AGILE PROJECT MANAGEMENT
METHODOLOGY APPLIED IN
NON-SOFTWARE DEVELOPMENT INDUSTRY

Dissertation submitted in part fulfilment of the requirements for the degree of
MBA – Business Administration and Project Management
at Dublin Business School

ARIANE DOS REIS SALES
DECLARATION

The following Declaration must be included –

Declaration: I, Ariane dos Reis Sales, 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: Ariane dos Reis Sales

Date: 22.08.2016
ACKNOWLEDGEMENTS

“While looking through a window is not just about the things you can see, but all the immensity that it is out there”.

- Author

I am grateful for this journey, for each step that took me to arrive here in this destination.

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Also thank all the professionals that dedicated a bit of their time answering the interviews and questions explaining me about Agile, sharing their point of view and expertise in the work context.

Show my huge gratitude to my family for all the support they gave me, and even being geographically distant encouraged me with their words, attention and immeasurable love.

My friends that were comprehensive when I could not be around, my classmates and colleagues that heard my complaints and kept me positive.

I want to dedicate this work to my mother and all efforts she makes to give me the best education, always inspiring me being a strong person with great values, and make me believe that it is possible, always it is!
**ABSTRACT**

Agile Project Management is a popular method within the Software Development area, and has been pointed as responsible to deliver faster projects where change is accepted and uncertainty managed. Nonetheless, the positive impact on communication where different areas must work together, collaborating and eliminating formal and heavy procedures. Although, those benefits are outstanding in the past years and other Industry sectors that are not software related, started to adopt and adapt the practices into their projects in order to have better results.

This research proposes to explore through qualitative analysis the effectiveness of the method and how metrics as budget, time and quality have been achieved. Additionally in what way communication have evolved within these teams and how physical environment can affect it. Professionals from different sector using Agile in their project, where a final deliverable is not a software, were involved in this investigation. From data collected generalisation and conclusions were developed based on statements and literature.

There is an overall consensus that Agile it is effective in decreasing lead time on these projects, delivering high customer satisfaction, with minor deviations presented in the budget metric. Communication within team have presented positive improvements, followed by personal development. Investment on physical environment and team organisations played an important role in this outcome.

The practices can also benefit non-software sector, although some similarities in the nature of the project are needed such as release in slots, constant change, and flexibility in scope and most important is people mind-set to embrace and make methodology succeed. Professionals must bear in mind that transition and implementation requires training, change management and especially high executive support in order to bring agility to all levels in the organisation for solid results.
# CONTENTS

1 INTRODUCTION .................................................................................................................. 5

1.1 THE CHOICE OF THE RESEARCH TOPIC ........................................................................ 5

1.2 DESIGNING THE RESEARCH QUESTION ....................................................................... 7

1.3 THE RESEARCH JOURNEY ......................................................................................... 9

2 LITERATURE REVIEW ................................................................................................. 12

2.1 AGILE PROJECT MANAGEMENT .................................................................................. 12

2.2 THE TRADITIONAL METHOD VERSUS AGILE ............................................................ 18

2.3 AGILE PROJECT MANAGEMENT ADOPTED IN OTHER PROJECTS SECTOR ............ 22

2.4 PROJECTS PERFORMANCE METRICS FOR SUCCESS .............................................. 28

2.5 TEAM COMMUNICATION IN AGILE ENVIRONMENT ................................................. 31

3 RESEARCH METHODOLOGY AND METHODS ............................................................... 34

3.1 METHODOLOGY INTRODUCTION .......................................................................... 34

3.2 RESEARCH PHILOSOPHY ......................................................................................... 35

3.3 RESEARCH APPROACH ............................................................................................ 36

3.4 RESEARCH DESIGN AND STRATEGY ...................................................................... 37

3.5 TIME HORIZON ......................................................................................................... 38

3.6 DATA COLLECTION INSTRUMENTS .......................................................................... 39

3.7 SAMPLING – SELECTING RESPONDENTS ................................................................ 41

3.8 DATA ANALYSIS PROCEDURES .............................................................................. 44

3.9 RELIABILITY AND VALIDITY ................................................................................. 45

3.10 ETHICAL ISSUES .................................................................................................... 45

3.11 LIMITATIONS OF THE RESEARCH METHODOLOGY .......................................... 46

4 FINDINGS .................................................................................................................... 48

4.1 INTRODUCTION ......................................................................................................... 48
LIST OF FIGURES/TABLES

FIGURES

Figure 1: APM Practices .................................................................23
Figure 2: APM Enablers .................................................................23
Figure 3: Conditions for Agile Applicability ...................................25
Figure 4 Statistic Methodology Distribution ...................................26
Figure 5: ARA – Agile Readiness Assessment ...............................27

GRAPH

Graph 1: Industry Sector ...............................................................120
Graph 2: Consultancy x Position ...................................................120
Graph 3: Methodology Approach ..................................................121
Graph 4: Hybrid x Pure .................................................................121

TABLE

Table 1: Created by the Author - Agile Management Practices Outcomes ........................................15
Table 2: Management and organisational behaviour. .........................................................17
Table 3 Drivers for choice ..................................................................50
Table 4: Project Nature, Industry sector and Professional Position ..................................51
Table 5: Background, Experience and Training .........................................................52
Table 6: Change Management Process ..................................................54
Table 7: Customer involvement in the project ......................................................55
Table 8: Metric - Budget ..................................................................57
Table 9: Metric - Time ....................................................................59
Table 10: Metric - Quality .................................................................60
Table 11: Team features ...................................................................61
Table 12: Physical Environment, Tools and Approaches ........................................63

4
1 INTRODUCTION

As defined by PMI (2013, p.5) “Project management is the application of knowledge, skills, tools, and techniques to project activities to meet the project requirements”. The role of Project Manager is essential for those interactions and along the years the profession is gaining more space and also popularity.

Changes in the culture and behaviour have a huge impact in business environment and its drives the strategies drift (Johnson, Scholes, and Whittington, 2011). The external factors are one of the biggest drivers of change and Project Management, especially in project driven organisations are facing new challenges. Within this new context the external changes are also affecting the way projects are managed, therefore new methods and techniques are emerging in order to fit into this the new scenario, types of projects and also improving their efficiency.

1.1 THE CHOICE OF THE RESEARCH TOPIC

The first challenge faced by the author was the search for a topic. Due the course stream and the researchers personal interest the research is associated with the Project management knowledge area, which can be regarded as a broad and flexible subject and applicable at different industry sectors at different manners.

From the author’s perspective the research topic should be innovative, with a contribution to the project management community and also offering future opportunities of being applied to a career journey amplifying the competitiveness and employability. This point led to the first research stage, which aimed to answer: What are the trends in the Project Management sector? The search was informal, not with an academic perspective, for this reason the answers were found in peer discussion groups, respected Project Management blogs and the Project Management Institute website and ranked. The exploration reached a common point - The Agile Methodology.
A lot has been discussed about the topic, forums, articles but most of them are focused in the software development Industry and according to Larson and Gray (2011, p.595):

“Agile PM is still evolving. While much of the attention in this chapter has been devoted to software development, Agile PM is being successfully applied to a wide range of unpredictable projects. New methods and approaches will continue to be developed and adapted to meet the specific needs of projects. Stay tuned.”

The Agile Manifesto it was the launch to flourish this new approach, as suggested by Wysocki (2013, p.327) “70% of the projects should have used some type of Agile [due their complexity nature] but it didn’t”. Since the manifesto models of APM (Agile Project Management) has been guided mostly by software developers.

Agile Project Management is described as an effective methodology in projects with software development nature responsible for Project performance (regarding metrics stablished) due the iterative planning, schedule shortening and customer involvement and good communication within the team (Rasnacis and Berzisa, 2015; Rasmusson, 2010). The method application aims to reduce the final product rejection, acceptance and management of changes due the interactive planning - what went wrong and what can we do better next phase (Ghani, Bello and Bagiwa, 2015). APM is also pointed as responsible for a simple and effective communication, eliminating the top-bottom structure fostering the sense of ownership and sharing common goals in the endeavour leading also to professional development.

The benefits of the Agile methodology and philosophy until then were not familiar to this author and having studied the PMI PMBOK approach the raised the question : If the APM is beneficial within the information systems sector can other types of projects make the use of the Agile practices practice and create added value to the project?

Three of the Agile Manifesto authors, Highsmith (2012) cited by Bowles Jackson (2012) defend that the practice can be used in all projects that present uncertainty, short delivery time and change in requirements, and defend the way project success have been managed lately dissolving the rigidity of the iron triangle and adding the value, quality and constraints as metrics.
“The Agile Principles are broadly applicable” Hunt (2012) cited by Bowles Jackson (2012), work is based on continuous improvement from lessons learnt and this is not just exclusive of software development.

As declared by Van Bennekum (2012), other author of the Agile Manifesto “Agile is holistic and applicable everywhere in business or life. I use it as a concept wherever I am and for whatever I do, from defining online strategies to the total refurbishment of my house.”(Bowles Jackson, 2012). In recent TED talks the writer Bruce Feiler (2013) mentioned the Agile benefits applied in the familiar context, highlighting how his family had improved their routine using Scrum’s technique – one of the different approaches described as Agile. Due the popularity of the subject and also the author’s perception in relation with the increase in the demand of professional’s experts with the practices the research topic showed great career value based in being pursued.

1.2 DESIGNING THE RESEARCH QUESTION

Taking in consideration the positive aspects of the method within the software development context, the popularity and also the statements of the authors that the practices are applied in other industries sectors the author engaged in an academic search to observe if previous studies had been carried out in this area.

The search aimed to build an understanding about the method, the different types of approach, benefits, downsides and investigations about diverse types of projects that had made use of the practice.

Grounded in the previous research “Can Agile Project Management Be Adopted by Industries Other than Software Development?” carried out by Conforto et al. (2014) taken as initial base for this work, practices and enablers related with the methodology were identified within industries not declared Agile. Therefore, suggesting the possibility of its use in other types of industries other than software development, especially in products or projects that are innovative in nature.

This research aims to further explore this field, the author recognized an opportunity not just to identify companies or projects [outside of software development] that have declared
themselves as Agile but also investigate whether the practice implementation can represent benefits for those organisations, resulting in an efficient in achievement of proposed metrics and evaluate the level of communication level within an Agile project team.

Based on the issues previously mentioned this research has as objective to investigate answers to the main question:

**Can Agile Project Management practices be effective in terms of project Performance (budget, time, quality) and team communication when applied in non-software development projects?**

This study has an exploratory nature that aims to investigate and answer these question throughout Qualitative Data utilising the inductive approach. For this reason, an hypotheses not developed, yet main factors about the methodology were identified in literature available for Information Systems sector. Those facts underpinned topics and questionnaire designed to collect primary data, carrying out analyses if other types of industries sectors and projects can also benefit from APM, or increase project implementation efficiency.

Firstly, searching for companies declared as Agile or professionals that work in those environments where software development it is not the final deliverable in their projects. Exploring if the performance metrics established by the author based on theoretical framework - budget, time and quality (Serrador and Turner, 2015; Kerzner, 2006; Shenhar et al., 2001) have been achieved in those context or even presented improvements after implementation, investigating whether these outcomes are related or not with the Agile practices.

Secondly, exploring the communication quality level within an Agile team identifying and relating the results with the layout proposed by the methodology, in terms of organisation, physical space and approach.

Thirdly, being able to identify some of the management practices and enablers (Conforto et al., 2014) and Agile Principles (Beck et al., 2001) presents in those environment carrying out a briefly discussion about change management process, customer involvement in these context as well the challenges faced by those companies with the practices adoption.
The author recognize that a detailed analyses of improvements measured before and after Agile implementation would be valuable in this context, as well an investigation the communication quality in all levels of the project such as stakeholders, governance and clients not just limited to the team. Although, due limitations related to time constraint, availability of samples and the necessity of having a more narrowed topic in order to execute a deeper study these hypotheses were excluded from the research scope.

Therefore, the research is focused on an initial investigation and exploration about APM in non-Information Systems industries, identifying those sectors and endeavours where the final deliverable is not a software. Furthermore the impact of the Agile practices in the metrics previously mentioned, communication proposing future studies and recommendations from conclusions draw.

1.3 THE RESEARCH JOURNEY

The research is subdivided in different phases, first stage was the Secondary data collection that resulted in the Literature review presented in the Chapter 2. This section aimed to critically analyse the information available in order to help answer the research question (Saunders, Lewis and Thornhill, 2016). This phase was the one most valuable in the research process, the knowledge acquired within the theory was crucial to underpin the semi-structured interview`s topic and questions in order to collect the primary data.

The third chapter will discuss the Research Methodology and methods utilised for data collection, presenting the choices made by the author followed by justifying the reason that methods chosen were more suitable than others in this research context. The research methodology describes the scientific procedures applied to investigate and answers the research question (Kothari, 2004, p.2), presenting how primary data was collected and analysed, from the questions development journey, selecting the participants and carrying
out the interviews. The chapter also explores the limitations of the methodology and ethical
issues based on author`s assumptions.

In the Chapter four the Data Analysis and Findings will be presented and discussed with the
conclusions based on the interview`s interpretation and analyses that hereafter will be
addressed to the main issues.

The following section brings Discussion that aims to answer the research question linking
the findings and results with the literature, answering the main question and critically
analysing the main finding.

The sixth chapter will draw the Conclusions and recommendations for future research that
aim to add more information about the Agile Project Management utilised outside of the
software development area. It should also identifying the weaknesses in the methodology
utilised, the challenges faced by the researcher and the contribution that the conclusion
have added to the Project Management body of knowledge.

The last chapter will be an inner journey, of self-reflection and learning as a result of
undertaking the research topic and about the MBA Project Management Stream as general.
The contribution, learning processes, challenges overcome and future recommendations.

