
Dissertation submitted in part fulfilment of the requirements for the degree of

MASTERS OF BUSINESS ADMINISTRATION PROJECT MANAGEMENT

at Dublin Business School

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MBA Project Management August 2016
Declaration

I, Amanda Queli Correa, declare that this research is my original work and that it has never been presented to any institution or university for the award of Degree or Diploma. In addition, I have referenced correctly all literature and sources used in this work and this work is fully compliant with the Dublin Business School’s academic honesty policy.

Signed: Amanda Queli Correa

Date: 22nd August 2016
Acknowledgments

I am gratefully thankful to several people that gave me support and helped me during this year when I could accomplish my study. I would like to thank my supervisor Paul Taaffe, for his support during the dissertation and for his insightful and passionate Project Management lectures.

I am thankful to the support given by DBS, providing good structure for learning. I would like to thank especially the library staff, which was always prompt to give assistance with the researches. I would like to thank my classmates for sharing their knowledge, experiences and learning.

I would like to thank also the professionals who participated on the survey, especially to Mr. Arthur O’Brien, who dedicated part of his busy schedule to an informal meeting, when I learnt from his experience and could find points of improvement for my research.

I am thankful to my closest friends, who were patient and helpful when I needed. I would like to especially thank my beloved Pierre-Yves Roger, for his support, encouragement, love and comprehension.

Above all, I am immensely grateful for my family. Going through the process without them nearby was hard, but knowing that they always supported me kept me motivated. Thank you for the immense and unending love.
Abstract

Architecture Practices in the AEC sector face challenges when managing Building Design processes in the firms. As a result, the relationship with stakeholders and the business performance are impacted. Considering that Architecture firms are project-oriented, seeking to improve the Design Process for which the Project Management field provides the methods, tools and techniques.

The purpose of this research is to investigate Project Success factors in Architectural building design processes from a Project Management point of view. Quantitative data analysis was carried out through a questionnaire survey sent to organisations qualified on both fields. The relevance of this research relies on the fact that Project Management is extensively applied to Construction but with a gap on the literature relating PM to Design Processes in Architecture firms (aside from the IT industry and software designing, on which extensive literature can be found). The research approaches Project Success factors from a Project Management point of view in order to analyze project outcomes related to the PM methods preferred by the firms.

Keywords: Project Management, Project Success Factors, Building Design Process, Architectural Practices
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1. INTRODUCTION

Architectural Design Practices are project oriented organizations providing Building Design service amongst other activities. However, the common issues in Architecture firms are related to the project process management, impacting stakeholders’ relationships and the business performance. For that reason, the effective management of the Design process is crucial to achieve project success. The Project Management field provides tools and techniques to improve design process and consequently achieve project outcomes successfully.

In order to meet clients’ criteria and avoid issues related to delays resulting from design changes or inadequate management of the process, the ability to harmonize the assignments of building design with Project Management is a significant differential in Architectural practices to perform effectively (Otter and Emmitt, 2009). If the procedures for the development of a project designed are faulty, the results are drifts from? the purpose of the project, losing control over the scope, schedule and budget (Gontijo, 2011). As a result, the inadequacy of parameters to manage the design stage and its processes increases its complexity for the business and stakeholders.

The purpose of this research is to investigate Project Success factors in Architectural building design projects from a Project Management point of view, considering the common management issues Architecture practices face during the process. Architecture Projects are the result from exploration of creative design solutions to a requested program, involving particular processes and stakeholders seeking specific value on the results. However, if “the value delivered by the process and the value delivered by the product over time to a multitude of users is influenced by the manner in which design intent is managed” (Emmitt, Prins and Otter, 2009, p. xxii), it is of primordial relevance of the adequate management of the building design process. With Architects being trained apart from the management culture, providing creative solutions as requested can be a challenge for the practice (Emmitt, 2014, p.10).

Managerial approaches and techniques are demanded for effective management of the project process (Hendrickson and Au, 2008). Pursuing to achieve the objectives of an architectural project, understanding technical and financial aspects from a Project
Manager’s point of view is essential to achieve practical design results (Ramqvist, 2013). For architectural firms, producing a well developed design through its adequate management is important to avoid delays on schedule, changes on design, unexpected costs, as well as minimize stress and bad reputation of the firm.

The relevance of this research relies on the fact that a well developed planning for the building design process is essential to prepare the firm to deal with issues and possible constraints, as “the life cycle of costs and benefits from initial planning through operation and disposal of a facility are relevant to decision making.” (Hendrickson and Au, 2008). These issues and common complaints from clients and employees reiterate the urge to enhance the management of building design processes and Architectural practices (Emmitt, 2014, p.10). The Project Management discipline provides the necessary knowledge to aid Architects develop the management of design activities.

Considering that, the application of Project Management on conception and design process is a relevant point of concern for Architecture practices. Awareness of procedures for the process of building design is necessary due to the crescent demand on technical refinement, restricted time and lower profitability, as well as lack of clarity on clients’ intentions, which can result in bad scoping and unreal scheduling (Gontijo, 2011). The Project Management field can provide the tools and techniques to improve business efficiency with the necessary framework to coordinate the processes of design building.

1.1 Background of the topic

The business environment is in constant transformation resulting in several projects not attaining the planned aims effectively. In order to reverse the issue, many practices lead improvements based on information technologies or establish new planning policies (Besteiro, Pinto and Novaski, 2015).

The Project Management (PM) field offers the tools and techniques to improve satisfactorily the outcomes of building design processes (Hendrickson and Au, 2008). Extensively applied in the construction industry, PM can be used also for the management of the design
process, considering that there is a scope, schedule, budget, resources and management of activities to be coordinated within the firm. Project Management is “the application of knowledge, skills, tools and techniques to project activities to meet requirements” (PMI, 2013, p.3). As “Architectural Practices are project-driven organisations” (Emmitt, 2014, p.32), PM can provide the methods and processes needed to sort those issues

Project Management (PM) in Architecture practices is broadly related to the construction phase of the project designed, considering the complex building processes involved until its final product is built and ready to be delivered to the client. The construction literature provides numerous frameworks to guide Architecture firms with tools and systems to perform the several tasks related to the profession, improving knowledge towards better practices (Alharbi, Emmitt and Demian, 2015a). However, as these studies focus on the construction sector, a small number of reports focus on Architects (Emmitt, 2014, p.10) and not frequently literature on management of the design processes on a Project Management point of view can be found.

The matter of concern is that the impacts of the project designed are notable in all further stages, especially on the construction phase and its final result. As the low quality of buildings (alongside other factors) can be also result of Architecture projects with low quality (Gontijo, 2011), a building poorly designed require numerous adjustments, rework and redesign to suit to client and construction’s needs (Jallow et al., 2014). In addition, with the expanding complexity of the building projects, uncertain budgets and continuous technologies developments in the construction industry, the project team has to deal with constant project changes (Chan, Scott and Chan, 2004). Architectural Practices elaborating adequate management of the design processes hold advantage on the market, hence become more prepared for possible constraints. The design process is crucial as it can reduce costs for next stage, add value on the final outcome and reduce or eliminate onerous alterations (de Souza, 2013).

Whereas the client seeks for the benefits and advantages of the building designed, “quality of work and performance are critically important to the success of a project” (Hendrickson and Au, 2008). A clear difference between quality of work and quality of service – the practice’s performance - is essential (Allinson, 1997). Architects may work producing
excellent solutions through design, although the lack of adequate management of the process can deliver service with low quality. Furthermore, the construction process is requiring an improvement on the level of cost efficiency. Although enhancing productivity at one stage is worthwhile, it may not be favourable if it postpones other deliverables or incur extra costs (Hendrickson and Au, 2008). In addition, the demanding increase on design productivity pushes Architecture firms to develop industrialization cost and integrate the project processes: planning, designing and producing. As a result, firms are leading initiatives through development and implementation of their own projects even though not having the adequate competency (Ramqvist, 2013).

1.2 Specific angle of the topic and approach

The topic of this research is Project Management in Architectural Practices: Project Success Factors in Building Design Processes. Considering the nature of the architecture business, the common problems and stakeholder’s complaints in Architecture Practices alongside the characteristics of the Project Management field, this research approaches the areas analyzing Project Management Success Factors in the Architecture field, as it regards the minimization of the issues in the practices.

To carry out the dissertation, a Question was developed to guide the research, pursue the aims and objectives. The literature review was carried out to provide a better understanding of the topic and a methodology for the research was then developed. Professionals in the area were contacted to participate in the research providing their insights on the subject and subsequently a questionnaire was produced. The results are analyzed separately then with the literature review. Conclusions were drawn up focusing on the research question and aims.

1.3 Research aim

The aim of this research is to analyze Project Success Factors resulting from the application of Project Management methods in Architecture Firms. This research focuses on the factors affecting the success of the Architectural Design Process and outcomes from a Project
Management’s point of view, consequently does not intend to scrutinize the quality of the architectural design. As mentioned before, Architecture firms are service oriented and the Design Process is part of the service. As investigated in the Chapter 2 Literature Review, criteria and definition of success is particular, regarding the industry, stakeholders and so on. This research focuses on Architecture Design Processes in AEC sector and approaches Success on the management of the process of design, but not on the design itself.

1.4 Research question
In order to explore the potentialities of the topic and the wide array of possibilities, the research question was developed to narrow down the process. According to Saunders and Lewis, “a suitable research question [...] provides a clear link to the relevant literature, and promises fresh insights into the topic chosen” (Saunders and Lewis, 2012, p.19). From that assertion:

RQ: Are Architectural Design Practices achieving Project Success through the application of Project Management methods during the building design process?

The following section outlines the objectives of the research regarding the topic and question mentioned above.

1.5 Research Objectives
In order to answer the research question, the researcher developed a systematic review of the literature and a questionnaire given to professionals in the area, analyzing the results afterwards. To accomplish that, the objectives of the research are:

- Outline the context of Architectural Practices as a business service, a brief outline of the Architectural Design Processes involved in building design projects, and the common issues related to the management of the project;
- Review the concept of a project, the Project Management discipline, and the management of projects in Architectural Practices;

- Identify definitions of Project Success distinguishing project objectives from business objectives;

- Outline Project Success factors on a Project Management point of view;

- Identify methods of Project Management in Architectural practices and project outcomes;

- Summarize findings proposing further research.

1.6 Originality, value and contribution

Researching the literature for relations between the Project Management and the Architecture practice - within the Architecture, Engineering and Construction sector (AEC), which means excluding any relation with the extensive studies about Architecture in Information Technology and related areas - the literature can be separated into two different approaches: Project Management and Construction, relating the need to organize the construction systems and processes through Project Management practices (Jallow et al., 2014) and Architecture Management, which is a topic regarding the general management of an Architecture business (Emmitt, 2014, p.32). The main point is, even with strong relations between management of design and Project Management, there is very little recent literature on the topic.

The contribution of the research is the suggested Project Management approach to improve building design process considering business performance and effectiveness, consequently Project Success. The literature results showed that PM in Architecture is strongly related to the building construction. Although highlighting the importance of adequate management of the design due its consequences, the literature lacks a PM point of view of the Architectural service. On these cases, the concern around the design process in the Literature is related to Design-and-Build practices. The Literature showed extensive use of Project Management methodologies on Design process in IT.
The relevance of this research relies on the fact that a well developed planning for the building design process is essential to prepare the firm to deal with issues and possible constraints, as “the life cycle of costs and benefits from initial planning through operation and disposal of a facility are relevant to decision making.” (Hendrickson and Au, 2008). These issues and common complaints reiterate the urge to enhance the management of building design processes and Architectural practices (Emmitt, 2014, p.10). The PM discipline possesses the necessary knowledge to aid Architects develop the management of design activities.

1.7 Suitability of the researcher and interest in the subject

The researcher has a previous Bachelor degree in Architecture and Urban Design and 5 years of experience in small / medium Architecture Practices and Construction field in Brazil. During that time, the researcher observed that a methodological approach when managing the construction processes is broadly applied but not on the Design processes. The framework provided by local bodies of Architecture regulates the profession and sets parameters for the service provided, although does not provide tools and techniques to manage the process. Several discussions over conferences attended, publications read during the academic years and the work experience at the Brazilian Institute of Architects (IAB-DF), as well as the professional experience achieved subsequently, brought up the attention of the researcher to that matter. The author observed professionals seeking to find better ways to manage the design process and found on Project Management discipline the suitability for both construction and Design processes. The researcher has finished and passed all course modules in the Dublin Business School’s MBA program in, which alongside the previous degree provides the knowledge and background required to carry out the dissertation.

1.8 Limitations of the research

The conduction of a research can be limited by many factors. The researcher opted for questionnaire survey in order to collect significant responses within the time frame available. However, due the busy schedule of any business, not all the professionals asked
to contribute answered to the survey. In addition, it should be mentioned that the researcher does not possess an Irish professional network in the Architecture area or the Project Management field. The survey was sent to Architectural practices in Ireland, considering that is where the MBA course was undertaken.

1.9 Organization of the dissertation
The research is organized into chapters as follow:

In Chapter 1, the author introduces the research problem, the context, the research question and the rationale.

In Chapter 2, previous studies on the topic are analyzed and relevant work is highlighted on the Literature Review. This section is of importance because it situates the research within a context, gives a background to the reader and increases knowledge and understanding on the topic.

