluation, risk analyses, and risk mitigation. In addition, it has also been inferred from the literature findings that risk identification, risk analysing, and risk response are essential risk management strategies that are needed to be employed in almost every construction projects so that the risk problems can be allocated and managed in effective ways through five stages of project management that includes initiation, planning, execution, monitoring and controlling, and closing. However, the whole process that has been involved in risk management includes risk identification, risk analysis, and risk control (Iqbal et al., 2015). Furthermore, it has been deduced from the interview findings that the Irish construction
industry is facing challenges that include on-site accidents, climate changes, and shortage of adequate resources such as manpower, financial resources, and raw material that, in turn, is affecting the progress of the construction projects and causing project delays. In addition, the lack of financial resources existing in the Irish construction project is leading to decreased investments in implementing safety features in the construction project activities that, in turn, tends to increase the number of deaths of workers at the construction sites. In the similar context, it has also been discussed that lack of adoption of risk management practices at Irish construction sites has also attributed towards the decreased quality of construction materials been used that further cause threat to the lives of workers working in the construction projects.

In addition to this, the shortage of skilled workers in the Irish construction industry is also causing a significant threat to degradation in the construction project performance and exposing higher risks towards unpredictable workers accidents at the construction sites. The literature also supports the findings that risk analysis and evaluation is an intermediate process that forms significant concern in the risk management and mainly focuses on minimising the impact of risks that led to decrease in the performance of construction projects, and has financial, as well as, threat to human loss (Wu et al., 2015). It has also been discussed from the findings that the strict regulations and less support provided from the government is also a considerable factor that is leading to gain in risk due to limited efforts being implemented towards regularising the safety efforts in Irish construction projects. In addition to this, the discussion on the interview findings also reflects that the less skilled construction workers being employed at construction projects in Ireland are also leading to high risks as workers possess limited knowledge and experience of the complex construction projects. In addition, the literature also supports the findings that both the internal risk factors and external risk factors have a significant impact on the overall growth, profitability, and
sustainability of the construction industry (Williams, 2016).

The interview findings also helped in analysing that lack of technical expertise, lack of effective and strategic measures adopted towards ensuring appropriate project funding also led to delay in the delivery of construction projects. In addition, lack of proper communication, coordination, and collaboration to help in performing individual duties is also a negative factor associated with Ireland construction industry that is leading to delays in the construction projects. In order to overcome the risk associated with the working practices, it has been discussed from the interview findings that providing the necessary training and development activities to the employs in the construction industry facilitates improving the skills and talents of the workers. This not only helps in completing the project activities within the stated time frame but also with due care and security that minimises the risk associated within the completion of the construction project activities. Furthermore, identifying the loophole in the construction practices, the literature also supports the findings of the interviews that identification, analysis, and monitoring of risk to be formed an effective part in the overall development and implication of the construction project planning and implementing (Halou, Samin and Ahmad, 2019). In addition, the construction project managers optimal decision-making process increasingly depends on effectively managing the internal, as well as, the external factors that are influencing the proper execution of the construction project activities. Lack of rigidity towards implementing safety and security measures in the Ireland construction project contracts also lead to prominent challenges being posed towards meeting the construction project deadlines and, in turn, leading to project cost overrun with a significant reduction in the construction project quality. In addition, it has also been discussed from the interview findings that the lack of support being provided from the governmental construction project authorities towards monitoring the risk issues in the
construction projects is also identified to considerable factor that is increasing the associated risk with the projects in Ireland. Minimal management efforts being given to ensure that the construction project team members possess the required resources to complete the projects also remained a considerable internal factor that has been affecting the timely delivery of the construction projects.