The research process is the final milestone for an MBA student, where is possible to
condense the knowledge acquired along the course, and in depth discuss a subject being
able to find solutions or models for certain issues. Nonetheless the personal and
professional development that is achieved, implementing skills and preparing the individual
for the professional journey.
For this particular research, the central objective in answering the main question is to evaluate if the method can be beneficial outside of software development. Creating awareness to companies that make the use of the practices but do not recognize it (Conforto et al., 2015) underestimating the results with lack of training and clarity (Rigby, Sutherland and Takeuchi, 2016). Also to encourage other academics to research further in this topic, discover addition knowledge and bring new solutions for the Project Management area breaking the rigidity, reducing failures and delivering valuable projects.
2 LITERATURE REVIEW

In this section the literature is reviewed and covered by five different topics. Firstly presenting the methodology and justifying the reasons for its popularity, secondly a comparison between the Traditional methodology and Agile identifying the positive and downsides of both methods.

The third section starts with a more direct approach to the research objectives, exploring Industrial sectors [except software] making use of the method and identifying necessary components for the practice implementation.

Followed by the performance metrics in the project context stablished in the research, and the communication within an Agile team.

More than build a knowledge base related to this work, this section helps to identify the main factors within the Agile Project Management practice in order to elaborate the topics for the interview’s question and validate the findings and conclusions.

2.1 AGILE PROJECT MANAGEMENT

2.1.1 THE AGILE MANIFESTO

The Agile term emerged on February 2001, in Wasatch Mountains of Utah in a gathering meeting between software developers (Highsmith, 2001) where the Manifesto for Agile software development was signed. The movement aimed to foster a lightweight methodology among the software developers, eliminating the bureaucratic processes and heavy documentation involving the industry.

The new mind-set approach disseminated by the manifesto would aim to keep the pace with new technologies (Griffiths, 2007; Highsmith, 2001) and comply with the cultural
changes in terms of new commercial position such as e-commerce, e-business and web companies (Highsmith and Cockburn, 2001).

In the main website that uncover the Agile Manifesto (Beck et al., 2001) focused on software development is possible to come across with the following says:

“We are uncovering better ways of developing software by doing it and helping others do it.

Through this work we have come to value:

- **Individuals and interactions** over processes and tools
- **Working software** over comprehensive documentation
- **Customer collaboration** over contract negotiation
- **Responding to change** over following a plan

That is, while there is value in the items on the right, we value the items on the left more.”

Agile is driven by twelve principles that remain its core value (Beck et al., 2001) the principles are based on customer satisfaction, collaboration, motivation, shortening the worktime and accept the changes:

1) **Our highest priority is to satisfy the customer through early and continuous delivery of valuable software.**

2) **Welcome changing requirements, even late in development. Agile processes harness change for the customer's competitive advantage.**

3) **Deliver working software frequently, from a couple of weeks to a couple of months, with a preference to the shorter timescale.**

4) **Business people and developers must work together daily throughout the project.**

5) **Build projects around motivated individuals. Give them the environment and support they need, and trust them to get the job done.**

6) **The most efficient and effective method of conveying information to and within a development team is face-to-face conversation.**
7) Working software is the primary measure of progress.

8) Agile processes promote sustainable development. The sponsors, developers, and users should be able to maintain a constant pace indefinitely.

9) Continuous attention to technical excellence and good design enhances agility.

10) Simplicity—the art of maximizing the amount of work not done—is essential.

11) The best architectures, requirements, and designs emerge from self-organizing teams.

12) At regular intervals, the team reflects on how to become more effective, then tunes and adjusts its behaviour accordingly.

The Agile software development evolved becoming Agile Project Management (Bowles Jackson, 2012) including more tools and techniques used in innovative projects where uncertainty and constant changes are present but the methodology still prominent among information systems projects (Conforto et al., 2015).

2.1.2 AGILE DISSEMINATION WITHIN SOFTWARE DEVELOPMENT COMPANIES

Around 94% of Software Development companies declare that they use Agile practices (Silberbauer and Coyne, 2015, p.6-7), and it is suggested that practices adoption helps to deliver better software (Tripp, Riemenschneider and Thatcher, 2016, p. 268) but the fact of Agile founders are professionals from the industry sector may not be the only responsible for the methodology popularity. The method is aligned with constant change that business are facing (Highsmith and Cockburn, 2001, p.120), and inside the sector innovative projects must be released in a decent timeframe to keep the sustainable position and remain in the market (Johnson, Scholes, and Whittington, 2011). Nonetheless, companies that adopted the approach showed positive results in return on investment (ROI), cost reduction and customer’s satisfaction (Ghani, Bello and Bagiwa,2015, p.89) the method implies in cutting not necessary work, focusing on deliver the final product according to customer’s expectations.
The methodology comprise a set of approaches that were disseminated mostly within the software industry: including Scrum, Lean Software Development, Crystal, Feature Driven Development, Adaptive Software, Development Dynamic System Development Method, Extreme Programming, Kanban and others (Conforto et al. 2014, Ghani, Bello and Bagiwa 2015).

Companies outlined that the positive results of the methodology implementation (see Table 1) exceeded the challenges (Silberbauer and Coyne, 2015, p.60) implied to it such as: cultural behaviour adjustment, change management, investment in training.

<table>
<thead>
<tr>
<th>OUTCOMES</th>
<th>REFERENCE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Not rigid control, learning process is carried to next iteration creating reflective process and implementing improvement in the next processes</td>
<td>(Conforto and Amaral, 2010,p.74)</td>
</tr>
<tr>
<td>Changing is accepted and encouraged, delivering valuable outcomes</td>
<td>(Dalcher, 2011)</td>
</tr>
<tr>
<td>Reduction on development costs and increase in the customer satisfaction</td>
<td>(TechBeacon, 2016)</td>
</tr>
<tr>
<td>Better management in high levels of uncertainty, high scope change</td>
<td>Larson and Gray (2014, p.593)</td>
</tr>
<tr>
<td>Enhanced in communication and team interaction</td>
<td>Silberbauer and Coyne (2015)</td>
</tr>
<tr>
<td>self-management, self-discipline, participative decision making, increase collaborative participation and sense of ownership</td>
<td>Conforto and Amaral (2010,p.74)</td>
</tr>
</tbody>
</table>

*Table 1: Created by the Author - Agile Management Practices Outcomes*

In terms of professional growing and development, the practice encourages the empowerment (Rasmusson, 2010), versatility and accountability by delivering valuables at the end of each interaction. Other issue addressed in the practice is communication, one of the biggest factor of project failures (Toader et al., 2010; Abbas and Sanavullah, 2008), APM disseminates the same language in the project and foster lean communication, based on face-to-face (Beck et al., 2001).
Another relevant point, is job satisfaction (Tripp, Riemenschneider and Thatcher, 2016, p.289) research suggests that software development teams where APM practices are implemented present higher levels of satisfaction, decreasing the turnover rate therefore presenting better results in the project. There is a possibility of the satisfaction factor be related with the accountability that nurture the sense of ownership, motivating individuals.

2.1.3 THE NEED FOR A NEW METHODOLOGY

The ascending of a new method is not just matter of delivering better software, but also fitting into the current business situation. The speed of changes and a new professional mind-set can be related as reasons for the necessity of a new managerial approach therefore project management practices that allow deal with changes and satisfying employees and customers (Conforto et al., 2015; Silberbauer and Coyne, 2015; Mullins and Christy, 2010).

In the statement made by (Mullins and Christy, 2010,p.20) the organisational behaviour and need for greater flexibility is being affected by the business competitiveness, fast technological advance, globalisation, customer-driven markets, balance life/work and the need for constant productivity and nonetheless the increase of Y generation in the job market. This factors lead to a reshape the work environment and relations (managers, workers and customers) that can be evaluated on the Table 2:
Table 2: Management and organisational behaviour. Source: Mullins and Christy (2010, p.21).

Analysing the changes is possible to conclude that the management practices were affected by the changes in the professional behaviour, where a top-down structure is substituted by collaboration and the power dilution (Mullins and Christy, 2010), factors prominent in the principles (Beck et al., 2001). Furthermore, acceptance of change and its management, a faster reaction to adapt into a new and uncertain situations are also features comprised by the Agile method (Beck et al., 2001; Karlesky and Vander Voord, 2008).

Other aspect that suggests a growth in the demand for users of the methodology is the increase of professionals applying for the Agile Practitioner certification processes (PMI, 2016). Project Managers with rapid response, facility to work with complexity in a collaborative are the profile that fits in the practices.

2.1.4 CUSTOMER GETS INVOLVED AND CHANGES MANAGED

In projects managed with Agile, customers takes a really proactive and participative part rather than active/passive like in the Traditional method (Wysocki, 2013), and even the
client must be trained and educated into the Agile practices to define this role, amplifying the participation to achieve valuable inputs to the business.

Creating sense of ownership in the client can be one of the solutions for this commitment, and highlight that the importance of the technical aspects are minimal and keep the focus on the value that the project must bring to the enterprise is the key element to justify the involvement (Wysocki, 2013). Product owner, nonetheless is a customer working in the project team, the practice recommends a client working full-time in the team yet in the reality the involvement rarely is totally dedicated, which does not represent a barrier to adopt the method (Rasmusson, 2010).

Literature suggests relation between the customer satisfaction versus involvement level, and methodology is pointed as a reason, which also reflect in the organisational learning progress required to iteratively and incrementally produce the best possible value (Shine, 2003 cited by Owen et al., 2006).

According to Steffens et al. (2007) in the traditional project management approach change it is a negative aspect (Conforto, E, & Amaral, D 2010), changes affects resources, causes plan alteration and compromise the budget (Wysocki, 2013). On the contrary, the change is well accepted in the Agile environment even in the later stages, and these inputs are generally due the customer working in togetherness and to adapt to market changes.

2.2 THE TRADITIONAL METHOD VERSUS AGILE

The traditional method has a well stablished set of tools, techniques and practices for project management, where in spite of the variety of tools that are present the Project Managers tend mostly use Gant Chart and Project Management Software (Conforto and Amaral, 2010). This can reflect in the rigidity where the project plan is stablished up-front and changes are not welcome, especially in case of innovative project and uncertain endeavours where change it is regarded as a learning process that can add value to the enterprise.

A comparison between Agile and Traditional Method made by Rigby, Sutherland and Takeuchi (2016) point that Agile presents major benefits specially in terms of team
productivity and employee satisfaction, minimizing the waste caused by excess of bureaucratic process, defects and low-value products. The team ownership encourage the decentralization of management, allowing executives focus their attention on higher value activities.

Furthermore, the rigidity and detailed plan in the traditional management can represent budgetary and time waste (Rigby, Sutherland and Takeuchi, 2016), while the Agile practices suggests focus only on delivering added value components.

2.2.1 THE PMBOK GUIDE IN AN AGILE WORLD

Firstly, is important to emphasize that PMBOK is not a methodology but a best practices guideline where methods can be adapted to the process. Other relevant aspect to be taken in consideration in of the methodology chosen is the internal company culture, the project management process must be aligned with the internal environment (Johnson et al., 2011; Ghosh et al, 2012; PMI, 2013). Although, the good practices recommended by the guide are more prominent in the traditional management style which in the case software development projects were widely associated with the Waterfall method for Project Management (Sliger, 2008).

Understanding the weaknesses related to PMBOK can represent a way to address the adoption of the Agile. The process suggested by the PMBOK guide results in a longer development stage, and the lessons learnt are just evaluated at the closing stage (Ghosh et al, 2012) whereas APM specially Scrum allow an assessment at the end of each iteration, encouraging problem solving for the next phase.

The guide suggests a robust detailed plan which has no margin for misinterpretation (Ghosh et al, 2012), although the change acceptance and adaptability of the new conditions can be affected by the level of detailing. APM does not present this level of information, but changes are easily implemented (Conforto and Amaral, 2010, p.74). Some authors defend that the PMBOK and Agile can be used in conjunction, but others highlight that high level of detailing can cease innovation and initiative (Highsmith, 2004 cited by Lesnevisky, 2007).
Another aspect previously mentioned is the customer involvement, Agile requires a customer participation during the all project life cycle equally while PMBOK practices this involvement is high at the beginning and decreased in the other stages (Sliger, 2008).

The aim of this piece of work is not to endorse the Agile Project Management practices in deployment of PMBOK practices or Traditional methods but understand the facts that made the method become more popular and acceptable in the past years, also to identify the use of the method outside of the software development and impacts that can cause in performance and communication to address the research question.

2.2.2 ENHANCING THE TRADITIONAL USING AGILE – HYBRID ENVIRONMENT

The companies can still using traditional and Agile in conjunction, is actually an ideal circumstance in the case of transition (Silberbauer, A. and Coyne, B., 2015). In the other side, the lack of flexibility present in the traditional method can be supplied by the APM practices (Conforto et al., 2015).

Trust and cooperation within the team and customer aligned to the customer satisfaction (Lesnevisky, 2007) are one of the features absent in the traditional approach that can be supplied by Agile practices in companies that have it as core value (Johnson et al., 2011).

Agile is often misinterpreted in relation with deficit of documentation and high regulated environments (Silberbauer, A. and Coyne, B., 2015) can opt to not implement agility due this concept. The documentation it is existent, only the waste it is eliminated just what is expected from the stakeholders (Donovan, 2015) or will add value to the customer will be produced. Is the same factor for the auditions, the method allow traceability especially if the appropriate tool is used, team will not be concerned because it will naturally occur and be controlled.

Furthermore, the concept of Hybrid Project Management is emerging as defined by (Conforto et al., 2015) the hybrid model is a combination of different project management approaches in order deliver flexibility and maximize the business value, enhancing the performance especially for projects with innovative nature.
Agile is generally defended to be applied as pure (Silberbauer, A. and Coyne, B., 2015). Although, some environments with high uncertainty and complexity added by distributed and large teams, with various stakeholders and heavy backlog can benefit from a Hybrid environment. The concept within the information systems teams generally comprise the known waterfall or stage-gate with one of agile approaches (Conforto and Amaral, 2016).

The demand for a hybrid environment can be justified by an increase of innovative projects (Conforto et al., 2015), but other authors defend it as an alternative for traditional companies adopting the Agile (Iqbal, 2015).