Chapter 3, describes the Research Methods and Methodologies available for business studies and describes the approach taken for the purpose of this research aims and objectives. The author analyzes the options and justifies the decision for the chosen methodology. The section also describes the Data Collection methods and procedures taken on the survey.

Chapter 4, presents the results from the Data Collection of the survey questionnaire and the findings.

In Chapter 5, the analysis of the findings provides a discussion and interpretation of the results along with the revision of the Literature. The research question and objectives are also revised in terms of achievement of the aims. A critical evaluation of the work is also provided in relation to the research limitations and methods undertaken.
Finally, *Chapter 6*, summarizes the conclusions of the findings, critically integrating the theories with research findings and reviewing the Research Question. This section also blueprints recommendations and further research.

The reflection on the learning during the MBA course and the dissertation process is included in *Chapter 7*. A critical self-assessment on the researcher experience is uncovered through an informal approach.

All the bibliographic material used in this research is referenced in the *Bibliography* section. Supporting files can be found in the *Appendix* section.

## 2. LITERATURE REVIEW

The Literature gives insights on previous researches on a topic and helps to identify key discussions to approach the research question. The review of the literature is a comprehensive analysis of relevant works available on a defined topic (Saunders and Lewis, 2012, p.31). It establishes the context of a topic and the understanding of its structure presents theories, identifies relations and variables, and gives a perspective on a problem and so on (Blumberg, Cooper and Schindler, 2010, p.86). The subtopics of the litera

### 2.1. CONTEXT

#### 2.1.1 Architectural Practices

Architecture Firms provide services to clients and for that it is of primordial importance the recognition of the commercial environment in which the firm is inserted and the value of consistent and efficient management of the design process, whereas “the challenge for the business owners is not to impose restrictive managerial and administrative constraints on creative individuals” (Emmitt, 2014, p.21). Architectural Practices are distinguished from other business organizations, considering that there is an institution which regulates and supervises the profession, the firm provides services which are judged according to its experience and the practice is a creative organization, where the quality of project concept
may be the differential between one a firm and another (Winch and Schneider, 1993). In Ireland for example, the RIAI regulates the profession (RIAI.ie, 2016), the RIBA in the UK (RIBA, 2016) and so on.

The Architectural Practices are mostly based on clients seeking a building design solution, with a certain purpose and requirements, which is the foundation of the design and must be managed through life cycle accordingly in order to achieve expectations (Jallow et al., 2014). The Architect’s role is to understand the client’s needs and communicate efficiently, considering that inadequate management of the project requirements result in major problems in communication between stakeholders and rework (Austin et al., 2002). The academic literature emphasizes, and Architecture professionals recognise, that there are difficulties with managing stakeholders interest, on planning design activities and managing resources and scheduling control (Pegoraro, Saurin and Paula, 2011), leading the design process into compulsory cycles of redesign forfeiting time and budget (Austin et al., 2000).

Ramqvist (2013) relates the Project Management in Architecture firms as the activity of coordination of design proposals and collaboration to integrate it with construction. Seeking to increase the Architectural value of a project, design managers and coordinators have to deal with the design processes of a project, at the same time as Project Managers and managers seek to reduce uncertainty and risks at the beginning of the design process (Prins, 2009).

The practice has to be concerned about managing client requirements, in order to achieve the conceived initial concept and to facilitate the project completion through its life-cycle, which benefits can be perceived positively on stakeholders (Jallow et al., 2014). In addition to that, the practice has to develop the ability to turn away bad projects and improve its planning and management skills (ArchDaily, 2012). The adequate management of client requirements information is also of importance. Knowledge resources if well conducted can prevent repetition of errors, and unnecessary work, consequently improving business performance (Othman and Halim, 2015). Jallow et al. (2014) suggest an integrated framework, as usually there is no approach on managing the information through the project life cycle, no repository of requirements and are ineffectively coordinated and controlled reducing the possibilities of an archive with history and lessons learned in the
practice, which could be used for better management of the design process, quality and mitigation plans.

Although “changes to architectural projects can be seen as an ongoing process from design concept to use” (Castro, Lima and Duarte, 2015) seeking to achieve stakeholders intentions, the outcome from uncertainties and requirements is the development of more work, time, number of workers and process complexity (Pegoraro et al., 2011). As result, the lack of managerial skills and the tension on achieving great design solutions put the Architecture professional working in unhealthy, unsustainable and exploitative conditions (ArchDaily, 2012). Business uncertainties also contribute to this scenario. For Othman (2011), the risks in the construction industry are higher, considering the rapid development of materials and equipment and the increasing client expectations. With the constant changes in the industrial context, Architectural Practices need to articulate their unique competences in order to differentiate from competition and perform successfully (Winch and Schneider, 1993).

A distinction between the processes involved in a building design project in Architectural practices is necessary in order to clarify the focus of the research. Hendrickson and Au describe that “…design is a process of creating the description of a new facility, usually represented by detailed plans and specifications; construction planning is a process of identifying activities and resources required to make the design a physical reality” (Hendrickson and Au, 2008). From that premise, the dependency of the construction to the design is then justified, as the former must be accomplished in order to proceed with the latter.

2.1.2 Design process

The nature of the design work and the understanding of how the design solution is achieved are essential elements for its adequate management (Rekola, Mäkeläinen and Häkkinen, 2012). The Architectural Design Process and each stage involved are not described thoroughly in this dissertation as the researcher aimed to focus on the Project Management discipline. Therefore, the design process is then considered as the group of activities to accomplish the project outcomes.
The process of design is focused on the product resulting from the brief and the creation, seeking to align with client’s expectations (Otter and Emmitt, 2009), given that “any design is composed to solve the specific problem and to find the most appropriate solution for the given design problems” (Nikanjam and Hassanpour, 2016). Austin et al. (2000) summarise the architectural design process as an execution of tasks pursuing the development of systems, which “are closely associated with the production of drawings and specifications [...] largely completed prior to the detailed design stage” (Austin et al, 2000).

With attention to the design process as relevant to accomplish the design product, the way how the process is managed is just as significant as the design itself (Lininger, 2016, p.3). As stated by Volker & Prins, “processes have to be facilitated while results have to be controlled” (2005). In addition, Austin et al. (2000) reinforce that “the fundamental activity in the project management of design is the planning and control of work”. The Project Management approach into the design process is suitable to this premise, hence the PM practice is applied to plan the processes, facilitating them and controlling the results, therefore improving the business performance through a better management of the services provided by the Architectural practice. The analysis of the process of design and factors reducing its efficiency contributes for project success as well as the adequate monitoring (Besteiro, Pinto and Novaski, 2015).

2.1.3 Issues in Architectural Practices
The most common issues in Architectural practices outlined by Emmit (2014, p.17 - 19) regard management problems. The client’s complaints are related to delays on completing the building design project, due to poor calculation of project’s duration; high expectations of clients with architects not giving adequate advice; Architects expecting to get paid for their mistakes, occurred due to lack of quality management and design management; lack of clarity on the contracts; conflicts of interests; and mostly common, communication issues, with Architects not informing clients about increasing costs, not answering to clients contacts, etc. This brief overview on the common issues reinforces the need for improvement of the management of architectural design processes. If the firm is prepared
with adequate management of the process, adding contingency plans for scheduling and budgeting, risk analysis, and improving communication with clients, the performance would benefit from the application of PM on the design process.

2.2. PROJECT MANAGEMENT

According to the PMBOK, a “project is a temporary endeavour undertaken to create a unique product, service, or result” (PMI, 2013, p. 3). Wysocki (2013, p.4) describes project as a “sequence of unique, complex, and connected activities that have one goal or purpose and that must be completed by specific time, within budget, and according to specifications”, That definition is similar to the approach of Kerzner (2010, p. 2), who defines that a “project involves a series of activities and tasks with specific objectives and specifications, with defined time, cost and expected outcomes”.

Larson and Gray’s approach defines a project as “a complex, non routine, one-time effort limited by time, budget, resources, and performance specifications designed to meet customer needs”, adding to the previous definitions that the main objective of a project is to satisfy customer’s needs. The authors affirm that the major characteristics of a project include: a defined objective, a life span with a beginning and an end, the involvement of personnel, doing something new, and under requirements of time, cost and performance (Larson and Gray, 2014, p. 6).

The activities involved in a project are considered to be completed in some specific sequence based on technical requirements (Wysocki, 2013, p.4). These activities involve resources, planning, organising, and controlling seeking the objectives and project goals (Kerzner, 2010, p. 4).

The Project Management discipline provides the means for achieving project objectives. According to the PMBOK, Project Management “is the application of knowledge, skills, tools and techniques to project activities to meet the project requirements”, performed through 47 processes categorised in five groups: Initiating, Planning, Executing, Monitoring and Controlling, and Closing (PMI, 2013, p. 5).
These processes groups are part of the project life cycle, which consists of a series of stages that the project goes through from the beginning to its end. Each stage is broken down considering the function, partial objectives and deliverables, etc. The project life-cycle includes the start of the project with its definition, the organization and preparation through planning, the execution of the project and closing (PMI, 2013, p. 39; Kerzner, 2010, p. 9).

The management of projects involves dealing with constraints. The relationship between cost, time and scope constraints is broadly known as “Iron Triangle”, where changes in one variable result in another variable to balance the outcomes. However, Kerzner (2010, p.126) considers the three variables as a balance for quality of project, meanwhile Wysocki (2013, p.14) affirms that the quality and scope of a project are resulted by time, cost and resources available.

Considering the characteristics of a project, the processes involved for the adequate management of resources and the constraints, a set of tools and techniques is used to achieve project outcomes. With this intention, defining the Project Management approach at the initiation stage is primordial to increase the probability of project success (Rolstadås et al., 2014). The analysis of the practice of project management using competent methodology can lead architectural practices to a competitive differential (Besteiro, Pinto and Novaski, 2015).

2.2.1 PROJECT MANAGEMENT IN ARCHITECTURAL PRACTICES

Ramqvist (2013) relates the Project Management in Architecture firms as the activity of coordination of design proposals and collaboration to integrate it with construction. Seeking to increase the Architectural value of a project, design managers and coordinators have to deal with the design processes of a project, at the same time as Project Managers and managers seek to reduce uncertainty and risks at the beginning of the design process (Prins, 2009).

As mentioned above on topic 2.1.1, Architectural Practices of this dissertation, the Architecture practice is regulated by local institutions, such as RIAI in Ireland and RIBA in the
UK. Commonly, practices follow the guidelines developed by those institutions when managing the design process. However, the guidelines consist on instructions or steps to be followed, lacking a methodological approach (Author). The Project Management field would suffice the weaknesses of the guidelines considering the nature of an Architectural Project.

2.3. PROJECT MANAGEMENT SUCCESS
Considering the context of Project Management, the definition of success for Kerzner (2013) “includes getting the job done within the constraints of time, cost, and quality”. The author suggests that the usual definition of Success is an intersection area between time and cost around the quality or scope as graphed bellow, considering that not many projects are usually concluded without adjustments on scope affecting time, cost and quality. For that reason, “the application of appropriate knowledge, processes, skills, tools, and techniques” is essential for a positive impact on Project Success, as proposed by the PMBOK (PMI, 2013, p.2).

![Diagram of Project Success](image)

Figure 1 - Project Success. Source: Kerzner (2013, p.73)

For Andersen et al. (2006), the classical approach of the earlier literature viewing success as “achievement of intended outcomes in terms of specification, time and budget”, is narrow and inchoate, considering the extensive set of outcomes derived from strategic intervention
of Project Management. On the other hand, Müller and Jugdev (2012) praised later works on Project Success concluding that the contribution is still valid hence it outlines the multiplicity of definitions, measurements of success and considers strategic thinking on longer-term business objectives (Pinto, Slevin, and Prescott, cited in Müller and Jugdev, 2012).

Project Success is aimed by project managers and stakeholders and it is dependent on several components. The literature outlines two aspects: Project Success Factors and Project Success Criteria. According to Müller and Jugdev (2012), the former is related to elements that increase the likelihood of success and the latter is related to measurable elements to analyse if the project failed or succeeded.

Shenhar et al. (2001) identified a large number of variables for Project Success and arranged into three groups: independent of project characteristics, influenced by project uncertainty, and influenced by project scope. This approach is important when analysing projects individually, considering that the relevance given to Project Success rates and Project Success Criteria vary “by industry, project complexity, and the age and nationality of the project manager” (Rolstadãs et al., 2014).

According to Mir and Pinnington (2014) the nature of Project Success was developed into two constructs. The uni-dimensional construct considers meeting budget, time and quality, and the multi-dimensional construct regarding several other attributes. The latter concept suits the variables grouped by Shenhar et al. (2001) and the multitude of possible approaches according to the industry etc, as mentioned above. The author considers four success elements in the multi-dimensional construct: project efficiency, impact on the customer, direct business and organizational success, and preparing for the future.