**4.4 Summary**

It has been discussed from the interview findings that for Ireland to employ effective risk management strategy, construction project managers need to ensure adequate funding is provided to ensure smooth operations of the construction operations and help in improving the chances of success of the construction project. It has also been discussed from the interview findings that the risk management strategies are closely interlinked with improving the timely and proper execution of the construction projects. The discussion on the data findings also signified that risk monitoring is an important process towards effective risk management that help both construction workers and supervisors in the construction projects to identify the loopholes and manage the risk associated with the execution of the construction project activities. The data findings also helped in concluding that some of the common issues that are hindering in the practice of risk management strategies in the Ireland construction industry include scarcity of adequate funding for the proper execution of construction activities and the lack of knowledge and skills of construction workers working under complex and challenged construction environment. Furthermore, it has also been concluded from the discussion on the data findings that risks in the execution of the construction project in Ireland can be effectively overcome through categorising the risks in terms of their likelihood of occurrence that, in turn, help the construction project managers to employ appropriate measures for practising risk management strategies in the construction
project.
Chapter 5: Conclusion and Recommendations

5.1 Introduction

The research study is aimed to identify the issues prevailing in the construction industry of Ireland and the risk management strategies that are adopted by the organisations in order to address the risk associated with the construction projects. In addition, the research is also focused towards determining the current scenario of Ireland construction industry and the areas that require improvements and impact of identified risks on the practices of the construction sector. For meeting the aim of the research, key subject related objectives are developed, and further different suitable methods are adopted. Survey and interview were conducted with several respondents, as the survey was conducted with 50 employees of various construction companies and 5 project managers were interviewed. For acquiring the outcomes of the research, two different methods are applied like graphical and thematic methods for analysing the survey and interview data respectively. The conclusion of the final research results is presented below:

5.2 Conclusion

From the data findings, it is concluded that risk management strategies assumed to be very crucial for every organisation that is involved in the construction business because it assists the organisations in reducing the risk level and enriching the organisational practices. The effective risk management strategies enable the organisations to handle all the challenges associated with the project. In the present scenario, it is found that the construction industry is confronting varied risks and challenges that degrade the quality of the projects and it also creates a problem for the project managers to deliver the quality project on committed time period. The construction industry is very broad, and it is considered as a major contributor to the development of the economy of a related country. However, in general, large number of
business organisations are facing several critical challenges and risks such as lack of adequate resources such as human, raw material and financial and due to this, the quality of a project is affecting negatively and the organisations are also unable to complete the project on stipulated time period.

It is also concluded from the final findings that the number of on-site accidents are also increasing at construction industry, which is also a major challenge for the organisations because occurrence of accident with the workers at sites can slow down the working process and it resulted in the delay in delivering the final project to the customers to time. The major critical challenge or risks that are threats for the construction organisations are an operational risk, financial risk, resource-related risk, the occurrence of accidents, and strategic risks. It is deduced that the main internal factors that degrade the quality and delay the project completion are lack of resources, adequate project team, stakeholder issues and conflicts, and poor planning and execution. Similarly, there are some external factors like scarcity of funds, changes in the external business conditions, lack of support from different construction authorities, and strict government regulations. These internal and external factors are the major reason behind the degradation in the project quality and affect the construction business organisations growth in the market. In the same manner, the Ireland construction industry is also affected by different challenges, and risks like most of the organisations are facing the issue of shortage of skilled workers. In Ireland, there are very less numbers of skilled workers are available who have experience and knowledge about construction working practices. Due to this challenge, the Ireland construction organisations are unable to deliver the quality projects to the customers, and it leads to the degradation in the organisational goodwill in the market.

Proper planning is important in the construction industry; thus, the project managers
are required to consider all the possible challenges and risks before planning and implementing effective strategies, as it would be helpful in fostering the organisational productivity and performance. It is concluded that the Ireland construction organisations are currently facing challenges related to climate change, lack of effective and required of resources like skilled and appropriate manpower, raw material, and financial resources. It is observed that these types of challenges are very common in the Irish construction industry, which has a negative impact on the motivation level of the organisations, and it resulted in the degradation in the worker's efficiency. In addition, the major requirement of every construction business is the availability of an adequate amount of financial resources. The financial resources play a major role in the construction business through this the organisations can upgrade their machinery and eliminate the problem of material unavailability. However, the organisations operating under the Ireland construction industry are facing critical challenges with respect to the availability of financial resources. Due to the lack of financial resources, the business organisations are unable to maintain the quality of the projects and the delay in projection completion is another challenge occur due to unavailability of the financial resources.