For the reasons related above is possible to conclude that one method is not better than other, or write or wrong. What must be evaluated is the nature of the project, the internal and cultural values and clarity of the goals, once these factors are identified the choice is easier and also as suggested by the hybrid methodology they can have an adjustment in order to supply each other weaknesses and reach better results. Those are other features of APM, the flexibility and adaptability of that the method allows (Conforto and Amaral, 2016).

2.2.3 THE REASON FOR CHANGE AND BOTH SIDES OF THE METHOD

Companies that desire a better collaboration, time shortage and cheaper projects with lower level of defects might consider to adopt the practices in their endeavours and processes, although the author found a deficit in the literature in relation of the effects when Agile is applied to other sectors and projects that are not software development, this was used as motivation to carry out the research and investigation.

While considering a switch to new methodology requires further investigation inside the company is necessary prior to the decision, analysing both sides the including positives (previously mentioned) and negatives that can be occur with implementation.

The adaption and success of the method depends on how the environment presents the features to maintain the lean philosophy, according to the Ninth Annual State of Agile Survey the biggest reasons for failures of an implementation are the lack of training and organisational culture (Tilk, 2016). Lack of experience that can lead to a misuse of the
practices, and the local mind-set must create contrary conditions for the method acceptance (Rigby, Sutherland and Takeuchi, 2016)

The capacity of the method being used in the risk projects where safety and security are argued by some authors (Walczak and Kuchta, 2013). Highsmith defends that APM are designed to comply risk projects while Beck states that the practice in terms of risk management is not highly covered in this cases, both are authors of Agile Manifesto. The different views can propose a deep consideration in the projects with this nature.

Other downside of the method is that Agile teams develop a high sense of prioritization (Rigby, Sutherland and Takeuchi, 2016) which can cause a conflict with the parts of the company that does not adapt the practice (Rigby, Sutherland and Takeuchi, 2016).

In some aspects of project management the implementation of the practices can be beneficial to keep the strategy alignment, responding faster the changes especially in portfolio management (Murphy and Lynagh, 2016; PMI,2013; Porter,1980) but for an efficient use Johnson et al (2011, p.145) – “The language used for change is also important.”

2.3 AGILE PROJECT MANAGEMENT ADOPTED IN OTHER PROJECTS SECTOR

The authors of the Manifesto defend that Agile Project Management principles can easily be adapted to other areas than software development, projects that present uncertainty, complexity, risks and constant changes can make use of the methodology (Bowles Jackson, 2012, Cleden, 2009).

The methodology is gaining popularity, and some other areas outside of information systems are making use of the practices to enhance their projects especially areas that demand new product development, and product vision where the release and client approval can be done by cycle generally at the end of each iteration (Conforto et aI., 2014).In previous research carried by Conforto et al (2014) the authors explored companies that are not declared as Agile, and identified Agile management practices see Figure 1 and 2 and enablers that would allow the use of the method in the project Management context.
The authors also defend that the practices and enablers must be present in conjunction to the adoption of Agile Project Management, and it is also important to emphasize that this piece of work is not limited to just projects that are “pure Agile” or have no software development in the life cycle as the nature of most projects developed in the recent years have software development or integration at some stage.

This study aims to focus on projects where the final deliverable is not a software but a product, service or construction and the practices are used along the project development not limited just at the information systems team.
The research indicates (Conforto et al., 2014) companies that are not software development, neither declare the use of Agile in their management practices, made use of the practices such as iterative planning in their project with innovative characteristics. Therefore, evidences suggest that the methodology has being used outside of software development, especially in projects that demand flexibility in management and are innovative with high level of uncertainty.

The use of traditional planning techniques, like Gantt chart, has been presenting limitations in the new product development (Conforto, E., & Amaral, D., 2010) the need for new alternatives can be supplied adopting APM practices.

2.3.1 IDENTIFYING AGILE IN OTHER SECTORS RATHER THAN SOFTWARE DEVELOPMENT

Studies indicate that Agile practices are totally related to innovation (Rigby, Sutherland and Takeuchi, 2016; Highsmith, 2004; Conforto and Amaral, 2010) and endeavours with this nature can be managed with the methodology and have its results improved such as IT projects.

Although, the method is not recommended in repetitive and operational processes (Rigby, Sutherland and Takeuchi, 2016) and projects that have predictability, or changes can imply on a huge budgetary impact, and even projects that can not be tested or released in slots. The Figure 3 consider the types of conditions that can make use of the method which can be contrasted with the enablers (see Figure 2) pointed by Conforto et al. (2014).
The lean mind-set was originally founded within the industrial manufacture sector the model was proposed in 1988 with the Toyota Production System as mentioned by Iqbal (2015) and Griffiths (2007).

A recent research carried out by Project Management Agility Global Survey (PM Agility Global Survey), see Figure 4, also illustrates and complement the identification of the type of companies using APM practices making a comparison with the Traditional and Hybrid model (Conforto et al., 2015, p.15).
One of the objectives of this research is also to explore in the real life context the types of sectors not related with software development that use Agile practices and in what extension they do it, the types of companies found in the literature and articles that are making use of APM can be also found in the statistics (Conforto et al 2014).

2.3.2 WHAT TYPES OF PROJECTS SHOULD ADOPT AGILE

While Agile adoption and effectiveness to develop information systems projects seems straightforward and has been repeatedly demonstrated. How is it possible to define if a non-software related project could benefit from the practice step, especially if the organisation is considering Agile implementation. Ogunnaike and Ray cited in Munshi (2015) proposed an assessment model to evaluate whether APM practices can be fitted into the endeavour, see Figure 5:
The ARA – Agile Readiness Assessment suggests that any project that is out of the simple zone will benefit from the use of the practice and four questions must be answered (Munshi, 2015):

1. How well do the stakeholders know their requirements?
2. How well do the stakeholders know their technology?
3. Are there conflicting interests from different stakeholders?
4. Is there a high risk of failure?

The model brings an interesting insight, although other similar types of assessments are suggested by consultancy companies. Understanding how the enterprise could benefit from the practice and evaluate whether there is an alignment with the business strategy and goals and it can provide an increase on ROI also needs to be taken in consideration before adapting the method (Rigby, Sutherland and Takeuchi, 2016).

The literature also indicates some benefits that can be pursued by different sectors by implementing the Agile such as:

- Adaptive scope and planning, quickly response to change therefore reactive to risks that can affect efficiency (Conforto, E., & Amaral, D., 2010; Highsmith, 2004)
- Competitive market analysis (Highsmith, 2004) business can adapt or change features in order to attend market drift and customer needs, leading to a better competitive advantage.

- Shortening time of a product/service be released in the market.

### 2.3.3 CULTURAL ALIGNEMENT AND AGILE MIND-SET

The culture is linked with the history and strategy, and when a business is facing a strategic drift it is necessary to understand the company culture and bring historical factors and the Managerial experience in order to pursue the new strategy and keep the capabilities and competitive advantage (Johnson et al., 2014).

More than identify types of projects and benefits it is important that the method is aligned with the cultural environment, to make use of APM the enterprise must have an Agile mind-set (Tilk, 2016) and understand why the use of the practice is beneficial and how they can interact and produce better projects if Agile is implemented. The team maturity is also other factor that can affect the adoption, while it is suggested that new practices can be adapted (Conforto et al., 2015) to fit the company others defend that a level of knowledge and experience is necessary (Rasmusson, 2010).

### 2.4 PROJECTS PERFORMANCE METRICS FOR SUCCESS

The iron triangle is known also as triple constraint define the traditional metrics for success in Project Management and it refer to scope (Wellman, 2011), scheduling and cost (Carpim Besteiro, de Souza Pinto and Novaski, 2015). The achievement of the three metrics can be associated with the project efficiency (Serrador and Turner, 2015), the authors draw a differentiation of project efficiency and project success based on theoretical findings as follow:

**Project efficiency:** meeting cost, time, scope goals

**Project success:** meeting wider business and enterprise goals as defined by the stakeholders
Contradictory, customer satisfaction is not regarded as a formal success metric even though is mentioned in the literature (Kerzner, 2009 cited by Serrador and Turner, 2015). Grounded in this theory this researcher believes that satisfaction it is linked with the level of quality that the project has being delivered. Understanding the concept of quality in this context which is “what the customer got what paid for”, implies that the requirements and functionalities were attended and expectations managed (O’Connell, 1994). Other point to be explored is when client can ask for an inflated and heavy scope due the lack of clarity and product vision, but can accept the final project without the previous requirements without affecting quality (Wellman, 2011).

Management plays an important role in this factor – conducting the scope, being able to identify and eliminate unnecessary requirements in order to achieve the business strategy. Some frameworks indicates Quality inside of the iron triangle, making an understanding of if project was delivered on time, budget and scope automatically the quality factor was met, although this statement can be contradictory especially if the expectations are not properly managed. As stated by (Dvir, Raz, and Shenhar, 2003) the “few projects can be delivered on time, on budget and executed as planned but still being a failure because the customer benefits were not met or revenue generated was lower than expected”.

In this study the efficiency regarded as project performance is related to time, budget and quality, while the metric scope is considered as one of most relevant vertices of the constraint (Shenhar et al., 1997), the recent research carried out by (Serrador and Turner, 2015) suggests that project success is impacted by 60% of efficiency and 51% of this factor complies time and budget only.

The focus on this exploration is not to underestimate the scope as a metric but yet include it in the Quality aspects which is understood as the customer’s satisfaction (Shenhar et al., 2001). The reason for that is not just broad the success perspective but also due the nature of the method being studied. As identified in literature Agile is mostly utilised in projects that present uncertainty and changes (Carlos Conforto, Rebentisch and Amaral, 2016; Tilk, D., 2016), which leads to conclude that the scope can be changed in each interaction.
2.4.1 THE METRICS INSIDE AGILE PROJECT MANAGEMENT PRACTICES

Some authors defend that the methodology chosen can impact in the project success (Carpim Besteiro, de Souza Pinto and Novaski, 2015), and the perspective of success may vary according to the stakeholders and client perspective (Serrador and Turner, 2015) as also with the business environment.

The fact is the concept of success may for each organisation, professionals and customers. Considering the case of projects with high technological complexity and uncertainty the factor success is highly impacted by the benefit delivered for the customer (Shenhar et al., 2001).

Nonetheless, the organisation strategic objectives also must be met in order to consider the project effective.

Project delivery time is one of the most relevant when it comes to APM, the main feature of the method is time reduction and delivers more work in short period of time, as delay can impact on ROI. The project managed under Agile practices tend to shorten the release date and this can be ideally applied for the projects that can make use of “release first, improve after” (Rasmusson, 2010).

According to Rasmusson (2010, p.84) “budget have to be treated as fixed”, although is really likely an idea that Agile projects can go over budget of due the flexibility and change acceptance.

Quality is other metric that can not be adjusted to suit time or budget, projects must present high quality standards. Therefore, the methodology suggests a flexible scope where adjustments can be done in order to achieve the time, budget and quality (Rasmusson, 2010). Flexibility on scope with customer involvement is crucial in this aspect of maintain the three metrics suggested.

Product visualization it is a way to manage the customer’s expectations, and also to involve the customer into the project. This relation need to be well managed as transparency can affect the client satisfaction which can impact in the project results (O'Connell, 1994).
2.5 TEAM COMMUNICATION IN AGILE ENVIRONMENT

As stated by Hyvrari (2006) communication is one of the most important factors for a project implementation succeed cited in (Carpim Besteiro, de Souza Pinto and Novaski, 2015, p.21)

The work environment has a significant impact on group cohesiveness and communication. Sharing the same task or working for the same objective can improve the group efficacy. Mullins and Christy, (2010) defends that communication is affected by the type of task, work environment and technology. Where a team has an easy and free communication environment, without physical barriers that can disturb it or isolate individuals which can improve the cohesiveness in the group.

The model command-and-control present in traditional environment (Ghilic-Micu, Stoica and Mircea, 2014) can affect how individuals interact within a team, therefore the quality of the outputs they will deliver. The project results are linked with how the communication processes are dealt during the life-cycle, this process includes project team, stakeholders, customers, top-management and all individuals that are affected by the project.

According to Bavelas and Leavitt cited by (Mullins and Christy, 2010) that proposed models for communication network for complex tasks nature that are common in the projects environment, they suggested the al-channel model where communication is decentralized encouraging full interaction and delivers a better performance, those characteristics found in Agile teams (Ibrahim Alzoubi, Qumer Gill and Al-Ani, 2015). The level of satisfaction of individuals in this model is higher with low leadership prominence, although under pressure the group can segregate which might indicate the need for a mediator (i.e. Scrum Master).

Certain authors have suggested (Kerzner, 2006; PMI,2013) that the communication is a complex matter and crucial for the project results, although the aim of the research question is to limited the analysis of the quality of communication within an Agile project team, not being extended to other areas such as top management, stakeholders and customers even though the high importance is recognized by the author.
2.5.1 AN AGILE PROJECT TEAM

The definition of the term communication within Agile team here discussed is not just limited to the exchange of technical aspects, but also all team members need to be able to identify the alignment of the project value’s and companies goals, recognize risks and impacts that change can signify to the endeavour Conforto et al. (2014). Workers that have a pre-established quantity, deadline and level of performance and more difficult goal will perform better, and have increased motivation rather than professionals that are required just to deliver their best with no clear objectives as stated by Mullins and Christy (2010).

APM practices propose a small team size, around 10-15 members (Silberbauer and Coyne, 2015) according to literature, but in contrast other authors suggest that it can be applied in bigger organisations (Owen et al., 2006) where formal written documentation is replaced by face-to-face communication to minimize deviations.

The reason for minimal teams can be related to the number network channels (Kerzner, 2006), much more individuals involved elevate number of communication channels therefore increasing risk of a failure (Silberbauer, A. and Coyne,B.,2015).

Also the role of the project manager in Agile environment is to facilitate and provide tools, teams are generally cross-functional and self-managed and capable of developing the project themselves, although team maturity is relevant for the choice (Rasnacis and Berzisa, 2015).