For the purpose of this dissertation the researcher opted for the uni-dimensional Project Success construct to approach the research question. As affirmed by Müller and Jugdev (2012), “research can only approach the general features of project success and individuals need to weigh the importance of the different success dimensions in relation to the specifics of their role and their relationship to the project they are judging on.” For this reason, the uni-dimensional construct was considered the most suitable due to time constraints and resources available for the researcher, hence the dynamic market of AEC with constant
changes, the particular measurements of success varying according to the stakeholders, the multi-dimensional construct would demand a deeper and extensive analysis of several architectural firms through mixed-methods research pursuing a common understanding of project success in this specific sector.

Müller and Jugdev (2012) highlighted that in the project context stakeholders understand Success with different meanings. The authors summarised the broader approaches of Project Success in the literature into the contemporary concept as “project success is predominantly in the eyes of the beholder”. This understanding is supported by Kerzner (2013, p. 71), who considers that definition of success varies according to the stakeholder. For that reason, general features may be analysed in order to define which parameters for measuring project success or failure are taken in consideration to attend specific project needs (Author).

Rolstadås et al. (2014) also highlights the multitude of factors for project success and its variations on each project and organizations, depending on the contextual influence. The authors affirms that the project management approach chosen is crucial for success and has to be decided according to the competence of organization and project objectives.

Considering all the mentioned above, Project Success is the result of interactions between personal involved in the project and organization, their competences and teamwork as well as the adequate planning on scope, cost, and time management.

### 2.3.1 Project Success: project objectives x business objectives

According to Andersen et al. (2006) assessing and determining the success of a specific project is more adequate when done on long term after its closure. Rolstadås et al., (2014) researched the Project Management approach and its influence on the probability of success and reiterated two groups of objectives: project objectives, comprising what the organisation is supposed to deliver at the project closing; and business objectives, comprising the outcomes of the project handed over according to the organization expectations. Seeking to achieve the research aim and suitability to the topic, the project objectives group is the approach selected for the purpose of this research.
2.3.2 Project Success x Project Management Success

It is of importance to differentiate Project Success and Project Management Success. The research of Wit (1988) and Cooke-Davies (2002) (cited in Rolstadâs et al., 2014) consider Project Success as the achievement of overall objectives of the project, consequently the business objectives; meanwhile the measurement of the performance on scope, quality, time and cost achieving the project objectives regards the Project Management Success.

<table>
<thead>
<tr>
<th>PROJECT SUCCESS</th>
<th>PROJECT MANAGEMENT SUCCESS</th>
</tr>
</thead>
<tbody>
<tr>
<td>business objectives</td>
<td>project objectives</td>
</tr>
<tr>
<td>measured on the objectives of the project</td>
<td>Measured on performance, considering scope, quality, cost, and time</td>
</tr>
</tbody>
</table>

Table 1: Project Success x Project Management Success. Created by the Author.

For the purpose of this research it is important to distinguish Project Management Success and the Project Product Success in the context of the Architectural Practice. According to Andersen et al. (2006), “a project might in one sense (project management success) be regarded as a success, but in another (product success) be regarded as a failure, and even the vice versa situation might occur”. A successful design delivered by the firm, considering the fit for the purpose, is related to the product success. The approach in this research is on the adequate management of the process of design to deliver the product – Architectural Project - through a successful Project Management (Author).

2.4. PROJECT MANAGEMENT SUCCESS FACTORS

Mir and Pinnington (2014) reinforced that it is primordial to identify which factors influence the success of a project positively, considering that even with the extensive literature on Project Management Success many projects failed on meeting objectives. The authors highlight that the “subjective and objective nature of how project success is perceived and defined” is crucial for Project Management Performance.
Kerzner (2013, p. 72) considered the Project Management methodology and identified Primary and Secondary Success Factors. The primary factors group regards cost and time, aligning with the uni-dimensional construct of Project Success by Mir and Pinningston (2014), although it does not include scope and added quality and client’s acceptance. The Secondary Factors group considers several elements aligning with the multidimensional construct of Shenhar et al. (2001), although Kerzner’s (2013, p. 72) factors can be included in Shenhar et al.’s groups.

<table>
<thead>
<tr>
<th>Primary</th>
<th>Secondary</th>
</tr>
</thead>
<tbody>
<tr>
<td>Within time</td>
<td>Follow-on work from this customer</td>
</tr>
<tr>
<td>Within cost</td>
<td>Using the customer’s name as a reference on your literature</td>
</tr>
<tr>
<td>Within quality limits</td>
<td>Commercialization of a product</td>
</tr>
<tr>
<td>Accepted by the customer</td>
<td>With minimum or mutually agreed upon scope changes</td>
</tr>
<tr>
<td></td>
<td>Without disturbing the main flow of work</td>
</tr>
<tr>
<td></td>
<td>Without changing the corporate culture</td>
</tr>
<tr>
<td></td>
<td>Without violating safety requirements</td>
</tr>
<tr>
<td></td>
<td>Providing efficiency and effectiveness of operations</td>
</tr>
<tr>
<td></td>
<td>Satisfying OSHA/EPA requirements</td>
</tr>
<tr>
<td></td>
<td>Maintaining ethical conduct</td>
</tr>
<tr>
<td></td>
<td>Providing a strategic alignment</td>
</tr>
<tr>
<td></td>
<td>Maintaining a corporate reputation</td>
</tr>
<tr>
<td></td>
<td>Maintaining regulatory agency relations</td>
</tr>
</tbody>
</table>

According to Shenhar et al. (2001), the different kinds of projects are influenced by different factors, requiring a specific approach for each case to determine success or failure. For that reason Muller and Turner (2007) approached different industries, project complexity and the project manager characteristics to analyse project success criteria and project success rates.

Rolstadås et al. (2014), outlined Fortune and White’s (2006) approach, which suggests identification of three factors: support from senior management, clear and realistic objectives and strong detailed plan; and Belassi and Tukel (1996), who elaborated a framework grouping success factors according to its relation to: project, project manager and team members, organization, and external environment (cited in Rolstadås et al., 2014)
The findings of Andersen et al. (2006) showed that the capability to deliver a project in time and at cost results from project commitment, strong involvement of stakeholder in early stages, earlier stakeholder approval and effective project communication. The authors also consider that strong project commitment and effective project communication have strong influence on the project impact, meanwhile the quality of the project results from the project approach and clear purpose.

2.5 Project Management methodologies increasing project success rates
Rolstadås et al. (2014) affirm that “Project Success is dependent on the Project Management approach selected, relative to the challenges posed by the project”. The authors describe two approaches in Project Management: prescriptive, focusing on formal qualities of the project organization, and adaptive, which considers the processes of developing and improving a project organization (Rolstadås et al., 2014). Considering the affirmed above, the research questionnaire is designed to compare the Project Management approaches used by the firms with the Project Success outcomes.

2.6 Summary
The understanding of Project Success Factors varies according to who analyses the outcomes. Measurements for defining project success criteria are defined according to the industry and the sector. Issues on Architectural Design Processes can be minimised using adequate project management approaches.
3. RESEARCH METHODS

3.1 Introduction

As defined by Saunders, Lewis and Thornhill (2012, p.4) a research is way to increase knowledge adopting a logical way to investigate about a subject. The authors describe methods as the means and procedures to analyse data, meanwhile methodology regards the theory of how to undertake and attempt to the research. Considering the large amount of information that can be gathered in any subject, order to maintain the focus on the topic and collect data in the most suitable way as possible for the research, it is important to apply adequate methodology and methods.

The Research Methodology gives directions for the researcher when using the methods. The Research Onion delineates the methodology organising the research in “layers” (Saunders, Lewis and Thornhill, 2012, p. 137). The idea is to analyse each layer when developing a research, defining the most suitable approach, what philosophies and strategies underline the researcher thoughts, and the techniques employed for data collection and analysis.

Figure 3: The research Onion. Source: Saunders, Lewis and Thornhill, 2012, p. 128.
3.2 Research Philosophy

The research philosophies refer to how the research should be conducted (Blumberg, Cooper and Schindler, 2011, p.16), and is the “term that relates to the development of knowledge and the nature of that knowledge”, where the choice of which philosophy to take is influenced by practical considerations according to Saunders, Lewis and Thornhill (2013, p.127). The philosophy adopted contains assumptions that define the research strategy and data collection. These assumptions denote “the way in which you view the world around you” (Saunders and Lewis, 2012, p.104).

The Research Philosophy includes four approaches: Positivism, Realism, Pragmatism and Interpretivism as following. These approaches consider three ways of thinking, which influence the way the researcher thinks about the process, according to Saunders, Lewis and Thornhill (2012, p.130 - 132): Ontology considers the nature of reality and presumes assumptions about the way the world operates under a particular point of view; Epistemology regards the data on a natural scientist point of view; and Axiology considers the understanding of value.

With the **Positivism** approach the researcher considers observable facts, which cannot be influenced by the researcher (Blumberg, Cooper and Schindler, 2011, p.17). It is a highly structured methodology engaged to simplify replication (Saunders and Lewis, 2012, p.104).

The **Realism** it is also related to a scientific inquiry and considers that objects exist independently of our knowledge of their existence (Saunders and Lewis, 2012, p.103). For Blumberg, Cooper and Schindler (2011, p.18) the realism shares principles of positivism and interpretivism, recognizing the existence of reality separated of human beliefs.

The **Interpretivism** Philosophy supports that the researcher adopts an empathetic attitude to comprehend differences between humans in our role as social actors (Saunders, Lewis and Thornhill, 2012, p.137). Within this scenario, the researcher is part of what is *observed* and guided by interests, claiming that the social world is built and inherently given meaning by people (Blumberg, Cooper and Schindler, 2011, p.17).
The argument from the Pragmatism approach is that the main motivators of research philosophy are the research question and objectives (Saunders and Lewis, 2012, p.103). It considers a multitude of interpretations of the world and consequently there are multiple realities and different point of view (Saunders, Lewis and Thornhill, 2012, p.130).

As the research will be carried out through questionnaires sent to architectural practices, the Interpretivism philosophy is considered the most suitable by the researcher, therefore will be adopted in order to accomplish the task. As Positivism and Realism are based on objective facts, these philosophies were discarded for this research, as it focuses on individuals and social phenomena. Interpretivism is based on the non-assumption of generalizations regarding the complex social human interactions, especially focusing the business and management field (Saunders, Lewis and Thornhill, 2012, p. 137). No hypotheses for this research was needed to be developed, therefore does not suit to this approach.

3.3 Research Approach

The literature considers three approaches for the research: the deductive approach, the abductive and the inductive approach. With the Deduction approach, a research strategy is developed specifically for that the purpose to test a theoretical proposition according to Saunders and Lewis (2012, p.105). The authors affirm that a research question is developed from the revision of the already known theory and specific ways to answer the question are delineated, whereas the results may agree with the existent theory or recommend adjustments, establishing a relationship between reasons and conclusions. According to Rowley (2014), a deductive approach is more common in research when using questionnaires to gather primary data.

On the other hand, in the Induction approach, the facts are considered to develop a conclusion. It involves the development of a theory as a result of analyzing data already collected (Saunders and Lewis, 2012, p.105). Meanwhile, the Abductive reasoning considers
an unexpected fact which becomes the conclusion instead of a premise, exploring a phenomenon (Saunders, Lewis and Thornhill, 2012, p.130).

Considering the flexibility of the parameters of the research, the Deductive approach will be conducted on approaching the respondents, hence it is more related to the social sciences. There is no theory to be built upon the research topic, therefore Induction is not adequate. One of the objectives of the research is to find out if there is a practical understanding on the design process through Project Management methods, directing the research towards the primary data collection to build conclusions upon the findings.

3.4 Methodological choice
Following to the next layer, the Methodological Choices influence the choice of time horizon and outline mono, multiple or mixed methods considering coherence with the research design and what it is intended to achieve as explained on the next topic.

3.5 Research Design
The Research design underlines the way that the research question and objectives are managed in order to complete a research project, and it is determined by the Research Philosophy (Saunders, Lewis and Thornhill, 2012, p.196). Its nature can be exploratory, descriptive or explanatory, or a combination of them. On the Exploratory study the research aims to new insights, ask new questions and suggest new understandings on a topic; the Descriptive study generates detailed representations of persons, episodes or circumstances; meanwhile the Explanatory study the research analyses the situation or a problem in order to clarify connections between elements (Blumberg, Cooper and Schindler, 2011, p.110 - 113).

The Research Design defines the methods for collecting data. The mono method can be either quantitative or qualitative, the multiple methods can be used to collect either quantitative or qualitative through various techniques, meanwhile mixed method approach
both qualitative and quantitative (Saunders, Lewis and Thornhill, 2012, p.160). For the case of this research, the mono method was considered reasonably applicable, as explained in the following Research Approach.

The primary data on the research can be **Qualitative**, related to non-numerical or non-quantified data, or **Quantitative**, which consists on numerical and quantifiable information (Blumberg, Cooper and Schindler, 2011, p.85). The researcher opted for Quantitative data using a questionnaire survey.

### 3.6 Research Strategy

The Research Strategy is the definition of a plan, outlining which ways the research will be carried out to achieve the research goal. The choice for one or more strategies must consider the nature of the objectives and research question conferring coherence with the research design (Saunders, Lewis and Thornhill, 2012, p.196). For the purpose of this dissertation, the collection of Quantitative data through a Survey strategy was considered the most suitable due to its exploratory and descriptive approach, as well as the fact that it allows easy comparison of the data collected from the population. The survey is “a research strategy which involves the structured data collection of data from a sizeable population”, which can be undertake on the form of questionnaires, structured observation or structured interviews (Saunders and Lewis, 2012, p.115). The survey is useful when seeking to develop patterns (Rowley, 2014) and provides validity on an exploratory and descriptive research.