It is also concluded from the overall data findings that adoption of effective risk management strategies is crucial in order to avoid the potential threats and challenges that can have an adverse effect on a project. The Irish construction organisations can adopt several effective and significant risk management strategies such as early identification of the risks, contingency policies, utilisation of risk rating method, and optimal utilisation of resources. These strategies can be helpful for the organisations in minimising the chance of happening the risks and enable the project managers to deal with potential challenges. Furthermore, it is also concluded that as the Irish construction industry lacks with skilled workers; thus, the
organisations must provide regular training to the workers about the technical knowledge, and skills required to undertake the complex construction activities. Training would be helpful for the organisations to motivate and enrich the worker’s capabilities and skills that result in an improvement in the quality of construction projects and it also enables the organisations to deliver the project to the customers as per their demand.

It is evaluated that monitoring and supervision are also vital for organisations to evaluate the activities of the workers and guide them accordingly, which motivates them to improve their efficiency towards organisational growth. The project managers must assist the workers at every level so that their capabilities and self-motivation can be enhanced. Regular monitoring is important in the construction industry because it helps in identifying the loopholes and enables the project managers to eradicate the problems before happening of any incidents.

5.3 Study Limitation

In this research, both survey and interview are applied for the accumulation of numerical and subjective data; however, some limitations have been encountered with both the methods. Collecting primary data through interview and survey was a very time-consuming process, and due to this, the research work was not completed at an expected time period. In addition, the approaching to interview respondents was also very difficult, and they have provided the information as per the interest and knowledge so the accuracy of the data provided by them cannot be ensured.

5.4 Recommendations

It has been found that the construction industry of Ireland is encountering several risks and challenges, which is affecting their overall business growth and sustainability in the market. In this relation, different appropriate and specific recommendations are presented

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below that can be helpful for the construction organisations to overcome the issues:

- In the construction business, proper monitoring is highly important in order to complete the project on a committed time period. The goodwill of construction organisations depends on their commitments and quality of the projects they deliver to the customers. Monitoring in the construction industry plays a key role in keep checking over everyone work that also helps in identifying the major issues that exist in the working style of the workers (Fang, Wu and Wu, 2015; Lozano-Vivas and Pasiouras, 2010). With the help of proper monitoring, the project managers can easily get to know that things that are working properly and other things that are not, which will enable the project managers to improve the process or to modify the working style. The regular monitoring is vital in order to control the unethical and inappropriate practices of the workers, and it can also help in reducing the number of incidents and improve the quality of the project (Aryal, Ghahramani and Becerik-Gerber, 2017).

- Guidance and assistance play an important role in the construction industry, as it is imperative for the supervisors and project managers to provide proper guidance to the workers, as it will be helpful for the workers to improve their overall working efficiency (Marzuki, Permadi and Sunaryo, 2012). It has been found that due to the lack of guidance and assistance from the supervisors and project managers can have an adverse impact on the working pattern of workers and this can result into increase in the number of on-site accidents (Fang, Wu and Wu, 2015). In this relation, the supervisors and project managers should give proper training to the workers about the way the worker should use the machinery, use of resources, different techniques, and time management. The training would be beneficial for the workers to learn about
different techniques that can enable them to work properly in a minimum time period and achieve the goals of the project. In addition, the management of the different construction organisations of Ireland is also recommended to provide safety training to their workers because accidents are very common at construction sites. The safety training would be beneficial for the worker to be safe by avoiding the situation of accidents. Moreover, the supervisors are completely accountable for saving the lives of the workers; thus, it is important for the supervisors to provide safety equipment to all the workers and must keep a check that every worker uses the safety equipment. This will be helpful in reducing the chances of injuries (Forbes and Ahmed, 2010).