APM recommends that a project can be more successful if the team is co-located, but the geographical segregation sometimes does not affect the results (Wysocki, 2013; Rasmusson, J., 2010) but communication still regarded as challenging (Ibrahim Alzoubi, Qumer Gill and Al-Ani, 2015) and is a common situation in the current business scenario. Distributed teams can make use of technology such as social media, video-conference, and chat groups to mitigate the distance factor and build trust.

In the case of co-located teams, the presence of visual and interactive work space such as: no walls, tables that can move, where office desk is not “owned” by the professional, aim to foster collaboration and trust.
The visual interaction and communication in Agile teams is one of the most valued aspects in the practice. Tools such as inception deck, elevator pitch, white boards, storyboards (Rasmusson, J., 2010) foster the creativity and deliver information at a glance.

Other characteristics of Agile teams are the lean communication and easy access to information, for example, in the Scrum (Nee, 2010) where the stand-up meeting has a maximum twenty minutes duration and members do not sit around a table avoiding unnecessary information and loss of focus.

The Agile Principles cover the communication concept in five of them, the authors defend that all involved in the team must communicate and the synchronous communication where only important information must be documented (Williams, 2012). This open feedback channel (Tripp, J., Riemenschneider, C., Thatcher, J., 2016) is a characteristic of this methodology that can enable the failure correction and improvements, eliminating misunderstandings and lack of project knowledge for the late stages.

Another point is that the close relations may cause conflicts within the team, and for new members being included in an already established team can be a challenge, where the project manager will have to play a more reactive role to minimize it (Rasnacis and Berzisa, 2015).

In conclusion, APM practices in terms of team communication present the concept of self-development (Ibrahim Alzoubi, Qumer Gill and Al-Ani, 2015), individuals being collaborative but independent with clear focus and goals being able to share their ideas, exposing the issues that can cause an impediment of the project flow. Although, for an improved level of communication inter-personal relations must be considered just the methods by itself can not be sufficient if team has a lack of cohesion. The mediator (Scrum master, Agile coach or project manager) have as part of activity manage this factors and create an environment to foster union (Rasnacis and Berzisa, 2015).
3 RESEARCH METHODOLOGY AND METHODS

3.1 METHODOLOGY INTRODUCTION

Various meanings are utilised to describe the term research, the terminology that most fit with this piece of work is “scientific and systematic search for pertinent information on a specific topic” (Kothari, 2004, p.1) and according to Clifford Woody cited in (Kothari, 2004, p.1):

“Comprises defining and redefining problems, formulating hypotheses or suggested solutions; collecting, organising and evaluating data; making deductions and reaching conclusions; and at last carefully testing the conclusions to determine if they fit the formulating hypothesis”.

This research does not have a scientific nature but Business and Management (Fisher et al., 2004, p.34) in terms of being aligned with the course purpose. The investigation is focused on general understanding of the Agile practices and applicability inside of the context pre-established, and it will develop a discussion about the outcomes of implementation rather than a deep investigation to build numerical evidences to proves its efficiency.

Based on the Research Onion Saunders, Lewis and Thornhill (2016), this chapter will uncover the steps followed and choices made with the objective to better address the research question, finding the patterns and information in the literature, developing the data collection strategy for analysis and conclusion.

Methodology and strategies describes the approach and paths pursued by the author to conduct the investigation. The choice impacts on the data collection and the quality of the information gathered which will result in the interpretation and conclusions drawn.
3.2 RESEARCH PHILOSOPHY

According to Fisher et al. (2004, p.12) Epistemology is the term that refers to the study of the knowledge’s nature and it may cause concerns during the research processes, which reinforces the need for an better understanding of the techniques in order to choose the most suitable.

The Philosophy adopted for the research topic, taking as bases the research onion is the first approach discussed.

Firstly, the research philosophy chosen was influenced by the view of the researcher about the world and impacts on what is being investigated, different philosophy methods are suggested but is not correct to state and defend an philosophy approach in detriment of the other (Kumar, 2014; Fisher et al., 2004). Secondly, the type of the investigation and context must be taken in the consideration (Saunders, Lewis and Thornhill, 2016).

In conclusion, the author’s assumptions influences the philosophy choice and lead to the research design (Saunders, Lewis and Thornhill, 2016). Scholars have not found an agreement for what type of philosophy is most suitable to Business and Management studies, although there are five (Saunders, Lewis and Thornhill, 2016) different types: Positivism, Critical realism, Interpretivism, Postmodernism and Pragmatism. It is discussed that the most common approaches in Master’s researches are the Positivism and Interpretivism.

Positivism the observation leads to the data generation, where hypotheses were created grounded in the theory and results collected to confirm those hypotheses. Also known as scientific approach, positivism is generally linked with Quantitative research where information is measurable and the researcher is not inserted in the data collection context (Saunders, Lewis and Thornhill, 2016).

Interpretivism comprises a higher involvement of the researcher during the process, and takes in consideration more the human behaviour than machine’s patterns. At this case, results can be interpreted by the researcher according to his or her personal experience or
set of values where one of the biggest challenges are raised due the fact that “researcher and reality are inseparable” Weber (2004, p.4).

The research philosophy pursued was the Interpretivism, where the life experience in this context can be defined by the professional know-how, also grounded on the literature and secondary data that influenced the research question, data collection and formulated the main points observed during the project execution.

Due the nature of the exploration and internal/external factors encountered at the different interviewee’s environment, the author concluded that the research results would not be tangible (Fisher et al., 2004, p.15). To carry out an open analysis and from there develop an understanding of the subject, the use of Interpretivism in this case was more relevant than positivism.

Nonetheless, the nature of this particular research it is exploratory, where the research question will lead to an appropriate hypotheses through data collection observing and drawing conclusions based on the evidence collected.

3.3 RESEARCH APPROACH

Different approaches for researches are named as Inductive, Deductive and Abductive. While using the Interpretivism philosophy the induction is more appropriated (Saunders, Lewis and Thornhill, 2016), in the Induction the theory is formulated after the data analysis and is not strict can be progressed with the research. According to Saunders, Lewis and Thornhill (2009, p.126) “Research using an inductive approach is likely to be concerned with the context in which such events were taking place”.

In other hand the Deductive approach is referenced to previous laws stablished and them logically drawing conclusions (Saunders, Lewis and Thornhill, 2016), it is initially based on certainties and test them with the patterns found in the data. In this piece of work, the prevalent characteristic is the newness of the topic which would limit the exploratory nature and also the challenge of finding hypotheses to be tested in future researches.
As stated by Mintzberg (1979) cited by (Fisher et al., 2004, p.235) “Drawing conclusions require a creative leap”, and due the fact that the information will be interpreted from the interview transcripts is necessary to have careful results analysis not letting the author thoughts influence in the probabilities and conclusions (Fisher et al., 2004). This can be mentioned as a limitation of the induction.

Inductive approach was adopted to conduct the research provided that Project Management can be regarded as a scientific specialization due to it methods and techniques, although the success or failure of the framework rely on the human behaviour and interactions along the endeavour. Therefore, the environment where the analysis is carried out it will influence the results. For this reason the inductive will be the most feasible approach even though the author recognizes the limitations on the method.

3.4 RESEARCH DESIGN AND STRATEGY

In the past 80’s a discussion among researchers related with the two research strategy methods took place the comparison quantitative versus qualitative aimed to prove which was better than another (Johnson and Christensen, 2012, p.31-32), However, the 90’s researches adopted the pragmatic mind-set defending that both strategy deliver relevant results and also could be used in conjunction where the term triangulation come from.

Quantitative research design aims to identify patterns and correlate variables through a numerical data collection and statistical and graphical analysis it is more recommend when the primary data collection is executed in a systematic way (Saunders, Lewis and Thornhill, 2016). The quantitative research investigates how one fact affect other, if there is or not connection between them (Bell and Waters, 2014). This alternative was considered by this researcher at the beginning of this investigation but the final decision to apply qualitative analysis remained appropriate to this research question.

Whereas, qualitative research is gaining popularity in the last few decades due the fact of pluralization of lifestyles Flick (2006, p.12) and it is referred to many type of non-numerical data collection (Saunders, Lewis and Thornhill, 2016, p.161).
It is important to emphasize that both strategic approaches have their limitations and the choice of the strategy depends on the research question and the type of data that is required and how it will be collected.

The investigation was conducted under a qualitative research design data collection strategy and analysis, as this was seen to align with the philosophy and approach chosen. Also considering the researchers point of view, that being part in the data collection and in contact with the respondents would increase either interpersonal skills would result in valuable insights for future conclusions rather than quantitative data collection, which could limit the purpose of this work. The main challenges of this strategy was to identify and gain the access to the instrument of analysis (Saunders, Lewis and Thornhill, 2016; Fisher et al., 2004).

Another major concern was related to the conclusion development that requires the author is distanced from the research context to carry a thoughtful analyses in order to avoid bias (Bell and Waters, 2014) and deliver a valid result.

Other option considered by the researcher was the mix of methodological choice - qualitative and quantitative (Saunders, Lewis and Thornhill, 2016; Johnson and Christensen, 2012), this would require another structure of data collection not compatible with the time available, and therefore eliminated by the researcher.

### 3.5 TIME HORIZON

Ideally in the case of the project executed would be more valuable if developed into a longitudinal research (Saunders, Lewis and Thornhill, 2016; Bell and Waters, 2014). The main reason would be evaluate the current situation of a company before adopting the methodology, analysing the implementation, change processes and after consolidation measuring the results again evaluating the method effectiveness. In this form the answer for the research question would be more persuasive, and could identify different perspectives and draw effective recommendations, suitable for a consultancy company.
Other alternative for longitudinal research is the retrospective of the literature available (Fisher et al., 2004) but as previously mentioned the APM it is an innovative topic, and there is no much data base to embed the analysis.

Due the time constraints factor and amount of research and literature available on the topic, the alternative pursued by the author was the cross-sectional study where the issues were addressed at the particular time (Saunders, Lewis and Thornhill, 2016). Generally this type of study is commonly used in conjunction with survey, not excluding the other instruments, at this particular case semi-structured interviews. The limitations of the choice implies on the depth of the information collected but still valuable as a start point for future researches. Therefore due to time constraints imposed on this researcher a cross-sectional approach was applied.

3.6 DATA COLLECTION INSTRUMENTS

Data collection process is essential for primary research execution and the selection of tools are aligned with the research strategy, in this investigation data collection was conducted throughout semi-structured interviews.

Semi-structured interviews are often utilised for qualitative data analysis, and aim to understand what and how is happening in the context. The nature of this work is exploratory which means that the approach is not depended on proving an hypotheses, and the interviews can present slightly variation inside the context pre-established adapting and improving the findings Saunders, Lewis and Thornhill (2016, p. 324). Other factor that influenced the choice was the information available (Gill et al., 2008) about Agile in non-software context.

Surveys and questionnaires with closed question, characteristic of quantitative design would limit the findings and not helpful in identifying major concerns and benefits of Agile in non-software environment.

Other factor that is important to emphasize in the instrument choice, is not only that professionals in the managerial level tend to be more likely in answer interviews rather than questionnaires, but also the seen opportunity in expanding professional networking...
executing interviews. Nonetheless, from a future career perspective that is intrinsic in the objectives of research, discover professionals in the area as well communicate with them meant skills reinforcement due the formality of the situation.

3.6.1 THE RESEARCH TOOL – INTERVIEW

According to Bell and Waters (2014, p.104) the research tool is the instrument used to gather the data. The main tool for this study were the interview questions. The total of thirty three questions designed based on theory points covered in the literature review, with open-end characteristic (Boyce and Neale, 2006). Qualitative research has questions and methods with more general at the beginning and become more focused when the study progress as stated by Bell and Waters (2014, p.17) this position was adopted in this study and can be reflected on the interview questions.

Recognizing the limitations in the data collection, a pre-determined list of questions in structured format (Gill et al., 2008, p.291) was elaborated in the cases where the information was collected by email due the participant availability allowing the same type of data collected from all the population.

The biggest concern on the development was to collect enough information (Gill et al., 2008,p. 292) for the study matters, and being progressive nature easier questions to build confidence (participant-interviewer). The estimated duration 30-45 minutes, participants were previously provided with details and agreement of confidentiality, which will be discussed in the Ethics section. The question format are verbal/open where interviewee could expose his/her own experience and point of view from the topic asked (Bell and Waters, 2014).

The investigation it was not limited to a geographical location, and mixed techniques were utilised: face-to-face, Skype calls and e-mail. The face-to-face interviews and Skype were voice-recorded to engage with the participant during the dialogue. Later information was accurately transcribed for data analysis purpose. While executing, the interview the biggest challenge for a first time researcher was voice tone and avoid miss-leading questions (Bell and Waters, 2014) to do not influence participants, especially verbally.
The participants were asked to answer each of the questions, what at the first impression could imply on a survey format but the main objective was to lead them in the question reflection, being opened with the answers and also letting them comfortable to highlighting missed aspects by the author and sharing experience that were valuable to data analysis.

A weakness found while using interview is the risk of bias and also is time consuming, but can be an advantage is the clarification of misunderstandings and adaptability what can result in more valuable information (Bell and Waters, 2014). Other concern was to develop questions with words easy to understand rather than make use of jargon and avoiding overuse of technical terms.

3.6.2 SECONDARY DATA

The secondary data collection had a crucial importance in the conduction of this investigation, not just gather information to build and address the research topic but also identify and evaluate different point of views about the method in the literature.

The collection was carried out through academic journals, books and conference proceedings and recognized focus discussion groups about Agile. The biggest challenge and concern faced by the researcher was to identify reliable sources within the information available. Nonetheless, keep focused on reading just relevant contents in order to build valid assumptions inside the context researched.