The research strategy will be carried out through closed questions sent over on a survey. The research uses quantitative methods for gathering data on the awareness of the topic between Architectural professionals and project managers in Architecture Practices. The results will be then analysed and findings will be compared with the Literature Review. The Research Question will be answered, considering the points and issues above analysed in the literature review as well as the nature of the profession. The primary data will be carried out through survey sent to Architectural practitioners in Ireland due the geographic location of the researcher.
3.7 Time Horizon

The way that the research is designed determines the time horizon. According to Saunders, Lewis and Thornhill, the research can be an observation at a particular time or a series of observations representing events on a given period of time (2012, p.190). Practical considerations determine the choice between Cross-sectional studies and Longitudinal studies. In the Cross-sectional research design the data is collected from respondents at only one time frame, meanwhile the Longitudinal design investigates a topic during an extended period of time, giving the possibility to analyze changes and developments over time (Saunders and Lewis, 2012, p.124).

For the purpose of this dissertation the researcher uses the cross-sectional study as the primary data is produced through quantitative data collected in the survey. The longitudinal design is not suitable for this research due to time constraints and the aim of this research.

3.8 Techniques and Procedures

As mentioned above, the quantitative data will be collected through a survey composed of nine questions of multiple choices or Likert ranking. The choice for the survey with closed questions was intended to try to collect as much response as possible from a wider number of professionals increasing the response rate. Rowley (2014) affirms that “closed questions are quick for respondents (which may increase response rate), and the responses to closed questions are easier to code and analyse”. The researcher selected the survey approach as it is more straightforward for what is intended to achieve in the research question.

3.9 Limitations

The concern around the use of closed questions questionnaire is that “you will never be sure whether the respondents have understood your questions or indeed, whether they have taken the time to provide accurate data” (Rowley, 2014). Also, the questionnaire with closed questions can provide unclear questions. For that, the researcher revised the questionnaire in experimental character to assure clarity of purpose.
3.9.1 Reliability and Validity

The Reliability considers whether “the data collection technique and analytic procedures would produce same consistent findings if they were repeated in another occasion” (Saunders, Lewis and Thornhill, 2012, p.192). The reliability of a research by several factors, such as participant error, participant bias, researcher error and researcher bias. Due to the characteristics of the online survey, it is not possible to guarantee participant reliability upon this extent. Indeed, professionals with expertise in the area were adequately selected and contacted. However, external factors that could affect their participation are out of the scope of the survey. In order to reduce biased opinion, the respondents participated anonymously, so then they or their practices could not be identified. On the other hand, the researcher ensured that researcher error and researcher bias would no compromise the reliability through extensive revision of the work.

The quality of a research can be confirmed with the analysis of its Validity. Saunders and Lewis (2012, p.127) define Validity as “the extent to which data collection method or methods accurately measure what they were intended to measure; and the research findings are really about what they profess to be about”. Cooke and Campbell (1979; cited in Saunders, Lewis and Thornhill, 2012, p.193) suggested that few reasons might threaten the internal validity of a research, such as past or recent events which can affect participants’ perceptions, the idea of being tested, the instruments used for data collection, ambiguity causing lack of clarity, and so on. The researcher examined those possible threats and opted for the questionnaire survey as it allows generalisation of results and replication of the study.

The respondents are likely to give biased information due the nature of the analysis being done by any researcher. The Internet also permits that third parts get involved in the survey providing unreal information by inexperienced professionals in the firm, for example, an intern may receive the task to complete the survey for the firm in order to keep other experienced professionals busy with their own tasks.
3.10 Data Collection

3.10.1 Primary Data

The primary data is considered by Saunders and Lewis (2012, p.84) as “the data collected specifically for the research project being undertaken”. For this purpose, the questionnaire was designed as closed questions in the format of a survey. This choice was influenced by the research question, the objectives and the resources available. As “questionnaires collect data by asking people to respond the same questions”, the survey strategy provides the collection of descriptive and explanatory data about opinions and patterns (Saunders, Lewis and Thornhill, 2012, p.422).

A pilot testing of the questionnaire was carried out and revised. The design was organised in three sections. The first section is designed upon descriptive data regarding information about the respondent within the firm. The second section included descriptive and ranked data about the management of the project design process. The third section on project success factors requested participants to mark the choices they considered most suitable in a Likert scale data.

Participants were requested to consider their estimation in the first two sections, and their opinion in the third section. The researcher considered the order of the questions and the sequence, in order not to influence respondents’ answers. The questionnaire design is detailed described in the Chapter 4.

3.10.2 Population and Sampling

A complete set of group members represents a population, meanwhile a sample means a subgroup on that population (Saunders and Lewis, 2012, p.132). The population group in this research regards professionals working with Project Management in Architectural practices, meanwhile the sample considered Architecture professionals and Project
Managers working in Architecture firms in Ireland, due to the location of the researcher and the MBA course undertaken.

Considering that a sample is used to represent part of the population (Rowley, 2014), a link for an online survey was sent by email to 81 Architectural Firms Listed on the RIAI website (RIAI, 2016). According to Rowley (2014), a Purposive sampling is used when the “researcher already knows something about the specific cases and deliberately selects specific ones because they are likely to produce the most valuable data” (Rowley, 2014). The researcher chooses the sample considering the professionals’ expertise in both fields – Project Management and Architecture. The professionals’ firms and contacts were collected and an invitation to participate on the dissertation research, as well as a link for the survey was sent to them through e-mail.

3.10.3 Secondary Data
The secondary data presented in the Chapter 2 regarded the Literature Review. Saunders and Lewis (2012, p.31) describe the critical review of the literature as “a detailed overview of the significant literature available about a chosen topic, providing a discussion and critical evaluation, and using clear argument to contextualise and justify the research”. Blumberg, Cooper and Schindler (2011, p.86) reinforce the main purposes of the literature: the understanding of a problem and its structure, the context where the problem is referenced in previous works and the rationalization of the significance of a problem.

The researcher approaches the rationale in the Chapter 1 and considers that the literature review provides deeper knowledge and consistent background on the topic, stage considered primordial to help refine the questionnaire.

3.10.4 Data Analysis
The results of the survey are collected and organised in tables to present a summary of the categorical data and bar charts showing the values for each category (Saunders, Lewis and Thornhill, 2012, p.170) in the Chapters 4. Then, analysis and findings are explained in the
Chapters 5. Conclusions are outlined in the Chapter 6. A computer and an online connection were required. Regarding the short time for the research and to be able to manage the information in the most suitable time, the option by online contact was chosen due to the facility and speed for both parts to communicate with each other – researcher and respondents.

All information given by the respondents were gathered and analysed in order to produce the results. The quantitative survey was collected then organised into tables and graphs in order to facilitate visualisation and comprehension of the results. The analysis of the information gathered is expected to answer the research question, when considered simultaneously with the Literature Review information.

3.11 Ethical Issues
Ethical responsibilities are involved when conducting a research. Blumberg, Cooper and Schindler (2011, p.114) define Ethics as the understanding of the appropriate behaviour when addressing considerations on how to carry a research in a moral and responsible way. The authors suggest that the respondents must be notified by the researcher about the benefits of the study and the participant’s rights and protection. To assure that the professionals contacted were aware of this, an email with the invitation for participation in the research contained the referent information. A sample of the emails sent can be found in the Appendix of this research.

3.12 Conclusion
This chapter presented the methods and methodologies that can be applied to carry out the research process. Blumberg, Cooper and Schindler (2011, p.16) outline that the research process is based on reasoning using the theory and observations through data collection. The methods chosen by the researcher to answer the research question and achieve the objectives were explained and justified. The following chapter focuses on the primary data collection through the quantitative questionnaire and the results obtained.
4. DATA ANALYSIS / FINDINGS

This section presents the findings of the survey. The analysis of these findings will be followed by discussion in the Chapter 5. As discussed in the previous chapter, the collection of data was done thought a questionnaire in form of survey sent to the participants. In total, 81 Architectural firms were identified in the Royal Institute of Architects of Ireland (RIAI.ie, 2016) as Architects and Project Managers specialists. This option eliminated those professionals who work only in the Construction sector, and focused on firms that provide Architectural Design services. The professionals were first contacted by email with an invitation letter and the link to follow to the survey (Smartsurvey.co.uk, 2016) if they agreed to participate.

4.1. Questionnaire structure and Sample Analysis

The questionnaire survey was organised in three sections:

1. Respondent and company’s information,
2. Building Design Project: life-cycle and Project Management
3. Project Success Factors on management of design process

The first section comprises information about the Architectural Firm the respondent work at. The sample was asked to inform of the location of the company, the size considering the number of employees, the most common type of projects undertaken by the firm, the average size of those and their role in the business. This section was included intended to outline the average amount of work undertake in the firms compared to the method to manage the projects. Bigger firms usually have a designated person to organise each project.
The second section focused on the Project Management approach used by the organisation. The methods found in the literature were listed in order to find the most common within the practices. In order to analyze the outcomes by applying the method mentioned in the previous section, the researcher opted for the uni-dimensional construct of Project Success to underline a limited number of project constraints using the “Iron Triangle” - Schedule, Budget and Scope in order to meet Client’s Requirements. The Quality constraint was not included in this analysis as it could be misunderstood as quality regarding the Architectural Design and its fit for the purpose, instead of quality of the Design Process aimed on this research.

Finally, in the third section, the respondents were asked to choose the three factors that they consider essential for project success between 19 options, where these options were underlined upon the review of the literature. This section was designed to provide the particular understanding of the Architects point of view of success regarding the Project Management approach.

The results of the data collection are illustrated in the following sections.

4.1.1 Section 1: Respondent and company’s information
In the first question of this session the respondents were asked the location of their organisation, in order to determine the location of the sample. Although the companies are registered on the Irish institution of Architects (RIAI.ie, 2016), more options were included considering that several firms are based in more than one location. Most of the firms are based in Dublin, corresponding to 53.33%, meanwhile 40% marked as based in Ireland but outside Dublin. Although the survey was sent to Architecture offices listed in the RIAI (RIAI.ie, 2016), 6.67% of the respondents have their firms outside Ireland.

1. Where is your Architecture Practice located?
The respondents were asked to inform the number of employees within the company in order to estimate the size of the practices participating in the survey. The majority of the firms can be considered as small practices as they employ up to 10 people, corresponding to 53.33% of the total. Small to medium sized firms correspond to 33.33%, meanwhile large architectural practices represent 13.33% of the respondents.

In order to outline the types of projects usually undertaken in their firms, the respondents estimated the projects that are designed in the firm more often. The question could be answered with multiple choice and participants were requested to mark up to two, although
some of them marked more than that. The Residential / housing projects represented the most common projects in this sample, corresponding to 80.00% of the cases. The Commercial / Retailing, offices, catering corresponded to 53.33% of the projects, meanwhile Renovation, restoration, conservation is 46.67%. The group with Institutional projects type are 33.33% of the sample, at the time as the Industrial group as marked 20.00%. Other projects included 6.67%, although the respondent described as “Pharmaceutical”, which is considered an Industrial, manufacturing, facilities type of project.

<table>
<thead>
<tr>
<th>3. In your estimation, what types of projects does the firm design more often? Please mark up to 2:</th>
<th>Response Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 Residential / housing</td>
<td>80.00%</td>
</tr>
<tr>
<td>2 Commercial / Retailing, offices, catering</td>
<td>53.33%</td>
</tr>
<tr>
<td>3 Renovation, restoration, conservation</td>
<td>46.67%</td>
</tr>
<tr>
<td>4 Industrial, manufacturing, facilities</td>
<td>20.00%</td>
</tr>
<tr>
<td>5 Institutional / Health, education, culture, religious, sports and recreation</td>
<td>33.33%</td>
</tr>
<tr>
<td>6 Other (please specify):</td>
<td>6.67%</td>
</tr>
</tbody>
</table>

**Analysis**

- Mean: 6.13
- Std. Deviation: 6.01
- Satisfaction Rate: 74.67
- Variance: 36.11
- Std. Error: 1.55

Table 4 - Survey: Types of Projects Designed

The average size of the projects was also asked on the survey as the complexity of larger projects demand a stronger project management approach. Small scale projects were considered those Up to 500 square meters, with 46.67% of the firms in this sample. Firms that mainly design projects Between 500 and 2,000 square meters were 13.33%, meanwhile 33.33% usually design projects Between 2,000 and 10,000 square meters. Respondents designing Above 10,000 square meters represent 6.67% of this sample.
4. In your estimation, what is the average size of the projects designed by the firm?