Furthermore, the Ireland construction industry is the lack of skilled employees; therefore, training is also profitable for the organisations to enrich the skills and abilities of the employees. The experiences supervisors and project managers can conduct the training sessions for the employees on a regular basis that can motivate and improve the employees’ abilities and it leads to the enhancement in the overall project quality (Mohamad et al., 2015).

- Ireland construction organisations are also confronting issues related to financial resources. Due to lack of proper planning initially, the organisations are not able to control their budget and expenses. In this relation, it is recommended to every organisation to put major emphasis on the initial financial planning, as it would be helpful in controlling the budget in an effective manner (Aminbakhsh, Gunduz and Sonmez, 2013). The organisations should effectively utilise the resources and minimise the wastage because the waste in the material is a major reason behind the increase in the overall costing of a project. The project's supervisors must keep on the check that the raw material must be used effectively by the workers, as it helps in
minimising the level of wastage. Moreover, utilisation of upgraded technologies will also be useful in reducing the level of wastage of raw material and improve the quality of work (Cooke and Williams, 2013).

- It has been identified that the Irish Construction Industry is facing the issue of management of resources and monitoring, which has led to several challenges in the completion of the construction projects. Thus, it is important that the organisations operating in the Irish Sector focus on hiring a construction project manager who is skilled in the management of resources and implementation of strategies as per the situation of the organisation. This is because hiring a professional can guide the employees in the organisation and help the organisation towards the enhancement of performance in the market (Ahsan, Ho and Khan, 2013). With the help of a professional, the organisation can also gain knowledge about different strategies regarding the management of resources and risk management strategies, which are required to gain success. Thus, it is recommended for the Irish Construction Sector and the organisations are operating that they should hire a professional who is a construction project manager, in order to manage the projects efficiently (Ahsan, Ho and Khan, 2013).

5.5 Future Implications

- The utilisation of appropriate methods plays a crucial role in the development of a study. For enhancing the practicality and credibility of final outcomes of the research work, it is highly significant to adopt primary methods that can be helpful for the researchers to have access to numerical and subject-related information. It has been found in developing the present research work that most of the previously developed studies have used a secondary method for accumulating the research data. However,
only using secondary data can have an adverse impact on the final outcomes of the research because only subjective data can be acquired through the secondary method (Flick, 2015). In this relation, using both survey and interview method for collecting the data will enable future researchers to have access to the detailed data and real-time information about the context. Adopting these two methods can be beneficial for the future researchers present the authentic results of the research study and help the readers to obtain an in-depth comprehension of the subject and enhance their knowledge. In addition, the future researchers must use the data analysis method as per the nature of the collected data because it would be helpful for future researchers to effectively interpret the acquired data (Bryman, 2015).

- Maintaining the authenticity of the research is a vital aspect for every researcher. In this relation, future researchers are suggested to present only original and subject-related information about the research context. The future researchers are required to exhibit original content and avoid copy-pasting the work of other authors because it can negatively influence the validity and authenticity of the research (Flick, 2015).
Chapter 6: Personal Reflection

I have undertaken a research project on the subject of a Study of Risk Management Practices in Irish Construction Industry: Current Scenario, Challenges and Strategies for Risk Management. The accomplishment of this research project is a great achievement for me in my overall academic career. As per my career experience, the accomplishment of this research project has added great knowledge and value for me in my existing knowledge base. This research study is an entirely new opportunity for me under this course and accomplishing this research project really proved a successful element for me in my overall career journey. I have been sharing my overall experience of conducting this research project in the personal reflection in terms of my experience, learning, challenges and improvement in knowledge about research methods and skills and personal development.