3.7 SAMPLING – SELECTING RESPONDENTS

Sampling is a common practice in research context, especially at this particular case where time constraint is a predominant factor it is not feasible to identify and collect data from all population making use of APM methodology and results must be achieved on time for data analyses process. For this reason, sampling is necessary but not for the previously mentioned also to maintain high level and accuracy of information, in the case of interviews a small sample was seen as practical and helped to narrow the analysis and findings.
In contrast with quantitative data collection, that has a sample size pre-established, considerations (Kumar, 2014) must be taken while selecting sampling for qualitative analysis. In opposition, quantitative, the sampling population was expected to be small not just considering the access to potential interviewees but also due the fact of the use of the Agile methodology is not common within the context specified. Therefore, the main concern in this investigation was the quality of the information provided rather than quantity, participants were carefully selected and some interviews discarded due the content not being aligned with the study.

As suggested by Saunders, Lewis and Thornhill (2016, p. 324) the number of interviews recommended for this type of analysis is between five to twelve or until reach data saturation as defended by other scholars (Saunders, Lewis and Thornhill, 2016; Kumar, 2014; Fisher et al., 2004).

Denscombe (2010) cited by (Bell and Waters, 2014,p.18) explanation reinforces this point:

“Should not lose anything by the way of rigour. Like any other small-scale research, it can draw on existing theories, apply and test research propositions, use suitable methods and importantly offer some evaluation of existing knowledge (without make unwarranted claims). It is the rigour, rather than the size of the project or its purpose, by which the research should be judged.”

The statement just emphasizes that the criteria in the study conduction can bring valuable results. The sampling definition proposed by Flick (2006,p.123) recommends 3 stages:

1) Data collection – Case Sampling and Sampling groups of cases

2) Data interpretation – Material Sampling and Sampling within the material

3) Findings Presentation – Presentational Sampling

The primary data collection could be considered as the second part of this research, where after the interviewees were identified, contacted, interviews executed. The transcribed data analysed to draw findings and conclusions. In Master`s and business dissertation the use of data collection in theoretical fragments for primary research is not a common practice.
Initially the author had proposed a sample between 6 to 10 interviews consisting of Agile Project Managers, team members and stakeholders. The main reason for the sub groups was to investigate all the process from different perspectives, also the sampling would be connected to the different types of industries using the APM. Limited by the time constraint the idea of sub-groups was eliminated, and only Agile Project Managers or as commonly known Agile Practitioners, Agile Coach and Scrum Masters were identified and regarded as a sampling group. Nevertheless, the quantity of interviews were reformulated due the rate of response.

Therefore technique utilised was the non-probability (Saunders, Lewis and Thornhill, 2016) sampling due the fact that was not possible to list all the population that uses the Agile method in the non-software development sector.

The sample was not concerned with geographical limitations, interviews were carried out all over the globe the only focusing on projects where the Agile Project Management practices were utilised through its life cycle and where the final deliverable is not a software.

3.7.1 PURPOSIVE SAMPLING

Identifying Professionals that can provide information based on their work experience with Agile project management practices in non-software context was more suitable for this type of investigation, based on the researcher’s judgement through analysis on those professional’s profile. Although, some expert sampling also will be applied identifying potential participants in articles and journals (Kumar, 2014).

Respondents were mainly identified through LinkedIn and peer discussion groups about Agile, the author also contacted other authors that wrote journals related with the subject, although their background and experience was extremely academic not being valid for this investigation that aims to study APM within a commercial context.

The search for participants was not limited just to these channels also included the tempting to find participants in Project Management Events, Twitter, reliable blogs and companies. The use of social media played an important role in the data collection, although the rate of positive response was lower than expected. The researcher understands that primary data
collection is one of the obstacles to being overcome during the study process and in spite of
the lower response the number of interviews executed totalised five as recommended by
the scholars and it did not affect the analysis.

3.8 DATA ANALYSIS PROCEDURES

The information collected is just valid after analysed and evaluated, in this case of semi-
structured interviews the challenge interpreting the information linking with literature.
Quoting the answers will be also a strategy to reaffirm the hypotheses. The recurrent
patterns in answers is what the research what the researcher aimed to achieve, but the
author is aware of the unexpected information due the methodology chosen can affect
evaluation.

The triangulation is a method more recommended while the time constraint is not present
on the research process and permit the same thing seen in different perspectives (Bell and
Waters, 2014, p.102), this research will make use of single methods.

Taking in consideration that the Qualitative strategy for data collection the interviews will
be recorded using a mobile phone app, with the participant authorization and transcribed
afterwards for an in-depth analysis. The data is displayed by written statements due the
investigation nature (Kumar, 2014). In the reduction process data was transcribed, and the
irrelevant content eliminated in order to originate a focused statement. The author created
a file for each of the interviews and to maintain confidentiality respondents were identified
by pre-defined characters. Data was grouped by question and displayed on excel by columns
to comparison, key words were searched patterns identified association with literature
done.

The data collected was evaluated based on the research question, being the data
transcriptions linked to it. The initial analysis was on individual bases and afterwards results
were grouped to find patterns in the responses and draw conclusions, associating with
literature and theoretical framework proposed by scholars.

Additionally, categorisation and unitisation to execute an analytical process, separating the
data by themes and constantly reviewing until plausible interpretation was reached due the
inductive nature of the investigation statements and conclusions draw can be defined as theory developed according to evidences found.

3.9 RELIABILITY AND VALIDITY

The researcher’s main concern was to Reliability in relation to the methods chosen, and the data collected and if it would provide sufficient evidences for the data conclusion.

Threats as called by the authors are subdivided by bias and error (Saunders, Lewis and Thornhill, 2016) and can be occasioned either by the author or the participant. In this context, the clarity of the questions being asked on the interview could lead to the participant error to eliminate this a pilot interview was carried out and questions examined by three people with different academic background.

In the cases where the interviews were face-to-face and Skype the researcher posture and intonation was neutral and carefully monitored in order to not influence the interviewee`s answers.

Validity matter was not a major concern in this case due the fact that the nature of the research is qualitative and inductive, this would be more related to quantitative research design.

3.10 ETHICAL ISSUES

Ethical issues within research is common a concern, the principle of ethics is largely applied to participant protection but also to ensure to protect the researcher. In the case where the investigation includes underage participants, it is an invasive process or in ethnographical studies (Bell and Waters, 2014) ethical factors must be treated in detail and rigorously also previously approved by a committee that is generally part of an educational institution.

The ethical factors most applied for the investigation conducted were anonymity and confidentiality that are different terminologies. This study relied on confidentiality where
the respondent will not be identified (Bell and Waters, 2014). Although, the anonymity was not possible to be maintained for data analysis.

In order to comply with ethical standards proposed by the institution each participant received an Information consent declaration formally by email before the interview being carried out, based on the template provided. The participant’s answer and were automatically understood as a positive consent. Interviews were confidential where personal name either companies’ names will not be revealed. The reason is not to intimidate the professionals in answering the questions and facilitate the process, due the fact that information data protection is a big concern for most of companies. Also at the beginning of interview the participant was informed by the research that the conversation would be recorded.

The nature of this study did not raised major concerns in term of ethics, and interviewees had the right not to answer the question when not pertinent and information collected will be only used for academic purpose not being revealed for third parties.

3.11 LIMITATIONS OF THE RESEARCH METHODOLOGY

Different limitation of the methodology applied can surround the research progress.

The First concern identified was the quantity of literature available could be challenge to develop a theoretical framework within the non-software industry, although it is important to find solutions to overcome and bring innovative subjects in the Project Management practices that can help professionals to rethink the management styles and create a manifesto for innovation.

Secondly, was the sampling process was not applicable or gathering sufficient data in order to develop a valid analysis. This remained a strong concern, because even at the late stages the researcher is still trying to gather data until a saturation point is reached. Thankfully, the number of interviews could lead to the analysis and conclusions and was aligned with published theory.
Thirdly, are the questions format and data collection process that can represent risk for reliability of the information it can not be eliminated that the human factor is crucial in this matter and interpretation of the same subject may vary from different people even inside of the same context. Also including the bias factor, the use of inappropriate language or use of articles that just evidence one author’s point of view (Bell and Waters, 2014) is important do not endorse the methodology but yet focus on a valuable contribution avoiding these traps. Furthermore, voice recorded interviews can intimidate participants and honest answers missed (Bell and Waters, 2014, p.150).

Following by the design chosen added to the researcher background, being an Engineer tend to be quantitative and graphical presentation does not lead to misinterpretation or ambiguity. Therefore not having a systematic way of interpreting the data caused doubt in terms of validity of the investigation. But the challenge of interpreting information in written fragments represented an empowering mind-set.

Other important limitation that also impacted at the methodology’s choice, that intrinsically have restrictions was the time frame to conduct the investigation. Develop a strategy, aligned with academic exigencies and ensure enough time to analyse, draw conclusions and proofread.
4 FINDINGS

4.1 INTRODUCTION

The author’s choice for a semi-structured interview was aligned with the strategy of pursuing a flow in the exploration allowing interesting insights and observation during the interview.

Although, a questionnaire with thirty three questions was designed based on topics found in the literature (See Appendix 9.1), divided by three different sections:

1) General appraisals
2) Project efficiency – meeting the metrics Budget, Time and Quality
3) The team communication

The decision for having a questionnaire model emerged by the necessity of interviews being answered by written e-mail due to limited access to participant as well to direct the conversation face-to-face or Skype. It is important to emphasize that the questions covered the same topics in order to answer the research question and its objectives.

Five interviews were executed among Project Managers, Scrum Masters and Agile coaches all of them at managerial level involved in projects non-software related or where the final deliverable it was not a software. Through data reduction the relevant information was extracted and analysed and the main findings are presented following sections.

The interview’s transcript have their full content available on Appendix 9.2.

4.2 GENERAL APPRAISALS

The focus on a research is addressing the main question, although to effectively investigate the central point on a study factors surrounding the theme also must be questioned and
analysed in order to make comparisons, finding relations and patterns. The general appraisals explores briefly points that will lead further to data analysis in order to answer the main query.

4.2.1 THE AGILE CHOICE AND STRATEGY

Understanding the factors why organisations choose the methodology and their strategy, it is essential to evaluate if those companies have been attending the objectives set as well what factors triggered the implementation.

Participants were asked the reason for the methodology choice, the company strategy, what they intended to achieve with the project and if a correlation between project management methodology being used with the organisation’s strategy. The Table 3 provides an overview for the reason on the three different layers mentioned.

Time shortening and faster projects were common reasons mentioned (OD01, GB02, KD04 and ZS05), but change in the high level in the management (CD03, KD04) can also influence the project management strategy choice.

External factors, and market influences as mentioned by KD04 “(...) as well as potential competition from the Googles and Facebooks, with their ability to develop and deploy solutions at speed, it was decided a change was required.”
The lack of clarity (CD03, OD1), that also can imply on the cost according to OD01 statement “*Waterfall model you make a big plan everybody signs the plan and agree about it but everybody understand everything different*. “*We deliver things that will be never used and that costs money and we want to avoid to create things that we never use*”.

Nonetheless, limitation within Agile also occurs, OD01: “*Safe [approach] (...) that can be the answer problems, problems that just scrum doesn’t acknowledge. They say to solve things with Scrum, there is a moment that Scrum does not work anymore*”.

Evidences leads to a coherent link between methodology choice, company strategy and the reason for Agile implementation in their context. The main factors mentioned as drivers for change and choices are addressing the central point in this study the project effectiveness (Budget, time and quality). Section 4.3 shows a deeper analysis and comparison.
### 4.2.2 INDUSTRY SECTOR, PROJECT AND POSITION

The general findings were executed for an initial exploration in regarding of the type of projects and industry sector that have been using the methodology as also the roles that the professionals play within this industries, see the Table 4 bellow:

<table>
<thead>
<tr>
<th>Label</th>
<th>Type of Project</th>
<th>Industry</th>
<th>Position</th>
<th>Consultancy</th>
</tr>
</thead>
<tbody>
<tr>
<td>OD01</td>
<td>Customer Service Relations Improvement</td>
<td>Bank</td>
<td>Project Manager</td>
<td>Yes</td>
</tr>
<tr>
<td>OD01</td>
<td>Communications Platform</td>
<td>Public Transport</td>
<td>Scrum Master</td>
<td>Yes</td>
</tr>
<tr>
<td>GB02</td>
<td>Confidential</td>
<td>Bank</td>
<td>Scrum Master</td>
<td>Yes</td>
</tr>
<tr>
<td>GB02</td>
<td>N/A</td>
<td>Charity</td>
<td>Agile Coach</td>
<td>Yes</td>
</tr>
<tr>
<td>GB02</td>
<td>N/A</td>
<td>Healthcare</td>
<td>Agile Coach</td>
<td>Yes</td>
</tr>
<tr>
<td>CD03</td>
<td>Customer Service</td>
<td>Insurance</td>
<td>Agile Coach</td>
<td>Yes</td>
</tr>
<tr>
<td>KD04</td>
<td>Marketing and Sales</td>
<td>Financial Services</td>
<td>Agile Project Manager</td>
<td>No</td>
</tr>
<tr>
<td>ZS05</td>
<td>Medical Evidence</td>
<td>Healthcare</td>
<td>Agile Coach</td>
<td>Yes</td>
</tr>
</tbody>
</table>

*Table 4 Project Nature, Industry sector and Professional Position*

Is not feasible to generalise due to the small sample conducted, but emphasizing that the participant’s choice was random within the sample investigated suggests that there is a relevant adoption in Healthcare and Bank (see Graph 1, Appendix 9.3) sector. Furthermore, the participant ZS05 suggests that APM used in non-software development is fairly new and Market and Sales are also implementing the practices “(...) in the recent years there is been a real move of agile outside of that area [IT area], and a lot of in areas like marketing, sales even, a lot of non-technical areas particularly disciplines that are not delivering software development but have a lot of process, a lot of workflow (…)”.