<table>
<thead>
<tr>
<th>Response</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Up to 500 square meters</td>
<td>46.67%</td>
</tr>
<tr>
<td>Between 500 and 2,000 square meters</td>
<td>13.33%</td>
</tr>
<tr>
<td>Between 2,000 and 10,000 square meters</td>
<td>33.33%</td>
</tr>
<tr>
<td>Above 10,000 square meters</td>
<td>6.67%</td>
</tr>
</tbody>
</table>

**Analysis**

<table>
<thead>
<tr>
<th>Mean:</th>
<th>2</th>
<th>Std. Deviation:</th>
<th>1.03</th>
<th>Satisfaction Rate:</th>
<th>33.33</th>
</tr>
</thead>
<tbody>
<tr>
<td>Variance:</td>
<td>1.07</td>
<td>Std. Error:</td>
<td>0.27</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Table 5 - Survey: Size of Projects in the Practice

Questions 3 and 4 were designed with the objective of understanding the complexity of Architectural Projects undertaken by the firms. Industrial projects demand more time and resources from the company due to the amount of project specifications required, for example, compliance with local regulations, project risk, therefore requiring a detailed and well-developed management of the Design process. Large projects also are demanding, meanwhile small projects and housing can be finalised commonly at ease if a clear briefing is done.

In order to understand the role of the respondents in the firms, their job roles are listed as bellow. Lead Architect / Founder correspond to 60%, Architect / Designer are 13.33% and Architectural Technician represent 6.67%. Also, 20% of the respondents marked their roles in Administrative, Office and Accounting.
5. What is your job role in the firm?

<table>
<thead>
<tr>
<th>Response</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lead Architect / Founder</td>
<td>60.00%</td>
</tr>
<tr>
<td>Architect / Designer</td>
<td>13.33%</td>
</tr>
<tr>
<td>Architectural Technician</td>
<td>6.67%</td>
</tr>
<tr>
<td>CAD / BIM Technician</td>
<td>0.00%</td>
</tr>
<tr>
<td>Intern</td>
<td>0.00%</td>
</tr>
<tr>
<td>Project Manager</td>
<td>0.00%</td>
</tr>
<tr>
<td>Administrative, Office, Accounting</td>
<td>20.00%</td>
</tr>
<tr>
<td>Other (please specify):</td>
<td>0.00%</td>
</tr>
</tbody>
</table>

**Analysis**
- Mean: 2.47
- Std. Deviation: 2.33
- Variance: 5.45
- Satisfactory Rate: 20.95
- Std. Error: 0.6

Other (please specify): (0)
- No answers found.

Table 6 - Survey: Respondent's role in the Firm

4.1.2 Section 2: Building Design Project: life-cycle and Project Management

In this section the management of the design process and the approach in the firms of the sample is outlined. One participant did not complete the research from this point. The majority of the respondents use the guidelines of their local professional institutions, representing 64.29%, meanwhile 28.57% use Methods developed ‘in house’ (by the firm). The “Other methods” option was marked by 7.14%, specifying “no formal system personal experience of issues”.

6. What Project Management Methods or guidelines does the firm apply to manage the building design processes successfully?

<table>
<thead>
<tr>
<th>Options</th>
<th>Response Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>PMBOK Guide</td>
<td>0.00%</td>
</tr>
<tr>
<td>Agile</td>
<td>0.00%</td>
</tr>
<tr>
<td>PRINCE / PRINCE 2</td>
<td>0.00%</td>
</tr>
<tr>
<td>Methods developed ‘in house’ (by the firm)</td>
<td>28.57%</td>
</tr>
<tr>
<td>Local Architects professional associations guidelines or plan of work (e.g. RIAI, RIBA, AIA, CAU, etc)</td>
<td>64.29%</td>
</tr>
<tr>
<td>Other (please specify):</td>
<td>7.14%</td>
</tr>
</tbody>
</table>

**Analysis**

- Mean: 4.79
- Std. Deviation: 0.56
- Variance: 0.31
- Std. Error: 0.15
- Satisfaction Rate: 75.71%

Table 7 - Survey: Project Management methods

The next question considered the project outcomes estimated by the respondents. Most of the participants affirmed that the projects are delivered Often within the planned scope (57.1%), Often within schedule (71.4%) and Often within the expected incurred costs for the firm (71.4%). The majority of the respondents affirmed that the projects were delivered Meeting client’s requirements (71.4%). The matrix charts illustrating each project outcome separately can be found on the Appendix section of this dissertation. This question was designed in order to understand the project outcomes from the Project Management method applied.
7. When applying the methodology or guideline mentioned above, how often do you consider that the projects were completed and delivered successfully?

<table>
<thead>
<tr>
<th></th>
<th>Always</th>
<th>Often</th>
<th>Sometimes</th>
<th>Rarely</th>
<th>Never</th>
</tr>
</thead>
<tbody>
<tr>
<td>Within the initial planned scope?</td>
<td>21.4%</td>
<td>57.1%</td>
<td>21.4%</td>
<td>0.0%</td>
<td>0.0%</td>
</tr>
<tr>
<td></td>
<td>(3)</td>
<td>(8)</td>
<td>(3)</td>
<td>(0)</td>
<td>(0)</td>
</tr>
<tr>
<td>Within the initial planned schedule?</td>
<td>14.3%</td>
<td>71.4%</td>
<td>14.3%</td>
<td>0.0%</td>
<td>0.0%</td>
</tr>
<tr>
<td></td>
<td>(2)</td>
<td>(10)</td>
<td>(2)</td>
<td>(0)</td>
<td>(0)</td>
</tr>
<tr>
<td>Within the initial planned budget? (In this question please consider the incurred costs for the firm).</td>
<td>7.1%</td>
<td>71.4%</td>
<td>14.3%</td>
<td>7.1%</td>
<td>0.0%</td>
</tr>
<tr>
<td></td>
<td>(1)</td>
<td>(10)</td>
<td>(2)</td>
<td>(1)</td>
<td>(0)</td>
</tr>
<tr>
<td>Meeting client’s requirements?</td>
<td>71.4%</td>
<td>28.6%</td>
<td>0.0%</td>
<td>0.0%</td>
<td>0.0%</td>
</tr>
<tr>
<td></td>
<td>(10)</td>
<td>(4)</td>
<td>(0)</td>
<td>(0)</td>
<td>(0)</td>
</tr>
</tbody>
</table>

Table 8 - Survey: Project Outcomes

Considering project changes as a common issue in Architecture practices, 35.71% of the respondents affirmed that the firm Always adapted to the changes without disruptions, 7.14% affirmed Most of the time and the 57.14% considered Often.

8. How often do you consider that the firm adapted to project changes (e.g. due to requirements change) causing minimal business disruption? (e.g. unexpected delays, redesign, etc)

<table>
<thead>
<tr>
<th></th>
<th>Response Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 Always</td>
<td>35.71%</td>
</tr>
<tr>
<td>2 Often</td>
<td>57.14%</td>
</tr>
<tr>
<td>3 Most of the time</td>
<td>7.14%</td>
</tr>
<tr>
<td>4 Rarely</td>
<td>0.00%</td>
</tr>
<tr>
<td>5 Never</td>
<td>0.00%</td>
</tr>
</tbody>
</table>

Table 9 - Survey: Change on requirements
4.1.3 Section 3: Project Success Factors on management of design process

This section of the survey asked the respondent’s opinion based on what factors they considered the essentials to complete the projects successfully. Listing the three main factors, the “Effective monitoring and controlling of the process” factor received the highest weight, marked with 42.86%. the “Realistic schedule” alongside “Clear communication with the client” and “Clear project programme / briefing” received 35.71% of the responses each.

<table>
<thead>
<tr>
<th>9. For the following question, please choose the three factors you consider as the most critical to conclude the project successfully:</th>
<th>Response Percent</th>
<th>Response Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 Adequate resources available</td>
<td>28.57%</td>
<td>4</td>
</tr>
<tr>
<td>2 Clear communication with the client</td>
<td>35.71%</td>
<td>5</td>
</tr>
<tr>
<td>3 Clear communication with the design team</td>
<td>21.43%</td>
<td>3</td>
</tr>
<tr>
<td>4 Clear project programme / briefing</td>
<td>35.71%</td>
<td>5</td>
</tr>
<tr>
<td>5 Commitment to business’ strategies</td>
<td>7.14%</td>
<td>1</td>
</tr>
<tr>
<td>6 Commitment to client’s expectation</td>
<td>21.43%</td>
<td>3</td>
</tr>
<tr>
<td>7 Conflict resolution</td>
<td>7.14%</td>
<td>1</td>
</tr>
<tr>
<td>8 Effective client’s requirement management</td>
<td>0.00%</td>
<td>0</td>
</tr>
<tr>
<td>9 Effective monitoring and controlling of the process</td>
<td>42.86%</td>
<td>6</td>
</tr>
<tr>
<td>10 Effective selection and use of design tools</td>
<td>0.00%</td>
<td>0</td>
</tr>
<tr>
<td>11 Effective team building</td>
<td>7.14%</td>
<td>1</td>
</tr>
<tr>
<td>12 Flexible approach to change</td>
<td>0.00%</td>
<td>0</td>
</tr>
<tr>
<td>13 Mitigation plans</td>
<td>0.00%</td>
<td>0</td>
</tr>
<tr>
<td>14 Quality of planning</td>
<td>0.00%</td>
<td>0</td>
</tr>
<tr>
<td>15 Quality of service provided to the client</td>
<td>14.29%</td>
<td>2</td>
</tr>
<tr>
<td>16 Realistic schedule</td>
<td>35.71%</td>
<td>5</td>
</tr>
<tr>
<td>17 Revision / feedback of firm’s previous projects (how were planned and managed)</td>
<td>0.00%</td>
<td>0</td>
</tr>
<tr>
<td>18 Support from design leader / architect leader</td>
<td>28.57%</td>
<td>4</td>
</tr>
<tr>
<td>19 Team communication</td>
<td>14.29%</td>
<td>2</td>
</tr>
</tbody>
</table>

Analysis

Table 10: Survey - Success Factors

<table>
<thead>
<tr>
<th>Analysis</th>
<th>Mean: 25.57</th>
<th>Std. Deviation: 31.42</th>
<th>Satisfaction Rate: 125.4</th>
</tr>
</thead>
<tbody>
<tr>
<td>Variance: 967.33</td>
<td>Std. Error: 8.4</td>
<td>answered</td>
<td>14</td>
</tr>
</tbody>
</table>
4.2 Project Management Methods Applied and Outcomes

The responses were analysed individually and generated the following results. Question 6 - “What Project Management Methods or guidelines does the firm apply to manage the building design processes successfully?” presented responses in two groups: the practices that apply ‘Methods developed ‘in house’ (by the firm)’ and the practices that follow ‘Local Architects professional associations’ guidelines or plan of work (e.g. RIAI, RIBA, AIA, CAU, etc)’. Two other methods were also mentioned: PRINCE2, answered by a respondent who identified his job role as ‘Project Manager’, and ‘Other’, who affirmed that ‘no formal system personal experience of issues’. For some reason unknown, the results given by the former did not make to the final results, although is registered into the individual responses. As methods developed in house are derived from professional experience, the latter response was included into this group.

These responses were grouped in order to analyse their project outcomes when the method is applied, according to the answers given to question 7 – ‘When applying the methodology or guideline mentioned above, how often do you consider that the projects were completed and delivered successfully?’ and also question 8 ‘How often do you consider that the firm adapted to project changes (e.g. due to requirements change) causing minimal business disruption? (e.g. unexpected delays, redesign, etc).

The respondents considered that the projects are always, often or sometimes delivered within the initial Planned Scope. Both Local Guidelines and developed ‘in house’ methods presented expected results often. 11% of the respondents using local guidelines have their projects within scope, at the same time that methods in house present 25% of the same result. Although not being a high percentage, this result shows that both methods can be ineffective for some firms.
Regarding the initial planned schedule, the local guidelines provided expected outcomes more ‘often’ than methods developed in house. With 77.75% of the firms participant affirming that their projects respect the planned schedule often, local guidelines seem quite effective regarding planning schedule.
One of the main issues found in the literature, the costs that a project incurs for the firm require also adequate management. Both groups presented their results often in nearly 80% of the projects. On the other hand, 11% of respondents using Local guidelines are always able to manage their projects within budget at the same time also 11% affirmed that the guidelines rarely result in the expected outcomes.

![Planned Budget](image)

*Figure 6: Project Methods and outcomes – Budget*

The third measure of success of the project outcomes regards the commitment with clients’ requirements. The majority of the participants representing Architectural Practices consider that the project outcomes always and often are in accordance to client’s requirements.

![Meeting Client’s Requirement](image)

*Figure 7: Project Methods and outcomes - Client’s requirements*
A common issue resulted from poor Project Management of the Design Process is related to project changes causing disturbance on usual business activities. The respondents from both groups affirmed that the Practice adapted to project changes without major issues, marking always and often options as majority.

![Adapted to Changes without disruptions](image)

**Figure 8 – Adaptation to changes on requirements**

### 4.3 Summary of findings

The research findings show that the respondents have their firms based in Ireland, which matches with the sample selected from the RIAI (RIA.ie, 2016). Even though the selection was based on the Project Management services provided by the practices, small / medium sized firms having up to 50 employees and designing projects up to 500 square meters represent the majority on this survey. Local guidelines and Methods developed in house are broadly applied by the firms in this sample when managing the Design Process. A comparison between the methods and project outcomes regarding the success of the project shows that the sample considers always or often achieved in most of cases.