This research project rendered me great learning. The accomplishment of this research project helped to have enhancement of my theoretical knowledge related to risk management practices and strategies. Though I had knowledge about the concept of risk and risk management, however at the completion of this research project, I gained new knowledge about varied kinds of risks that may occur in the businesses and the challenging situations that are faced by the businesses due to varied kinds of risks. Along with this, I also learnt about the significant risk mitigation strategies that can be applied for dealing with particular kinds of risks.

Along with theoretical learning, the research project also facilitated me with good practical knowledge. At the first level, I understood the actual scenario of risk management in the construction sector. I studied thoroughly about the construction sector related risks more specifically in relation to the Irish construction sector. The knowledge of the risks helped me to understand the severity of those risks and essentiality to deal with those risks with the
implication of the supportive risk mitigation strategies. The accomplishment of a risk mitigation strategy also facilitated me to have good knowledge about the supportive strategies that can be helpful to deal with the varied critical risks.

The research study also proved good experience for me in terms of having an improvement in my skills and personality traits. In my key skills, the accomplishment of the research project helped me to improve my time management skills. The research project was a long project that was assigned with a specific timeline for completing all the research activities. For such purpose, I prepared a well-organised research schedule that helped me to understand the importance of time management and this even helped me to improve my time managing skills. Overall, I became able to accomplish this research project in a defined timeframe that was a great achievement for me.

Along with this, my communication skills were also improved to a great extent. I had regular meetings with my immediate supervisor, and during each meeting, I had good and spontaneous communication with the supervisor. It helped me to improve my confidence level and enhanced my interactive skills to be updated and have effective two-way communication with anyone. This not only improved my communication, but I also had an improvement in my English communication skills too.

Other than this, I also had a good improvement in my data collection and presentation skills. I had no experience of the data collection and data presentation process, but the accomplishment of this research project helped me to understand the process of data collection by different methods and hence to attain significant knowledge about the importance of different data collection methods in different research contexts. The research study has also helped me to understand the measures that are supportive of data presentation and data analysis purpose. The research study has clearly affirmed that data presentation is
the most important part of the research work and with the accomplishment of this research project, I gained good knowledge of data collection and data analysis.

The research project also helped me to have good learning about ethical considerations that are vital for conducting any academic research project. I incorporated a range of ethical consideration in this research work that enhanced my knowledge of the ethical code of conducts in the research work.

The overall experience of this research study is quite good, but despite this, some challenges were also faced during the research work that was quite difficult to deal with. At the first level, it was quite difficult for me to convince the research respondents to take part in the data collection process due to time constraints and their occupancy. The research study also was problematic in terms of finding out the specific information related to the Irish construction sector and hence searching information in a specific context to Irish construction was really a problematic task for me.

Overall, the experience gained in this research project was really a nice experience for me in terms of gaining theoretical knowledge and enhancing my practical knowledge about the research context and research method implications. The overall knowledge and experience gained with this research project will prove helpful for me in my academic journey as well as meeting future career aspirations. This is because I had good personality development with the accomplishment of this research project and even, I had a good knowledge base that will foster me to attain a successful career position in the near future. Overall, the research project is the most significant and supportive academic project in my throughout academic journey.
References


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Appendix

Interview Questions:

1. In your opinion, can you please explain in detail, what is the role and importance of risk management strategies in the successful completion of construction projects?

2. According to you, what are the major challenges encountered by the Irish construction industry?

3. Do you think there is a need for improvement in management and execution of construction projects in Ireland construction industry?

4. What are the main construction project risks faced by the companies in Ireland construction industry?

5. In your viewpoint, what is the importance of risk management in executing construction work of Ireland construction industries?

6. What are the negative impacts of ineffective formulation and implementation of risk management strategies on the construction projects in Ireland?

7. Kindly suggest some ways for effective implementation of risk management strategies for improving the practices of Ireland construction industry?