Nonetheless, the presence of consultancy within this projects, where the same individual have different roles such as Scrum Master and Agile Coach (OD01, GB02). Interaction with customer is also a characteristic of those projects (see Graph 2, Appendix 9.3).
4.2.3 PROFESSIONAL EXPERIENCE, BACKGROUND AND TRAINING

The researcher considered as an interesting factor investigate the educational background, experience and type of training that professionals involved in the context had (see Table 5). The discover that Scrum Master training can be regarded as popular, also suggests certain maturity in terms of experience not related just with projects but also with APM practices. An interesting point found by the author was the fact that even the industry sector was not tech related it is common those professionals with Information systems or computer science background (OD01, GB02, KD04).

<table>
<thead>
<tr>
<th>Label</th>
<th>Background</th>
<th>Project related Activities (years)</th>
<th>Agile Practices (years)</th>
<th>Training</th>
</tr>
</thead>
<tbody>
<tr>
<td>OD01</td>
<td>Bacharel IT/ICT; Master ICT Management</td>
<td>13+</td>
<td>8</td>
<td>Scrum Master</td>
</tr>
<tr>
<td>GB02</td>
<td>BEng Aeronautical Engineering, MSc Computing</td>
<td>25</td>
<td>12</td>
<td>Scrum Master</td>
</tr>
<tr>
<td>CD03</td>
<td>BEng Electronic Engineering</td>
<td>18</td>
<td>9</td>
<td>Scrum Master</td>
</tr>
<tr>
<td>KD04</td>
<td>MSc. Management of Operations and National Certificate in Computer Science</td>
<td>10+</td>
<td>3+</td>
<td>Scrum Master</td>
</tr>
<tr>
<td>ZS05</td>
<td>Industrial Engineering</td>
<td>27+</td>
<td>6</td>
<td>Scrum Master</td>
</tr>
</tbody>
</table>

Table 5 Background, Experience and Training

4.2.4 APPROACH AND HYBRID ENVIRONMENT

Evidences suggests that the most popular approach in the context is the Scrum and pure environment is prominent, see Graph 3 and 4 (Appendix 9.3). Although, as suggested by the statement the hybrid environment it is present on implementation process (GB02) “They are in the process of adopting Agile and still have a mixture of traditional project management and new Agile practices” or where the method have not achieved certain maturity (KD04) “There is an element of hybrid to the approach, as the team are not fully in control of the release of content to the banks online channels (...).”
Other factor that emerged during the interviews was the necessity of scaling the methodology, and even a transformation from pure Agile to hybrid, (OD01) “public transport it is pretty Scrum for the moment, and looking forward to scale it up as we are looking as systems as Safe or hybrid (...) Scale means bring it to a bigger part of the organisation.”

OD01 – “The Agility is being used in the bank because they are doing pilot, is not completely rolled out yet we are just in pilot phase/”(...) we are more not at the start phase anymore, but still in the learning phase, still learning how we are going to do the scale it up.

4.2.5 CHANGE MANAGEMENT PROCESS AND CUSTOMER INVOLVEMENT

While exploring the change management process the statements suggest a link between change, customer involvement and satisfaction. Evaluating the Table 6 is possible to identify that changes in these environments are expected, accepted and even encouraged. At some cases (KD04) there is a formal process regarding change management, limitations (GB02) but others formality is not necessary (OD01).

A fact to be emphasized is the challenge that can be faced by the Agile team when customer is not directly involved or geographically distant (CD03). Answers also suggest a connection between changes and customer involvement, the value that change add to customer satisfaction.
<table>
<thead>
<tr>
<th>Label</th>
<th>Quote</th>
<th>Author`s observation</th>
</tr>
</thead>
<tbody>
<tr>
<td>OD01</td>
<td>“For us (team) during the project just mean a change in the backlog”; there is no formal change process ;”Change its priority there is not a formal process”; “whenever they want to change they do it. We just ask them to let us know as soon as possible. No process for that is not necessary.”</td>
<td>No formality for change; treated as priority; not limited by time or stage.</td>
</tr>
<tr>
<td>GB02</td>
<td>&quot;when using Scrum there is no change management process&quot;; &quot;framework expects there will be continuous change as the project proceeds&quot;; “encourages change so that the product being developed is a good match for the customer’s needs”; “exception(...customer is outside the organisation and the work is being provided under contract”</td>
<td>Change part of process to satisfy customer need; exceptions applied under type of contract/scenario</td>
</tr>
<tr>
<td>CD03</td>
<td>“commercially impossible to engage with them directly”; ”layers of abstraction across the globe so in that scenario where fundamentals of Agile in that space they are struggling with them”; “internally get your requirements as clear as you can with Agile execution”</td>
<td>Challenge regarding change with overseas customer</td>
</tr>
<tr>
<td>KD04</td>
<td>“Changes are managed in standard way...” see Appendix 9.2.4 for stages description</td>
<td>Formalised change processed by stages</td>
</tr>
<tr>
<td>ZS05</td>
<td>“we not only accept the change will happen but we encourage to happen because we feel that having an approach that adapts well to change will get a best product at the end of the day, because then we can get feedback from people as we are doing the work and based on that feedback we can make changes”</td>
<td>Change encouraged; feedback and change results in client satisfaction</td>
</tr>
</tbody>
</table>

Table 6 Change Management Process

In most of the organisations the client is highly involved in the project context, mostly being a part of the team and feeding the Change management process.
4.2.6 CHALLENGES ON THE IMPLEMENTATION

Those respondents that took part on implementation process were asked to identify the biggest challenge and also what they regard as fundamental in the context or organisation to use the Agile practices.

The biggest challenge faced on the implementation is pointed as human factor (OD01, CD03, KD04), the acceptability and ability to accept change (CD03), power dissolution, especially within the more mature professionals (OD01) “(...) older population [55+] have more challenges with that than the younger population, definitely the really young people that are leaving universities they are basically trained in this way of thinking.”

A misconception about the method application is also presented as a challenge is underpinned by GB02: “Adopting Agile in some departments but then having them work closely with other departments that are not using Agile practices.” Some other areas of the organisation consider that APM is just applied to the project team (OD01, GB02, ZS05) or even create resistance to adapt to it (GB02, KD04).
The desire for change also can represent a challenge if the implementation process does not have a clear vision (CD03).

In relation with the factors that must be present on an organisation the participants highlighted the following points:

- High Management/Executive support (OD01, GB02, CD03 and ZS05)
- Investment in training and facilities, i.e. physical space, software (OD01, KD04)
- Flexible, open-minded and innovative organisation (GB02, KD04)
- Other areas of the organisation being included in the process (OD01, GB02)
- Customer focused organisation (OD01)
- Not high regulated environment (GB02)
- Customer involvement and commitment (OD01)

To that end, the data gathered indicates that human behaviour and high management support are factors that can highly impact on the transition or implementation process and must be included on the change management plan while considering to adapt the methodology.

4.3 PROJECT PERFORMANCE – MEETING THE METRICS: BUDGET, TIME AND QUALITY

The evaluation of these metrics were crucial for addressing the research question, and investigate the effectiveness of the methodology when applied in the context pre-established. As previously mentioned, the overall analysis can not be carried out in isolation of the factors to address the main enquiry. In this section the results found in the exploration for each one of the metrics will be displayed, hereinafter discussion and conclusions in the section 5.
4.3.1 BUDGET

In relation with the Budget, the participants were asked to evaluate the cost of a non-software project managed with APM and if they considered relation between the results with the method. In case those ones whom took part on an implementation process, if improvements were presented.

This question generated a certain variation on response pattern and it suggests that APM can cause positive impacts (OD01, GB02, KD04), as well as a negative impact (CD03) especially at the early stages on the implementation phase, see Table 8.

<table>
<thead>
<tr>
<th>Label</th>
<th>Budget Evaluation</th>
<th>Result x Method</th>
</tr>
</thead>
<tbody>
<tr>
<td>OD01</td>
<td>Cost reduction after implementation, not in high proportions, but reduced</td>
<td>Result is related with Agile</td>
</tr>
<tr>
<td>GB02</td>
<td>Budget more predictable</td>
<td>Result is related with Agile</td>
</tr>
<tr>
<td>CD03</td>
<td>Significant loss of control on budget (implementation), short-term increase</td>
<td>Result measured after implementation</td>
</tr>
<tr>
<td>KD04</td>
<td>Flexible Scope, adjusted to deliver project on budget</td>
<td>Result is related with Agile</td>
</tr>
<tr>
<td>ZS05</td>
<td>Suggested that fixed budget is not aligned with method</td>
<td>N/A</td>
</tr>
</tbody>
</table>

Table 8-Metric: Budget

Other interesting responses were the adaptability in what is being delivered while having a fixed budget (KD04) and also the suggestion for new types of budget (ZS05) while adopting APM.
To illustrate the results displayed on Table 8, the author highlighted the main findings throughout narrative pieces collected from interviews:

**OD01** - Presence of KPI’s to measure efficiency pointed decrease but not significant on budget. KPI’s also suggests relation with Agile and improvements on budget: “(...) bank we have the KPI - cost of project, how long the project takes, and we see that projects they tend to be cheaper and shorter, actually dramatically shorter, cheaper is not that dramatically but definitely shorter.”

**GB02** – Predictability: “Less likely to have nasty surprises on cost/schedule”; “Agile is critical to these results.”

**CD03** - Initial negative impact on budget (overspent) early stages of implementation: “a loss of control in there in spent, but it was over a short term, it was over couple of quarters spend went to the roof. There was a negative impact in there”.

**KD04** - Suggests achievement budget due flexibility on Scope, that is allowed by the Agile (Scrum) framework: “Generally delivered in line with budget and time/scope that has flexed to allow both to be maintained.”

**ZS05** – Suggests that fixed budget is not aligned with the framework mind-set: “Still have budgets but that is very difficult because if you remember the way I describe it with this adapting to change requirements is very difficult to keep that within a budget so other financial models”; “when you are introducing Agile to an organisation (...) you need to stop thinking in terms of fixed budget for projects”

On the basis of the evidences currently available, it seems fair to suggest that the results in metric budget is variable depending on the context where is applied.

### 4.3.2 TIME

In regarding with the metric time, the same format question applied for budget was examined for each participant and the following results were provided, see Table 9:
In contrary of the budget, the metric time presented a positive answer pattern in terms of time reduction (OD01, GB02, CD03, ZS05) or schedule alignment due adjustability (KD04) provided by the framework. The participants related the outcomes with APM and can be assessed in detail by the statements below:

**OD01** - Presence of KPI’s to measure efficiency indicates significant decrease on deliver time (around 8 months) the KPI’s suggests relation Agile and improvements: “projects they tend to be cheaper and shorter, actually dramatically shorter”; “When we started the transformation program we have objectives and the project (...) time was more than 2 years and is dramatically down is partly done because of Agile”.

**GB02** – Predictability: “More predictable (i.e. less likely to have nasty surprises on cost/schedule)”; “Agile is critical to these results.”

**CD03** – Time shortening: “Timewise the overall lead time of a project disappeared (...) so it really impacted on timing”.

**KD04** – Adaptability on scope to deliver project on time: “requirements in the format of user stories, in a priority order, the flexibility provided in terms of scoping is greatly increased. This then allows budget and timeline restrictions to be adhered to”.

<table>
<thead>
<tr>
<th>Label</th>
<th>Time Evaluation</th>
<th>Result x Method</th>
</tr>
</thead>
<tbody>
<tr>
<td>OD01</td>
<td>Delivery time reduced from 1.5 year to 9 months</td>
<td>Result is related with Agile</td>
</tr>
<tr>
<td>GB02</td>
<td>Predictability in schedule</td>
<td>Result is related with Agile</td>
</tr>
<tr>
<td>CD03</td>
<td>Significant decrease on lead time</td>
<td>Result measured after implementation</td>
</tr>
<tr>
<td>KD04</td>
<td>Flexible Scope, adjusted to deliver project on time</td>
<td>Result is related with Agile</td>
</tr>
<tr>
<td>ZS05</td>
<td>Time reduced due Agile</td>
<td>Result is related with Agile</td>
</tr>
</tbody>
</table>

*Table 9 – Metric: Time*
**ZS05** – Adaptability: “(...) with Agile you tend to do a lot more work than you would do in the traditional project because you tend to adjust a lot more. While in the past was over a year now that can be reduced just in a few months or even less.”

All things considered, it seems reasonable to assume that the Agile practices had a positive result in terms of time shortage when applied in non-software projects.

### 4.3.3 QUALITY

Participants were asked about customer satisfaction, if the project suffered many recalls or quality issues after being delivered. Satisfaction in this case it was utilised as an indicator of the project’s Quality, the author’s understanding is the metric is attended when the client signs off the final deliverable (or stage) and it meets or exceed their expectations with the features and purpose met.

Surprisingly the metric seems not officially measured as a KPI, only one participant mentioned the measurement (ZS05). Although, the general assumptions and assessment made by the participants suggests that APM have a positive impact on the customer satisfaction as showed on Table 10:

<table>
<thead>
<tr>
<th>Label</th>
<th>Quote</th>
<th>Quality Evaluation</th>
<th>Impact</th>
</tr>
</thead>
<tbody>
<tr>
<td>OD01</td>
<td>“We don’t measure the quality today”; “the fact that they are always there, giving us more directions and making us more aligned with what they want, and they know what they will receive. In that perspective I believe we are in the good track.”</td>
<td>Not officially measured Satisfaction demonstrate due client behaviour and participation</td>
<td>Positive</td>
</tr>
<tr>
<td>GB02</td>
<td>“In my experience projects delivered using Agile usually result in a high client satisfaction and a high level of quality.”</td>
<td>Use of APM impacts on Quality</td>
<td>Positive</td>
</tr>
<tr>
<td>CD03</td>
<td>“I think the overall quality of the deliver dramatically increased”; “feedback was out of the charts, the feedback of this community of brokers out there (Australia) (...) they thought was the best thing they came across.”</td>
<td>Increase on customer satisfaction, feedback assessment</td>
<td>Positive</td>
</tr>
<tr>
<td>KD04</td>
<td>“Client satisfaction is very high”; “As the Product Owner reviews the backlog on an ongoing basis (...), the chance of successfully delivery are greatly increased.”</td>
<td>Client satisfaction is high Retrospective (Scrum) increases final acceptance rate</td>
<td>Positive</td>
</tr>
<tr>
<td>ZS05</td>
<td>“(With Agile) What we would do is deliver a project which is close to what the end user wants”; “often with Agile project we measure customer satisfaction”</td>
<td>Adjustability and customer satisfaction as KPI; APM projects delivered according to customer needs</td>
<td>Positive</td>
</tr>
</tbody>
</table>

Table 10 Metric: Quality
4.4 COMMUNICATION WITHIN THE TEAM

Communication within the team is a factor included in the research question, the exploration of how the teams are constructed and distributed, the size, modification on the physical environment are queries addressed in software projects that use the methodology.