The results of the survey also identify from a Project Management point of view the factors considered by the practices as the most relevant for Project Success. The findings show that Effective monitoring and controlling of the process is the primordial factor. Clear
communication with the client, Clear project programme / briefing and Realistic schedule is also considered important, followed by Adequate resources available and Support from design leader / architect leader.
5. DISCUSSION

The topic “Project Management in Architectural Practices: Project Success Factors in Building Design Processes” is discussed in this dissertation through the research question:

Are Architectural Design Practices achieving Project Success through the application of Project Management methods during the building design process?

The Secondary data collected on the Literature it is suggested few points which are discussed with the results.

1. The lack of adequate management of the design process results in issues for the practices and project outcomes.

2. Due the nature of building design processes, it can be managed with Project Management methods.

3. Changes on requirements result on redesign and overwork exhausting stakeholders’ relationship.

4. Measurements and definitions of Project Management Success vary according to the industry and the “eyes of the beholder” (Müller and Jugdev, 2012).

5. The uni-dimensional construct for reviewing Project Success outcomes is suitable for generalisations

6. Project objectives and business objectives are aligned, although the Design Process outcomes regard project objectives in the short term perspective.

7. Control of the design activities increases Project Success


The following section refers the findings back to Literature suggestions listed above.

The fact that the firms are based in Ireland does not influence the findings but illustrates the scenario. Although the practices were contacted for being part of the Irish institution (RIAI, 2016), firms based outside Ireland could demonstrate a different approach on the
management of the design. The results collected from the questionnaire show that small and medium practices achieve satisfactorily Project Success outcomes when applying Local Guidelines and ‘in house’ methods to manage the design process, affirming that most of the time projects are delivered within the planned schedule, budget, cost and requirements. Those Project Management approaches also prove to be effective when changes on project requirements may cause disturbance in the usual activities of the Practice. This result is aligned with the suggestion that the lack of adequate management of the design process results in issues for the practices and project outcomes.

Regarding the nature of building design processes, the types and average sizes of projects reinforce the need for Project Management. The results showed that most of the firms are dedicated to small / medium and less complex projects. Larger Firms designing complex projects demand a more in depth, detailed and systematic Project Management approach enriching the findings. Although large scale firms were contacted, they did not accept to participate on the research. A higher number of respondents focused on big projects would show more variety on Project Management approaches, which is one of the weaknesses of this research.

As mentioned on the literature, design and requirement changes can cause rework and higher costs for the firm stressing stakeholders’ relationship. For that reason the questionnaire asked the respondents if they consider that the firm has the ability to adapt to those changes. The results showed that the management of the projects is effective. On the other hand, the literature contradicts the finding as it affirms that Architectural Practices face difficulties with rework resulting on extended working hours. The firms have to be prepared for possible changes allocating time and budget to cover those issues if they happen.

The questionnaire is intended to reach Architects applying Project Management in their practices to achieve Project Success. The dilemma pointed out on the Literature is that the measurements and definitions of Project Management Success vary according to the industry and stakeholder’s opinion. That premise defined the choice for the sample, which considered that the firms usually achieve project success outcomes. That interpretation of Project Success also guided the choice for the uni-dimensional construct for reviewing
project outcomes. This approach provided generalization of the results, which is suitable for an overall analysis of the Project Management scenario in Architecture Practices.

This research analyzes the outcomes of Project Success focusing on project objectives. Again, the uni-dimensional construct is identified. As the purpose of this dissertation is to analyze implications of the Project Management approach towards effective project success, business objectives are not part of the findings. The two objectives are related, but business objectives do not suit for answering the research question.

Comparing the groups of answers according to the methods used when managing the design process, it is possible to analyse the Success outcomes. Again, a larger number of answers from the participants would provide a better overview, although methods developed in house and guidelines provided by institutions appear to be effective when controlling design activities and increasing successful outcomes.

The findings also give an insight about what factors the firms consider as primordial for Project Success. The respondents consider Effective monitoring and controlling of the process as the main factor in their practices. This result is directly aligned with Project Management Processes groups outlined in the literature.

The aim of this research was to analyse Project Success Factors resulting from the application of Project Management methods in Architecture Firms. The primary data shows that the methods applied in the design process are being effective to achieve selected Successful project outcomes. Although the outcomes analysed are limited, it shows that the essential objectives of projects are being achieved with methods applied, considering the respondents’ estimation.

The researcher considers that the research question “Are Architectural Design Practices achieving Project Success through the application of Project Management methods during the building design process?” has been answered, despite the limited number of answers collected in this survey.
6. CONCLUSIONS and RECOMMENDATIONS

6.1 Recommendations for further research
Throughout this research, a strong focus has been put on showing the gains architecture practices can expect when applying Project Management to the Architecture design process. As outlined on the review, the literature on that specific subject is scarce and tackling this subject became of prime interest to the researcher. Indeed, a similar approach of Project Management into Architecture design process has not been widely done before and the researcher believes the findings are an important step towards confirming the importance of project management applied to Architecture.

The researcher opted for a questionnaire survey to gather relevant information from professionals as it provides a generalisation of the results. From that, the research analyzed the common project outcomes from the “iron triangle” of Project Management to review the application of methods seeking Project Success factors in Architectural practices, using uni-dimensional approach. The researcher suggests a multi-dimensional construct approach for further research, with the analysis of the project outcomes resulting from the Success Factors found in this research.

The researcher also suggests the adoption of different methods for data collection. The method used for this research provides a limited array of possibilities. Analysing the same topic on a case study comparing methods from different practices or comparing different methods within the same practice could provide and in-depth understanding about the relation between the two variables: the Project Management methods used within the firms influencing project success factors. The researcher discarded this option when carrying out the primary data once firms contacted did not wish to participate. In-depth interviews could also provide an opportunity to discuss the relation between the two elements.

The practical implications of this research are the increased awareness of the Project Management in Architecture Design, instead of construction. The application of PM tools and techniques can be differential to achieve Project Success frequently.

The researcher also recommends a study on specific Project Management Methodologies applied on Architectural Design Process. As an example, bringing the knowledge from the IT
industry into Architecture practices. The PM tools and techniques can also be investigated on project success outcomes. These options were discarded by the researcher due to limited ability to carry out such an in-depth approach.

Taking the starting point from the research question: “Are Architectural Design Practices achieving Project Success through the application of Project Management methods during the building design process?”, the research aimed to analyze Project Success Factors resulting from the application of Project Management methods in Architecture Firms. The research findings showed that the sampled professionals consider their practice successful, once the elements of success are achieved frequently. Although the results provide a good insight about both fields, one can point out that the findings may be slightly biased as the respondents may have given optimistic results when answering the survey as they were answering on behalf of their practices. Moreover, it is to be pointed out that participants from large firms were contacted but did not wish to participate, reducing the variety of findings from the questionnaire.

Overall the objectives of the research have been achieved. The introduction provided the background and the issues that raised the interest of the researcher to pursue the topic. The lack of researches using this approach (Ramqvist, 2013) also kept the researcher’s interest. As mentioned before, the researcher considers that the aim of the research was accomplished through the research question and data collection.

Outlining the context of the architectural practices provided an insight about the field and situated the reader. The revision of Project Management discipline gave the necessary support for the primary data collection. In addition, the study on Project Success also underlined the questionnaire survey.

This research was limited by time constraints and the participation of respondents. Even though a good amount of answers were collected, the researcher had difficulty to get in contact with professionals from the studied area and get them involved in the research by answering an open questionnaire.
It should be noted that while this thesis mainly focuses on Irish architecture practices, it would be worthwhile to develop the research more by widening the scope to other countries and highlight regional differences in a further research project.

The researcher intends to deepen the knowledge in the Project Management area for future work and considers developing a framework for application of PM tools and techniques into the Architectural Design Process, in accordance to specific local guidelines.

7. SELF REFLECTION

This section consists of personal thoughts regarding self-awareness, self-knowledge and reflections developed throughout the research and dissertation process to conclude the graduation MBA Project Management. Reflecting on own personal characteristics, goals and values is important when pursuing professional development. The idea behind it is that knowing ourselves better is essential to succeed professionally and personally. Self-awareness helps us to determine objectives and goals, observe what stops us from reaching it, what has to be changed, what paths should be chosen, what needs to be done to achieve them and so on.

7.1 The MBA Course

The researcher had considered doing a Master’s even during the Bachelor’s degree. At that time, the idea was obviously crude but over the years the attention of the researcher grew on Project Management subject. After working for few years in Architecture, the researcher moved to Dublin aiming for the Master’s course, which was possible to start after a few difficulties and the interruption of the Architecture career. Besides that, the Masters experience was a fulfilling challenge where the researcher was able to develop several skills, self-awareness and discover new forms of self-improvement.

The MBA Project Management prepared the researcher with theoretical knowledge and learning experiences, when several challenges were faced during the MBA course. Firstly, the language seemed not be a significant barrier at first but when critically reviewing and analysing theories, works or papers, the appropriate expression of one’s own ideas and thoughts can be conflictive. Although expressing oneself in a foreign language that differs
from one’s mother tongue can be a challenge, the researcher improved her language skills and the aptitude to engage in debates, discussions and critical thinking. Secondly, during the MBA course, the researcher had the great opportunity to exchange knowledge in a culturally diverse class. Through this unique experience the researcher not only developed her communication and listening skills, but also broadened her horizons when learning about her colleagues’ work background.

7.2 Dissertation and research process

The topic choice for the MBA dissertation was based on the researcher experience as an Architect. Working in different offices, in the Institute of Architects of Brazil and participating in several conferences, the researcher observed a common concern within the professionals: Architecture Practices struggle to manage the project processes under the business aims and objectives. The researcher found in the Project Management discipline the methods, tools and techniques that can help with that issue.

The research process meant several opportunities for self-improvement. Through it, the researcher was able to develop critical thinking and organising skills. Time management was particularly demanding when organising all the information gathered and writing about the subjects with focus. During the process of this dissertation, the author had the opportunity to improve academic, professional and personal skills. The most challenging development was met on the actual research process itself. Coming from an Architectural background, the previous bachelor degree was achieved through the proposal of a 2,500 square meters project for a governmental institution meticulously detailed and justified over hundreds of sketches, drawings, and visualisations, all at Architectural Professional level. In addition to that, critical analyses on previous works during college were conducted around sketches. The researcher did not have the opportunity to carry out a similar in-depth research approach like this before and this was surely the most demanding challenge. The researcher had to step back from the approach learned before and “learn how to learn” again, seeking ways to study more effectively, be more productive and focused.

The dissertation process was a daunting although fulfilling task. Coming across several interesting subjects, it was hard to narrow down the research topic but the ability to focus
was developed. The review of the literature pursuing a better understanding and definition of the topic gave the researcher not only a deeper knowledge on the subject matter but also an overview on other interesting themes, which were separated for further study. When studying the research methodologies, the researcher gained insights about how to pursue the research aims. The methods used in business studies provided the adequate background to seek answers on a topic. As mentioned above, as the researcher did not carry out a similar approach before, the experience was an insightful reflexion, widened horizons and triggered the researcher interest on that approach.

During the data collection, although the researcher did not receive a considerable number of participants when contacting the sample for the survey, a small number of feedbacks were enough to keep the motivation. The professionals were first contacted by email with an invitation letter and the link to the survey if they agreed to participate. In this invitation it was mentioned that if respondents wanted more information or wished to give further contributions they could contact the researcher. Even though most of them did not replied, three professionals emailed back with good responses. A meeting with a lead Architect and Project Manager was then arranged in order to discuss the research topic informally. This was a great opportunity that would not be possible without carrying out the dissertation research. The outcome of this meeting is that the researcher is now even more akin to pursue an in-depth approach on the topic, maybe through a case study in the future.

7.3 Learning Process

When observing the requirements of this section on the dissertation handbook and the eager to “find out things”, the author researched about the learning process. Kolb (1984, 41) explains that learning is not a process but is a cycle with four stages: the concrete experience, which is related to experimentation when doing something; the reflective observation, which analyzes the experiences from the previous stage; the abstract conceptualisation means conclusions and new ideas as a result; and the active experimentation is when the new concepts learned are tried out. Reflecting on the MBA course, the researcher observed the learning cycle repeatedly through the assignments and essays completed as underlined in the following sections.
7.3.1 Concrete Experience

The researcher had an imprecise idea on taking a Project Management point of view and approach the issues observed in Architecture. An extensive review of the literature over several possibilities and relations between the topics was done at the beginning of the process to assure it was suitable for the researcher to approach the matter. Combining the two fields as keywords when researching showed several articles about Project Management in construction on the AEC sector or papers related to IT Architecture. That highlighted the fact that the researcher had to narrow down, eliminate subtopics and focus on what was needed. In addition to that, it showed that there are not many work combining the two disciplines on the architectural process regarding project success, when the researcher understood the importance of the topic.

With the topic delineated, a clear definition of the research objectives was also needed. The revision of the literature was now following a specific focused approach. Then, the research objectives were refined and better defined, with the aim of gathering a comprehensive overview of the literature. The research question and aim were kept on highlight, seeking to achieve adequate outcomes from the research.

At this stage of the learning processes, the researcher not only increased her knowledge and interest around the topic but as well developed research skills and better management of the information acquired.

7.3.2 Reflective Observation

The researcher had to familiarize herself quickly to a new learning environment. Additionally to the language barrier, differences on the way the subjects are studied, approached and analysed required intensive preparation, effort and adaptation. For that, the support found at the library and the online resources were of great importance. Moreover, the assistance from the librarians, the help from the classmates and the support from the lecturers and the researcher’s supervisor made all the difference during this process of self-improvement.
Throughout the research, the author improved her perception on ways to advance on a determined understanding. The variety of definitions for Project Success for example, highlighted that it varies according to key elements: the context and the stakeholder or, the beholder. That premise will give to the author during the profession the eagerness to adapt and grasp each particularity of the projects to come.

Throughout the MBA course, the researcher was able to acquire familiarity with business subjects. Learning about organisation environments gave good insights for the researcher career. Moreover, the ability to research and “find out things” at her own provided to the researcher the ability to judge what material was to be taken into consideration and how to work on that information.

Deepening the knowledge on the Project Management subject increased the researcher’s interest. The classes attended during the MBA course provided excellent material and the spark to dedicate to the field. The dissertation process gave an understanding about how to approach a topic, deepen the expertise and especially the opportunity to contact experts in the field. The researcher considers that the literature review provided the necessary knowledge to the student to discuss with professionals at a good level.

Overall the researcher considers that the critical analytical thinking improved significantly from the beginning of the course to the dissertation. The biggest improvement was noticed during the research process, comparing to the early stages of the process to its conclusion. The researcher considers that there is of course still room for improvement, but compared to the point where the researcher started and the achievements so far, the progress is noticeable and make the researcher proud of the accomplishments. However, as the Kolb’s model indicates (1984, 41), learning process is a cycle and for a first time researcher, further opportunities will provide more and better improvement.

7.1.3 Abstract Conceptualisation

The knowledge and skills acquired during the research process and the Master’s Degree provide the researcher with the competitive differential for the professional market. The
ability to manage projects and the research skills acquired give to the researcher the know-how to pursue a career in the area and grow professionally.

The researcher improved her communications skills but seeks to develop even further. Studying in the culturally diverse environment mentioned before resulted in a great experience and learning, although the job market will require even better skills. Project management is a dynamic environment and demands adaptation, quick-thinking and the ability to deal with people of all kinds. The communication skills, that got better over the course of the Master’s degree, provide a solid base to convey points of view on a subject, the ability to demonstrate knowledge and discuss what approaches are more suitable.

The researcher faced three main personal challenges: time management, knowledge management and self-confidence. Even though preparing plans, scheduling and setting daily goals, keeping the research advancing within the time frame was demanding. The researcher has a lot to improve on that area, considering that in several moments the tasks were poorly calculated for the time frame available, either overestimating or underestimating their duration. Of course, as for any first experience it is hard to determine precisely how things are going to happen, but to precede in the career the researcher has to better approach time and task execution and scheduling.

The management of the information acquired was also a challenge. Coming across several interesting studies and subjects demanded not only focus but also an organisation ability. Using bibliography management tools, taking notes and gathering the information demanded much attention from the researcher, who literately decided to search information about “how to learn”. The module Professional and Personal Development taken during the MBA course suggested interesting handbooks which the researcher dived into to develop study skills.

The module also helped on developing self-confidence. The researcher came across several tests on self-awareness, personal SWOT analysis, and personality traits for business environment. The opportunity gave to the researcher a better understanding about her own strengths and weaknesses and points to improve. The learning outcomes from that module were brought to the dissertation process. Having to choose a topic to deepen her
knowledge on, and deciding on a suitable and achievable subject, demanded self-awareness and consciousness from the researcher.

7.3.3 Active Experimentation

The dissertation process demanded extensive and rewarding effort, over long periods of isolation. Of course the supervisor is there to guide and give advice, but the research process demands analytical thinking and reflection on what is being found, produced and if it is in the adequate context. Thus, isolation is necessary to process all the information acquired. Self-awareness was also improved during this stage. The ability to look and analyze what has been achieved and produced at the end of each task or stage during the dissertation, gave the opportunity to self-reflect on the outcomes and seek for points to improve.

To conclude, the researcher considers that the challenge of the MBA and the dissertation was a great experience. Each stage of the process provided singular opportunities to learn and improve in many areas. The contact with professionals during the survey was rewarding and alongside the research process, gave the researcher the eagerness to continue growing professionally and personally. The researcher considers that the dissertation process provided a singular opportunity for learning.

7.2 CONCLUSION

The researcher finalises her MBA Project Management fulfilled with great knowledge. The learning was not limited to understanding theories and methods on the business subjects, but it was greatly broaden through critical analysis, reflections, reviews and discussions. The researcher also learned how to self-evaluate her improvements, taking the best of weaknesses and strengths.

The researcher concludes the MBA course with a dissertation thesis which challenged her in as many ways as possible. Since the decision on a topic to be worked, extensive reading, analysis and revision, narrowing down the idea tested the ability to focus on one thing at time, when the researcher was actually trying to learn all at once.
After all the steps on this experience, the researcher feels eagerness to follow career in the Project Management. The first step for the next journey will be broaden the possibilities acquiring the Certified Associate in Project Management CAPM from the PMI. The certificate does make difference in the competitive market. The researcher is looking forward to an internship in the area, were she will able to use her knowledge, and above all, learn more.
8. BIBLIOGRAPHY


Letter sent to participants:

Request for participation on MBA dissertation research

I would like to request your participation on a research survey I am carrying out on my MBA dissertation. My Name is Amanda Correa and I am currently undertaking a MBA Project Management program at Dublin Business School, Aungier St. Dublin, Ireland, under the supervision of Paul Taaffe P.M.P. (paul.taaffe@dbs.ie).

The topic of my research is Project Management in Architectural Practices: Project Success Factors in Building Design Processes. The research aims to analyse the project completion through the application of Project Management in Architecture organizations. The Success Factors in this research focus on the management of the project life cycle, not the Architectural Design outcomes.

As your firm have been recognised in the Architecture Design field I would kindly request you to participate on a quick survey that can be accessed on the link below. There will be 9 questions taking around 5 minutes to be completed. The survey is anonymous and the data I collect does not contain any personal information about you or your organization.

Due to your proven experience and expertise in the Architecture field, I sincerely hope that you can participate in this study and give your important contribution. The survey is available at: http://www.smartsurvey.co.uk/s/LLBN8/. Thank you for your time.

Should you wish to contribute or require any further information please do not hesitate to contact me.

Kindest regards,
Amanda Corrêa
Dublin Business School
amandacorrea.arq@gmail.com
Phone: +353 89 486 0821

List of companies contacted:
**Survey: Project Management in Architecture Practices**

**1. Respondent and company’s information**

### 1. Where is your Architecture Practice located?

<table>
<thead>
<tr>
<th>Location</th>
<th>Response</th>
<th>Percent</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dublin</td>
<td></td>
<td>53.33%</td>
<td>8</td>
</tr>
<tr>
<td>Ireland but outside Dublin</td>
<td></td>
<td>40.00%</td>
<td>6</td>
</tr>
<tr>
<td>Rest of Europe</td>
<td></td>
<td>6.67%</td>
<td>1</td>
</tr>
<tr>
<td>UK</td>
<td></td>
<td>0.00%</td>
<td>0</td>
</tr>
<tr>
<td>South America</td>
<td></td>
<td>0.00%</td>
<td>0</td>
</tr>
<tr>
<td>Other (please specify):</td>
<td></td>
<td>0.00%</td>
<td>0</td>
</tr>
</tbody>
</table>

**Analysis**

- **Mean:** 1.53
- **Std. Deviation:** 0.62
- **Satisfaction Rate:** 10.67
- **Variance:** 0.38
- **Std. Error:** 0.16

**No answers found.**

### 2. How many employees does the firm have?

<table>
<thead>
<tr>
<th>Number of Employees</th>
<th>Response</th>
<th>Percent</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Up to 10</td>
<td></td>
<td>53.33%</td>
<td>8</td>
</tr>
<tr>
<td>Between 10 and 50</td>
<td></td>
<td>33.33%</td>
<td>5</td>
</tr>
<tr>
<td>Between 51 and 100</td>
<td></td>
<td>0.00%</td>
<td>0</td>
</tr>
<tr>
<td>More than 100</td>
<td></td>
<td>13.33%</td>
<td>2</td>
</tr>
</tbody>
</table>

**Analysis**

- **Mean:** 1.73
- **Std. Deviation:** 1
- **Satisfaction Rate:** 24.44
- **Variance:** 1
- **Std. Error:** 0.26

**No answers found.**

### 3. In your estimation, what types of projects does the firm design more often? Please mark up to 2:

<table>
<thead>
<tr>
<th>Project Type</th>
<th>Response</th>
<th>Percent</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Residential / housing</td>
<td></td>
<td>80.00%</td>
<td>12</td>
</tr>
<tr>
<td>Commercial / Retailing, offices, catering</td>
<td></td>
<td>53.33%</td>
<td>8</td>
</tr>
<tr>
<td>Renovation, restoration, conservation</td>
<td></td>
<td>46.67%</td>
<td>7</td>
</tr>
<tr>
<td>Industrial, manufacturing, facilities</td>
<td></td>
<td>20.00%</td>
<td>3</td>
</tr>
<tr>
<td>Institutional / Health, education, culture, religious, sports and recreation</td>
<td></td>
<td>33.33%</td>
<td>5</td>
</tr>
<tr>
<td>Other (please specify):</td>
<td></td>
<td>6.67%</td>
<td>1</td>
</tr>
</tbody>
</table>

**Analysis**

- **Mean:** 6.13
- **Std. Deviation:** 6.01
- **Satisfaction Rate:** 74.67
- **Variance:** 36.11
- **Std. Error:** 1.55

**No answers found.**

---

Other (please specify): (1)

- ID: 43506561
  - Pharmaceutical
4. In your estimation, what is the average size of the projects designed by the firm?

<table>
<thead>
<tr>
<th>Response</th>
<th>Percent</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Up to 500 square meters</td>
<td>46.67%</td>
<td>7</td>
</tr>
<tr>
<td>Between 500 and 2,000 square meters</td>
<td>13.33%</td>
<td>2</td>
</tr>
<tr>
<td>Between 2,000 and 10,000 square meters</td>
<td>33.33%</td>
<td>5</td>
</tr>
<tr>
<td>Above 10,000 square meters</td>
<td>6.67%</td>
<td>1</td>
</tr>
</tbody>
</table>

Analysis:
Mean: 2, Std. Deviation: 1.03, Satisfaction Rate: 33.33
Variance: 1.07, Std. Error: 0.27

5. What is your job role in the firm?

<table>
<thead>
<tr>
<th>Response</th>
<th>Percent</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lead Architect / Founder</td>
<td>60.00%</td>
<td>9</td>
</tr>
<tr>
<td>Architect / Designer</td>
<td>13.33%</td>
<td>2</td>
</tr>
<tr>
<td>Architectural Technician</td>
<td>6.67%</td>
<td>1</td>
</tr>
<tr>
<td>CAD / BIM Technician</td>
<td>66.67%</td>
<td>1</td>
</tr>
<tr>
<td>Intern</td>
<td>0.00%</td>
<td>0</td>
</tr>
<tr>
<td>Project Manager</td>
<td>0.00%</td>
<td>0</td>
</tr>
<tr>
<td>Administrative, Office, Accounting</td>
<td>20.00%</td>
<td>3</td>
</tr>
<tr>
<td>Other (please specify):</td>
<td>0.00%</td>
<td>0</td>
</tr>
</tbody>
</table>

Analysis:
Mean: 2.47, Std. Deviation: 2.33, Satisfaction Rate: 20.95
Variance: 5.45, Std. Error: 0.6

Other (please specify): (0) No answers found.

2. Building Design Project: life-cycle and Project Management

6. What Project Management Methods or guidelines does the firm apply to manage the building design processes successfully?

<table>
<thead>
<tr>
<th>Response</th>
<th>Percent</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>PMBK Guide</td>
<td>0.00%</td>
<td>0</td>
</tr>
<tr>
<td>Agile</td>
<td>0.00%</td>
<td>0</td>
</tr>
<tr>
<td>PRINCE / PRINCE 2</td>
<td>0.00%</td>
<td>0</td>
</tr>
<tr>
<td>Methods developed ‘in house’ (by the firm)</td>
<td>28.57%</td>
<td>4</td>
</tr>
<tr>
<td>Local Architects professional associations guidelines or plan of work (e.g. RIAI, RIBA, AIA, CAU, etc)</td>
<td>64.29%</td>
<td>9</td>
</tr>
<tr>
<td>Other (please specify):</td>
<td>7.14%</td>
<td>1</td>
</tr>
</tbody>
</table>

Analysis:
Mean: 4.79, Std. Deviation: 0.56, Satisfaction Rate: 75.71
Variance: 0.31, Std. Error: 0.15

Other (please specify): (1) ID: 43471826 no formal system personal experience of issues
7. When applying the methodology or guideline mentioned above, how often do you consider that the projects were completed and delivered successfully?