The professionals were questioned about this information, and also to make an assessment of the quality of communication within the team members.

The interviewee OD01 did not answer the communication section due to time limitations, and ZS05 made an overall statement about the topic. However, considering the good quality of the information collected from GB02, CD03 and KD04 the evaluation will be carried based on the evidence gathered from those participants in togetherness with ZS05 statement.

Team features was the first assessment made by the author (see Table 11) data collected seems to suggest the point that Agile teams tend to be smaller (3 to 12 maximum). Another suggestion is that team size can impact on communication quality as data yielded proposes that “Large teams can cause issues on communication” (GB02) and in lessons learnt from transition process “I was working a group of about 24/25 split across 3 teams. That was a mistake (…)” (CD03).

<table>
<thead>
<tr>
<th>Label</th>
<th>Team Size</th>
<th>Distribution</th>
<th>Part-time/Full-time</th>
</tr>
</thead>
<tbody>
<tr>
<td>GB02</td>
<td>Scrum - 3 to 9 per team&lt;br&gt;Kanban - 9</td>
<td>Distributed and Collocated</td>
<td>Full-time</td>
</tr>
<tr>
<td>CD03</td>
<td>Currently - 10/12 per team&lt;br&gt;Transition - 24/25</td>
<td>Distributed and Collocated&lt;br&gt;Cross-Functional</td>
<td>Full-time</td>
</tr>
<tr>
<td>KD04</td>
<td>3 to 4 per team</td>
<td>Co-located</td>
<td>Full-time</td>
</tr>
</tbody>
</table>

Table 11 Team features

The statement made by ZS05 underpin the idea of the quality of information versus team size can impact on budget and efficiency, reinforcing the communication lines theory.
(Kerzner, 2006), and defending the point that Agile teams should be small "Agile teams they tend to be smaller they communicate more and more efficiently and because of that there is less of those issue", misleading of communication impact negatively on cost.

Teams tend to be fully dedicated to the project function, and it is common the presence of distributed and co-located teams, the latter being pointed as more effective (GB02). Other information presented by CD03 are the cross-functional teams, that improved the quality of the work delivered but in controversy created communication issues "initially we were working on functional based teams, so that was obviously a mistake as well and so we switched to cross-functional teams which improved things significantly but it then created communication problems, collaboration issues".

Table 12 explores the physical environment in an APM context, and types of communication approaches and tools used by the teams. Results lead to the conclusion that the physical environment can impact on integration and executive support is important to make it happen (CD03), furthermore external factors can impact on methodology functioning "physical changes made to the working environment outweigh the APM practices themselves" (KD04).

The type of approaches encountered encourage informal communication and high level of interaction throughout the use of visual tools.
<table>
<thead>
<tr>
<th>Label</th>
<th>Physical environment</th>
<th>Communication Approach/Tools</th>
</tr>
</thead>
<tbody>
<tr>
<td>GB02</td>
<td>Break-out areas</td>
<td>Chat tools (Skype)</td>
</tr>
<tr>
<td></td>
<td>Team seat positions - encouraging free communication</td>
<td>Strong reliance on verbal communication and less emphasis on documentation</td>
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<td></td>
<td>Task board and meeting space</td>
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<td></td>
<td>dual key-board for pair working</td>
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<td></td>
<td>information radiators(product backlog visualization)</td>
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<tr>
<td>CD03</td>
<td>Culture of Mobility: desks reshuffled on regular basis</td>
<td>Feedback on retrospective collaboration</td>
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<td></td>
<td>Electronic board</td>
<td></td>
</tr>
<tr>
<td></td>
<td>white board (encourage physical interaction)</td>
<td></td>
</tr>
<tr>
<td>KD04</td>
<td>Floor redesigned (team seating together)</td>
<td>Release goal</td>
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<tr>
<td></td>
<td>&quot;White walls&quot; to make work visible (boards, capacity planners, brainstorm and meetings)</td>
<td>Scrum board</td>
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<tr>
<td></td>
<td></td>
<td>Jira (product backlog, sprint backlog and burndown charts)</td>
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<tr>
<td></td>
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<td>rely on informal communication</td>
</tr>
</tbody>
</table>

Table 12 Physical Environment, Tools and Approaches

The quality in communication within the team after implementation presented improvements (GB02, CD03) and is pointed as clearer and more effective (GB02, KD04) where teams are more interacted (GB02) and collaboration increased. The respondent GB02 suggests a link between communication quality and methodology effectiveness “Teams that struggle with communication rarely succeed with Agile.” At some cases also professional development (GB02) such communication skills are pointed as positive factor.

The downsides that APM can present is related with introverted members (GB02), limitations on integrations of new members after “closed groups” are formed (CD03) and the amount of information exchange can limit the time available to work (GB02, ZS05).

“Communication is the most significant aspect of Agile (….) communication becomes far more productive across the organisation (…)a traditional organisation you get a lot of progress meetings the really not adding a huge amount of value with agile a lot of the conversation is very very powerful, direct conversation this is what you want” (Z05).
Grounded on data analysis, evidences indicates that communication can be regarded as one of the most relevant and positive aspects of the methodology with team size and physical environment impacting on the quality level.

4.5 SUMMARY

Data analysed in this section showed that Agile Project Management practices adoption for non-software projects has been flourishing in the latest years, and areas such as Bank, Healthcare, Insurance and others are benefiting from it.

The factors that propelled the APM implementation, mentioned by the participants were also points addressed (performance metrics) by the research question and there is an alignment between methodology choice and strategy.

Scrum appeared as most popular approach, followed by Kanban, where the majority of the professionals applying the methods in non-software context have I.T. background. The concept of hybrid environment is not significant but utilised on the transition stage.

A high customer involvement is necessary, where changes are well accepted and encourage are part of the projects. Nonetheless the APM implementation requires the executive level participation, workers with an open mind-set and involvement of all areas of the organisation.

In relation with budget performance no general conclusion, either positive and negative impacts were identified, as well suggestion for new financial models to align with methodology. Nevertheless, the flexibility on scope permitted by the practices can control the impacts. Time reduction was presented by all the projects implemented with APM in the participant context, suggesting a positive outcome in this metric. Quality was not identified by the interviewees as official metric, although based on the participants assessment the level of customer satisfaction in those projects is acknowledged.

Communication within team is positively affected by the methodology, and the use of physical space with team member’s limitation can influence in this metric.


5 DISCUSSIONS

In order to answer the research question “Can Agile Project Management practices be effective in terms of project Performance (budget, time, quality) and team communication when applied in non-software development projects?”

This section will look back at the literature review and results found in the primary data creating a comparison between the theoretical methodology outcomes identified in the software context and “real life” non-software projects utilised with Agile, evaluating the practices effectiveness in the context established.

5.1 PROJECT PERFORMANCE – BUDGET, TIME AND QUALITY

The data analysed within the five different participants showed that the metrics proposed to answer the main question were aligned with their strategic choices, and is fair to confirm that were successfully met in terms of time and quality within the non-software projects explored.

Evidences suggests that the metric time was the most positive achievement with the methodology utilisation, pointed by the five participants, which agrees with the idea that schedule shortage is the most beneficial factor in the methodology (Rasmusson, 2010, Beck et al., 2001). Findings pointed to time shortening and a dramatically decrease on lead time (OD01, CD03), including the concept of flexibility on scope (KD04) to attend the schedule proposed. The reduction of the project delivery time, enabled implementation of solutions creating business competitive advantage (Highsmith and Cockburn, 2001) and concern of first to market of the competitors (KD04). As confirmed by (Highsmith et al., 2001).
In agreement with Serrador and Turner (2015) the metric quality it is not officially measured in the most of the contexts investigated with exception for ZS05, although grounded on the participant`s assumptions and customer feedback APM it is related with a positive impact and customer`s need were met or exceeded (CD03). Which leads to the other point found in theory, where the client involvement plays an important role (Wysocki, 2013) on the achievement of this metric.

Relating the three factors quality achievement, customer satisfaction and change acceptability within the contexts explored in the interview resulted in a project closer with the client needs (OD01, GB02, CD03, KD04), change is seen as a limitation on the traditional method utilisation (Ghosh et al, 2012, Steffens et al., 2007) due a robust and detailed plan (Rigby, Sutherland and Takeuchi, 2016) but as a principle in Agile (Conforto and Amaral, 2010, Beck et al., 2001) in order to deliver the results expected in a shorter time frame.

In relation with the metric budget the investigation resulted in different aspects. While some theory suggests positive improvement in budget with the method Conforto et al. (2014).other made the point that budget aspect in Agile is still a grey area (Rigby, Sutherland and Takeuchi, 2016; Wysocki, 2013), reflecting in the suggestion made by ZS05 for new budget models. Although, it is important to emphasize that only OD01 pointed cost reduction as reason for methodology choice, and the same mentioned a slightly decrease on budget with the APM utilisation. In the case of CD03, assumptions made by the author are that the negative impact on budget can be related with the lack of maturity regarding the practice as the participant suggested that costs were controlled on the third quarter after implementation. In the case of KD04, the flexibility on scope [acceptability of changes] makes the budget be achieved as suggested by Rasmusson (2010) “costs should be treated as fixed”.

Based on literature (Dvir, Raz, and Shenhar, 2003) even though the budget metric did not present significant decrease and caused negative impact on early stages post-implementation in one of the contexts, the customer satisfaction presented in the project with the time shortage suggests that the method still can be effective due the benefits delivered to customer (Shenhar et al., 2001).Emphasizing the fact that the methodology choice can affect the project success (Carpim Besteiro, de Souza Pinto and Novaski, 2015).
5.2 TEAM COMMUNICATION

Literature shows that level of communication affects project success (Carpim Besteiro, de Souza Pinto and Novaski, 2015, p.21), and Agile framework in software projects proposes an informal but strong communication within the project team, where only relevant information is documented (Owen et al., 2006).

The data gathered suggests that non-software projects executed with APM presents strong, clear and effective communication (GB02, KD04). Investigation identified small teams between 3 to 12 members fully dedicated in the project which agrees the point made by Silberbauer and Coyne (2015) that teams should be 10 to 15 members. In opposition with the point of view that Agile can be applied to bigger teams (Owen et al., 2006), investigation identified challenges to deal with larger teams (CD03) reinforced by communication line theories, more channels can contribute for project failure (Silberbauer and Coyne, 2015; Kerzner, 2006).

The context investigated had distributed and co-located teams, which aligned theory that both can work (Wysocki, 2013; Rasmusson, J., 2010), even though co-located teams are more effective as suggested by GB02 the data collected did not present negative impacts on distributed.

Only participant CD03 presented the cross-functional team concept, pointed out that it improved the quality of work although it created problems with communication which can be associated with the fact that was analysed in the implementation process, which stands the theory that maturity factor is relevant for this choice (Rasnacis and Berzisa, 2015).

The concern with the physical environment and use of interactive ways to share information and visual communication were aspects encountered in the exploration, those factors were related with positive improvements within the team integration emphasizing the evidences found in literature that how the environment is constructed impacts on team cohesiveness (Mullins and Christy, 2010).

Members self-development was also identified (Beck et al., 2001), but the amount of communication and free talk can intimidate introverts and also be seen as “time wasting”
Furthermore the high level of involvement among team members can cause problems for “newbies” as identified on literature (Rasnacis and Berzisa, 2015) and participant statement (CD03).

The exploration in non-software projects and comparison made with theory identified similar aspects, and suggests that APM practices foster a high level communication quality within the teams, making non-software projects benefit from the methodology.

5.3 GENERAL CONSIDERATIONS

The Agile choice for those companies investigated was driven by limitations found on the traditional methodology (Conforto, E., & Amaral, D., 2010) as well with the nature of projects being delivered, organisation culture and strategy. The possibility of APM being implemented in those projects that are not just exclusively software development and succeed can be justified by the presence of practices and enablers Conforto et al. (2014) identified in theory, see Figure 1 and 2, as also with the favourable conditions related by the respondents that can be compared with Figure 3 (Rigby, Sutherland and Takeuchi, 2016) such constant change in solutions and options, complexity and release in slots.

Other factor identified in literature yet not further explored were hybrid environment, suggested by literature (Conforto et al., 2015; Iqbal, 2015) as alternative in transition phase for non-software context, or companies that want to benefit from the practice but are high regulated environment or demand larger teams. The participant OD01 indicated the intention of hybrid implementation after transition process, with the necessity of scaling [implement method to other areas in the company], and the others respondents just apply pure Agile as defended by Silberbauer and Coyne (2015).

As an initial exploration the research presents limitations in terms of sampling, methodology, access to participants/companies and context investigated not being possible to draw a final generalisation or theory related with the main issue. As assumption made by the author fact that implementation in non-software is fairly new. Although is possible to state that the study achieved the initial purposes made by the academic identifying the method utilisation inside new context and contribution.
6 CONCLUSION

The research carried out showed that in spite of its recent development Agile practices has being effectively used not exclusively in software project but also in other type of industries such as Healthcare, Banks and Financial services and even Charity. The use of the methodology indicates positive impact on time shortening, customer satisfaction and satisfactory budget achievement. Communication within teams presents a good level, fostering collaboration and self-development.