<table>
<thead>
<tr>
<th>Within the initial planned scope?</th>
<th>Always</th>
<th>Often</th>
<th>Sometimes</th>
<th>Rarely</th>
<th>Never</th>
<th>Response Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>21.4% (3)</td>
<td>57.1% (8)</td>
<td>21.4% (3)</td>
<td>0.0% (0)</td>
<td>0.0% (0)</td>
<td>14</td>
<td></td>
</tr>
</tbody>
</table>

| Within the initial planned schedule? | 14.3% (2) | 71.4% (10) | 14.3% (2) | 7.1% (1) | 0.0% (0) | 14               |

| Within the initial planned budget? (In this question please consider the incurred costs for the firm). | 7.1% (1) | 71.4% (10) | 14.3% (2) | 7.1% (1) | 0.0% (0) | 14               |

| Meeting client’s requirements? | 71.4% (10) | 28.6% (4) | 0.0% (0) | 0.0% (0) | 0.0% (0) | 14               |

**Matrix Charts**

### 7.1. Within the initial planned scope?

<table>
<thead>
<tr>
<th>Response</th>
<th>Percent</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Always</td>
<td>21.4%</td>
<td>3</td>
</tr>
<tr>
<td>Often</td>
<td>57.1%</td>
<td>8</td>
</tr>
<tr>
<td>Sometimes</td>
<td>21.4%</td>
<td>3</td>
</tr>
<tr>
<td>Rarely</td>
<td>0.0%</td>
<td>0</td>
</tr>
<tr>
<td>Never</td>
<td>0.0%</td>
<td>0</td>
</tr>
</tbody>
</table>

**Analysis**

- Mean: 2
- Std. Deviation: 0.65
- Satisfaction Rate: 25
- Variance: 0.43
- Std. Error: 0.17
- Answered: 14

### 7.2. Within the initial planned schedule?

<table>
<thead>
<tr>
<th>Response</th>
<th>Percent</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Always</td>
<td>14.3%</td>
<td>2</td>
</tr>
<tr>
<td>Often</td>
<td>71.4%</td>
<td>10</td>
</tr>
<tr>
<td>Sometimes</td>
<td>14.3%</td>
<td>2</td>
</tr>
<tr>
<td>Rarely</td>
<td>0.0%</td>
<td>0</td>
</tr>
<tr>
<td>Never</td>
<td>0.0%</td>
<td>0</td>
</tr>
</tbody>
</table>

**Analysis**

- Mean: 2
- Std. Deviation: 0.53
- Satisfaction Rate: 25
- Variance: 0.29
- Std. Error: 0.14
- Answered: 14

### 7.3. Within the initial planned budget? (In this question please consider the incurred costs for the firm).

<table>
<thead>
<tr>
<th>Response</th>
<th>Percent</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Always</td>
<td>7.1%</td>
<td>1</td>
</tr>
<tr>
<td>Often</td>
<td>71.4%</td>
<td>10</td>
</tr>
<tr>
<td>Sometimes</td>
<td>14.3%</td>
<td>2</td>
</tr>
<tr>
<td>Rarely</td>
<td>7.1%</td>
<td>1</td>
</tr>
<tr>
<td>Never</td>
<td>0.0%</td>
<td>0</td>
</tr>
</tbody>
</table>

**Analysis**

- Mean: 2.21
- Std. Deviation: 0.67
- Satisfaction Rate: 30.36
- Variance: 0.45
- Std. Error: 0.18
- Answered: 14
### 7.4. Meeting client’s requirements?

<table>
<thead>
<tr>
<th></th>
<th>Response</th>
<th>Percent</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Always</td>
<td>71.4%</td>
<td>10</td>
</tr>
<tr>
<td>2</td>
<td>Often</td>
<td>28.6%</td>
<td>4</td>
</tr>
<tr>
<td>3</td>
<td>Sometimes</td>
<td>0.0%</td>
<td>0</td>
</tr>
<tr>
<td>4</td>
<td>Rarely</td>
<td>0.0%</td>
<td>0</td>
</tr>
<tr>
<td>5</td>
<td>Never</td>
<td>0.0%</td>
<td>0</td>
</tr>
</tbody>
</table>

**Analysis**
- Mean: 1.29
- Std. Deviation: 0.45
- Satisfaction Rate: 7.14
- Variance: 0.2
- Std. Error: 0.12

### 8. How often do you consider that the firm adapted to project changes (e.g. due to requirements change) causing minimal business disruption? (e.g. unexpected delays, redesign, etc)

<table>
<thead>
<tr>
<th></th>
<th>Response</th>
<th>Percent</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Always</td>
<td>35.71%</td>
<td>5</td>
</tr>
<tr>
<td>2</td>
<td>Often</td>
<td>57.14%</td>
<td>8</td>
</tr>
<tr>
<td>3</td>
<td>Most of the time</td>
<td>7.14%</td>
<td>1</td>
</tr>
<tr>
<td>4</td>
<td>Rarely</td>
<td>0.00%</td>
<td>0</td>
</tr>
<tr>
<td>5</td>
<td>Never</td>
<td>0.00%</td>
<td>0</td>
</tr>
</tbody>
</table>

**Analysis**
- Mean: 1.71
- Std. Deviation: 0.59
- Satisfaction Rate: 17.86
- Variance: 0.35
- Std. Error: 0.16

### 3. Project Success Factors on management of design process
9. For the following question, please choose the three factors you consider as the most critical to conclude the project successfully:

|   | Adequate resources available | Clear communication with the client | Clear communication with the design team | Clear project programme / briefing | Commitment to business’ strategies | Commitment to client’s expectation | Conflict resolution | Effective client’s requirement management | Effective monitoring and controlling of the process | Effective selection and use of design tools | Effective team building | Flexible approach to change | Mitigation plans | Quality of planning | Quality of service provided to the client | Realistic schedule | Revision / feedback of firm’s previous projects (how were planned and managed) | Support from design leader / architect leader | Team communication |
| 1 | Adequate resources available | | | | | | | | | | | | | | | | | | | |
| 2 | Clear communication with the client | | | | | | | | | | | | | | | | | | | |
| 3 | Clear communication with the design team | | | | | | | | | | | | | | | | | | | |
| 4 | Clear project programme / briefing | | | | | | | | | | | | | | | | | | | |
| 5 | Commitment to business’ strategies | | | | | | | | | | | | | | | | | | | |
| 6 | Commitment to client’s expectation | | | | | | | | | | | | | | | | | | | |
| 7 | Conflict resolution | | | | | | | | | | | | | | | | | | | |
| 8 | Effective client’s requirement management | | | | | | | | | | | | | | | | | | | |
| 9 | Effective monitoring and controlling of the process | | | | | | | | | | | | | | | | | | | |
| 10 | Effective selection and use of design tools | | | | | | | | | | | | | | | | | | | |
| 11 | Effective team building | | | | | | | | | | | | | | | | | | | |
| 12 | Flexible approach to change | | | | | | | | | | | | | | | | | | | |
| 13 | Mitigation plans | | | | | | | | | | | | | | | | | | | |
| 14 | Quality of planning | | | | | | | | | | | | | | | | | | | |
| 15 | Quality of service provided to the client | | | | | | | | | | | | | | | | | | | |
| 16 | Realistic schedule | | | | | | | | | | | | | | | | | | | |
| 17 | Revision / feedback of firm’s previous projects (how were planned and managed) | | | | | | | | | | | | | | | | | | | |
| 18 | Support from design leader / architect leader | | | | | | | | | | | | | | | | | | | |
| 19 | Team communication | | | | | | | | | | | | | | | | | | | |

<table>
<thead>
<tr>
<th>Analysis</th>
<th>Mean: 25.57</th>
<th>Std. Deviation: 31.42</th>
<th>Satisfaction Rate: 125.4</th>
</tr>
</thead>
<tbody>
<tr>
<td>Variance: 987.33</td>
<td>Std. Error: 8.4</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Individual responses

The following table shows the individual results:
<table>
<thead>
<tr>
<th>Respondent ID</th>
<th>Q1</th>
<th>Q2</th>
<th>Q3</th>
<th>Q4</th>
<th>Q5</th>
<th>Q6</th>
<th>Q7</th>
<th>Q8</th>
<th>Q9</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>43422114</td>
<td>Dublin</td>
<td>Up to 10</td>
<td>Residential / housing</td>
<td>Lead Architect / Founder</td>
<td>Local Guidelines</td>
<td>Always</td>
<td>Always</td>
<td>Always</td>
</tr>
<tr>
<td>2</td>
<td>4344039</td>
<td>Ireland but outside Dublin</td>
<td>Between 2,000 and 10,000 square meters</td>
<td>Lead Architect / Founder</td>
<td>Local Guidelines</td>
<td>Often</td>
<td>Often</td>
<td>Often</td>
<td>Often</td>
</tr>
<tr>
<td>3</td>
<td>4344760</td>
<td>Dublin</td>
<td>Up to 10</td>
<td>Residential / housing</td>
<td>Lead Architect / Founder</td>
<td>Methods developed ‘in house’ (by the firm)</td>
<td>Always</td>
<td>Always</td>
<td>Often</td>
</tr>
<tr>
<td>4</td>
<td>4345120</td>
<td>Dublin</td>
<td>Up to 10</td>
<td>Residential / housing</td>
<td>Lead Architect / Founder</td>
<td>Methods developed ‘in house’ (by the firm)</td>
<td>Often</td>
<td>Sometimes</td>
<td>Sometimes</td>
</tr>
<tr>
<td>5</td>
<td>4345823</td>
<td>Dublin</td>
<td>Up to 10</td>
<td>Residential / housing</td>
<td>Architect / Designer</td>
<td>Local Guidelines</td>
<td>Often</td>
<td>Often</td>
<td>Often</td>
</tr>
<tr>
<td>6</td>
<td>4345820</td>
<td>Dublin</td>
<td>Up to 10</td>
<td>Commercial / Retailing, offices, catering</td>
<td>Architect / Designer</td>
<td>Methods developed ‘in house’ (by the firm)</td>
<td>Sometimes</td>
<td>Often</td>
<td>Often</td>
</tr>
<tr>
<td>7</td>
<td>434714</td>
<td>Ireland but outside Dublin</td>
<td>Between 2,000 and 10,000 square meters</td>
<td>Administrative, Office, Accounting</td>
<td>Local Guidelines</td>
<td>Often</td>
<td>Often</td>
<td>Sometimes</td>
<td>Always</td>
</tr>
<tr>
<td>8</td>
<td>4347269</td>
<td>Ireland but outside Dublin</td>
<td>Residential / housing</td>
<td>Renovation, restoration, conservation</td>
<td>Lead Architect / Founder</td>
<td>Local Guidelines</td>
<td>Sometimes</td>
<td>Sometimes</td>
<td>Rarely</td>
</tr>
<tr>
<td>9</td>
<td>4350797</td>
<td>Dublin</td>
<td>Up to 10</td>
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<td>Lead Architect / Founder</td>
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<td>0</td>
<td>0</td>
</tr>
<tr>
<td>10</td>
<td>434714</td>
<td>Ireland but outside Dublin</td>
<td>Residential / housing</td>
<td>Renovation, restoration, conservation</td>
<td>Lead Architect / Founder</td>
<td>no formal system personal experience of</td>
<td>Sometimes</td>
<td>Often</td>
<td>Sometimes</td>
</tr>
<tr>
<td>11</td>
<td>4348471</td>
<td>Dublin</td>
<td>More than 100</td>
<td>Industrial, manufacturing, facilities</td>
<td>Lead Architect / Founder</td>
<td>Methods developed ‘in house’ (by the firm)</td>
<td>Often</td>
<td>Often</td>
<td>Always</td>
</tr>
<tr>
<td>12</td>
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<td>Dublin</td>
<td>Between 2,000 and 10,000 square meters</td>
<td>Lead Architect / Founder</td>
<td>Local Guidelines</td>
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<td>Often</td>
<td>Always</td>
<td>Always</td>
</tr>
<tr>
<td>13</td>
<td>4343937</td>
<td>Ireland but outside Dublin</td>
<td>Residential / housing</td>
<td>Commercial / Retailing, offices, catering</td>
<td>Administrative, Office, Accounting</td>
<td>Local Guidelines</td>
<td>Often</td>
<td>Often</td>
<td>Often</td>
</tr>
<tr>
<td>14</td>
<td>4341395</td>
<td>Rest of Europe</td>
<td>Residential / housing</td>
<td>Commercial / Retailing, offices, catering</td>
<td>Architectural Technician</td>
<td>Local Guidelines</td>
<td>Always</td>
<td>Often</td>
<td>Often</td>
</tr>
<tr>
<td>15</td>
<td>4344135</td>
<td>Ireland but outside Dublin</td>
<td>Residential / housing</td>
<td>Commercial / Retailing, offices, catering</td>
<td>Administrative, Office, Accounting</td>
<td>Local Guidelines</td>
<td>Often</td>
<td>Often</td>
<td>Always</td>
</tr>
</tbody>
</table>

**Scope**
- Institutional / Health, education, culture, religious, sports and recreation
- Commercial / Retailing, offices, catering
- Residential / housing
- Renovation, restoration, conservation
- Other (please specify): Pharmaceutical

**Schedule**
- Up to 10
- Between 2,000 and 10,000 square meters
- Up to 500 square meters
- More than 100

**Budget**
- Often
- Always
- Sometimes
- Most of the time

**Responsibilities**
- Lead Architect / Founder
- Architect / Designer
- Administrative, Office, Accounting
- Architectural Technician
- Architect / Designer