The similarity within non-software projects and software projects context in relation to applicability, metrics achievement and challenges were identified by this researcher and the interesting fact is the professionals working in those environment, generally as consultants and coaching have an I.T. background showing an opportunity for other areas investing on training. Those similarities can also be justified by the ascending type of innovative and uncertainty in projects, driven by the current business situation.

Although, limitations on the methodology must be considered, as the exploration did not have access to projects in high regulated environment, with complex budget (McHugh, McCaffery and Casey, 2012) additionally with the fact that the projects investigated the deliveries were done by release which is favourable for the practices adoption.

APM has been proven as a valuable alternative to manage projects and even limitations being considered, organisations should not exclude a project management philosophy but rather adapt techniques into a hybrid environment.

6.1 FUTURE RESEARCHES RECOMMENDATIONS

The author believes that this research is just a beginning of the studies about the Agile practices utilised in other areas rather than software, a lot has to be studied, tested and developed in order to contribute effectively for it.
For future research, a longitudinal and deep statistical analyses of the method implementation should be carried out including deductive quantitative research, measuring KPI’s before, during and after transition to evaluate impact on ROI, considering investment in training and expenses with the implementation process. The study also can prove project efficiencies based on factual evidence discovered during this research. From this process a framework or good practices for change management based on the general challenges faced could be developed, suggesting better ways for other companies minimize the risks and failure on implantation process.

Other area for future development are the hybrid environment further investigating this approach and analysing what Agile practice has been adopted and what aspects from Traditional remained, creating models to enhance the methodology.

Nonetheless, a study to suggest efficient budgetary models that can be easily adopted in order to minimize increase or surprises in terms of uncertainty and constant change.

The author believes based on this study that in the Agile 12 principles the concept of software can be replaced solution, service or product democratizing the methodology creating better work environment, customer satisfaction and competitiveness taking in consideration that there is no better methodology than other, but the most applicable within the business context.
7 REFLECTIONS

“Would you tell me please, which way I ought to go from here? That depends a good deal on where you want to get to, said the cat. I don’t much care where, said Alice. Then it doesn’t matter which way you go, said the cat”.

- Lewis Carrol, Alice in Wonderland

The author believes that this quote fits very well the stream chosen, and it leads to one of most favourite’s process in the Project Management area: Planning.

When a clear goal is set the planning stage begins, and it does not mean changes in the goal or in the planning will not happen during the cycle, especially if gets back to the earlier chapters where the topic chosen is favourable to change and embraces it for better results but being clear in what to achieve, a vision that the author shares.

During the planning stage, other action that must to be taken is the Risk Assessment, trying to anticipate where it can go wrong and draw suitable strategies to mitigate, avoid, accept or even take advantage of these risks in order to the process run smoother.

Nonetheless are the lessons learnt, that allow time to reflect, correct and prepare for the next phase and as Agile methodology emphasizes the self-reflection need to be done in short iterations not allowing big mistakes or wrong strategies being carried for long and causing a negative impact in the final deliverable (Rasmusson, 2010). This section will explore the lessons learnt, the author throughout the an inner journey trying to express the dissertation process evolvement not limited just the in research matter but also during the course taken, relating the knowledge acquired, challenges faced and skills developed.
7.1 AUTHOR’S LEARNING STYLE

The preference in the learning style reflected on this piece of work. There are four main learning style’s model proposed by Honey and Mumford (1992) cited by Cottrell (2010, p. 84-85): Activist, Reflector, Theorist and Pragmatist. The author’s reflective style can be associated with the type of work carried out in this research “gathering data taking time to consider all options and alternatives before making a decision” (Cottrell, p.84) and reinforced by the previously statements in this section.

Furthermore, aspects of Visual learn style also is applicable to the student, while is easier the learning process when information is presented. Those characteristics not just impacted on topic choice strategy as well how data was collected, organised, analysed and conclusions draw.

7.2 THE DISSERTATION JOURNEY

The dissertation stage it was regarded by the author as one of the most challenging, but also a rewarding process. The research just not involves the academic development but also builds the self-confidence and sense of achievement in each obstacle she had overcome.

When the author decided to pursue an innovative topic, with the desire to be familiar with a new methodology and also a new professional mind-set she could not imagine the amount of research and tries would be necessary.

Secondary data

The ability of collecting, organise and analyse secondary data is one of the points the author judge as one of most time demanding yet beneficial in the research process. We are living in a time where the information analysis drives the decisions made and based on data those decisions can be more valuable to the business, therefore the skills acquired will be essential for future professional life.

Employers and companies are searching for professionals with critical thinking and analysis and these skills started to be improved by the author in this stage, know where to look for information, use of different resources, being able to select the important and reliable sources, build viewpoints, search for alternatives to fill gaps found and also to build a pool of most influential scholars in the subject.
The author judges that there is a deficit on literature, especially books, related with the research topic – Agile Project Management applied in non-software projects. Although, due the innovative nature of the work this was already expected. In order to pursue the theme, the author found a secondary way finding the valuable information in academic works, such journals and conference procedures. Other alternative found by the author was appeal for literature written for the Software development area, in order to make assumptions and to underpin the points needed in the research.

Other motivation the author found was to sign for membership Project Management Institute, in order to have access to data, and more than papers is possible to be part a community and start to build a professional network.

Critical analysis still a skill that the author wants to further develop. More than analyse, criticize is a challenging task of translate your thoughts and ideas into words and while not writing on your own mother tongue has been proven more arduous. Although, the author believes it is a constant exercise, being able to find the information and extract the important ideas and contrast with other different points, and just the practice can bring the excellence.

**Primary data**

Qualitative data collection strategy, is regarded by the author as a good choice to exercise the self-confidence and expose herself to the challenges of the external world. Working with things that you are comfortable with makes the individual remain in the comfort zone avoiding to expand the intellect and having contact with new ideas, overcoming weaknesses. From the beginning of the course the author considered the communication a skill to be improved and as a personal challenge exposed herself on situations to encourage it, such as face-to-face interviews.

While primary collection is one of the core factors on a dissertation, when the researcher decides to interview he/she open hand of autonomy and will relies on other people`s answers and availability which can be a concerning process. In order to find the potential interviewees the author called upon to different sources such as peer discussions group, LinkedIn, and even a conference where other professionals with similar interests.
It was challenging process, to find professionals that worked or are working with Agile Project Management in non-software development projects and available to take part on the research, which lead the author of moments of frustration and concern of not being able to continue the work.

Searching for alternatives, and with the persistence gathering the professionals was beneficial in a matter of building persistence and self-confidence to talk on a professional level since the first approach and trying to “convince” people that she does not know to give some of their time in order to help on a project.

The author regard this stage with the most positive sense of achievement, due the fact that the data collection had to be managed in different ways (Skype, face-to-face and e-mail) and the most important feedback received from those professionals that this work can be really valuable for the Project Management community and the boldness of carrying out this with the amount of limitations. Other achievement in the academic perspective that allowed to learn research methodologies and understand why one were more suitable than other and understand the limitations.

Conclusions

Drawing the conclusions is a reflection stage as well, creating a link between the data collected with the literature, validating it to better answer the research question. One of the biggest challenge of the author is being impartial while addressing the research issues, analysing from different angles, and draw a valuable contribution. During the research process the time management skills to avoid burnouts were crucial and also a development of a study plan to have better results.

7.3 THE MBA JOURNEY AND LEARNING PROCESS

After three years of a career break the author felt a desire to take part of a more consolidate project, the reason of taking a masters would not just help her to get back to her career but also contribute to build and reinforce valuable skills for the future professional life.
The choice of an MBA Project Management stream would introduce new knowledge and being a useful bridge with the professional background, also represented an opportunity as the author was always fascinated by the Project Management area. The idea of a project creation process, planning, dealing with uncertainties and finding solutions until its final deliverable adding value for a certain community, which requires a certain dose of persistence and a lot of flexibility were the factors that led to this decision.

In the first semester in the Professional and Personal Development subject the students were asked to write their perspectives about the course and achievements expected not just in terms of marks, but also personal and related to the learning process. Looking back and assessing those first impressions and statements is a way to complete this reflection task, acknowledging the gains and achieved goals also the weakness encountered and points that must be improved.

The first big challenge on an MBA course are the group assignments, especially in a course where the participants are from different nationalities. Working on communication barrier, deadlines, and being responsible sometimes to delegate activities, deal with conflict among the members was crucial to improve the communication and leadership skills, as well to being in contact with possible factors that can be present on a future professional environment. The use of emotional intelligence and self-control are necessary to complete the work and as many times highlighted by the Project Management lecturer “Learn how to work with people you dislike, they will make you to deliver your best results”.

Other rewarding process were the public presentations, where the author recognises as a big challenge and also noticed improvements and self-confidence. Along the course was a notable evolution since the first presentation where a blackout happened compared with the latest ones where the student developed training techniques and engaging with the audience in a better manner.

Understanding different cultures, learning how to evaluate market and industries, strategies and passion for the Global Picture trough information resources (Newspaper, books and articles) the analysis of corporative behaviour the reason of why measures are applied in few situations and how it can impacts in the business results are positive knowledge
acquired when undertaking an MBA course. The development of a global vision that is aligned with the author objectives of pursuing a career in an International Company.

The case studies, and time constraint to solve them during the lectures made the author discover the necessity of improving the capacity of seeing the big picture when necessary not get stuck in the details, and understand that assumptions sometimes are necessary.

Surprisingly, subjects such as Business Strategy made the author discover strengths and vision she never knew she had. The achievements in this case were a new passion for strategy and development of a business mind-set being able to make an assessment and new opportunities for the professional journey.

During to the course development the author found that even the subjects were treated separately they completed one another, constructing a big web of knowledge making sense of the information received.

The course represented an enormous and positive personal achievement for the student. Able to complete her studies in a full-time course at a master’s level on a foreign country and other language, also working to pay expenses and trying to find a balance between personal life and obligations. Being exposed to challenging situations, developing a new mind-set for studies, respecting differences and also keeping up with determination made her believe that it is possible. All those factors prepared the author of this work to the next step that is the certification in Project Management and the search for a professional collocation.
8 BIBLIOGRAPHY


Nee, N, (2010), Metrics for Agile Project, PMI Global Congress Proceedings – North America


9 APPENDIX

9.1 DESIGNED QUESTIONNAIRE

1) What is your position at the current company?

2) What is your education background?

3) How many years of experience with project related activities do you have?

4) How long have you been using the Agile Project Management (APM) practices?

5) Have you attended any type of Agile Project Management training? If positive, please list them.

6) What is the market sector (industry sector) of the actual company you are working for or providing services? Could you give some examples of products/services you provide?

7) At the present moment are you taking part in a project, a programme or a portfolio? What is the final product/service or result the project has as objective? Is it an innovative project?

8) In the endeavour you are involved at the moment, are APM practices utilised as part of the Project Management processes? In what stage(s) of the project?

9) In what extent APM is applied at? Pure Agile or Hybrid (traditional or other approaches in conjunction with APM)? Please specify.

10) What Agile approach is utilised (i.e. Scrum, Kanban, Lean, XP, TDD or others)?

11) What is the main reason for the current project management methodology choice?

12) How could you relate the current project management methodology choice with the business strategy?
13) Considering the current context did you take part in a transition process (implementation of the APM Practices) or APM was already ongoing?

14) In case interviewee took part of the implementation process:

   a) Describe briefly the implementation process: the reason for change, how implementation was carried out and the biggest challenge of the transition process.

   b) What improvements could you see after implementation?

   c) What are the pitfalls after the implementation?

15) How could you evaluate the results of delivered projects implemented with APM, in terms of budget and time? If you can not give an example of a delivered project give a most recent one.

16) In what extent would you relate Agile practices with the results you previously mentioned?

17) In relation to delivered projects where Agile was utilised in the project management process, how would you evaluate the client satisfaction in terms of project quality and final deliver acceptance? Did occur any recalls or modification after the final deliver?

18) How is the client involvement during the project execution (initiation until sign off)?

19) How is the change management process carried out? How the changes are processed, assessed and implemented?

20) What factors present in the actual environment (organisation, team and type of project) do you regard as fundamental for effective use of APM practices?

**Communication**

21) What is the team size?

22) Is the team co-located or geographically distributed?
23) Is the team full-time dedicated to the project (programme or portfolio) or part-time? (i.e. they execute other functions within the company and work in the projects in parallel)

24) Was the environment physically modified to accommodate the project team and facilitate communication? Give examples.

25) How project objectives, plan and changes are communicated to the team?

26) What Agile Practices are adopted in the communication process within the team? (i.e. inception deck, dashboards, burn down chart, etc)

27) How would you define the communication flow among team members, informal (face-to-face, emails, ad hoc) or formal (reports, briefings)?

28) How would you evaluate the team understanding of the project goals and customer requirements?

29) How would you assess the effectiveness and quality of communication within the team?

30) In which aspects would you relate the results previously mentioned with the APM practices?

31) How would you evaluate the team maturity regarded as the Agile practices utilisation?

32) In case you took part in the transition process (APM implementation) could you mention any improvements or downside in the communication processes within the team comparing with the previous methodology?

33) Is there any aspects of the interview I have missed or you would like to cover?
9.2 INTERVIEW TRANSCRIPTS

9.2.1 PARTICIPANT OD01

INTERVIEW 01 – LinkedIn Profile

METHOD: SKYPE

PARTICIPANT ID: OD01

INTERVIEWER: ARS

DATE: 12.07.2016

ARS - What is your position at the current company and education background?

OD01 - (...) I have to customers a bank which (...) and other customers that I have is the (...) Public Transport company, so big companies both organisation (...) the second one I work as an Agile coach and the first one I'm working on a Project Management methodology which is also include agility lean and other stuff. My background is a bachelor IT/ICT and I have a masters in ICT management.

NOTE: SECTOR - BANK/PUBLIC TRANSPORT, PROFESSIONAL – IT RELATED BACKGROUND

ARS - How many years of experience with project related activities do you have?

OD01 - Around between 13/15 years I'd say

NOTE: EXPERIENCE 13/15 years

ARS - How long have you been using the Agile Project Management (APM) practices?

OD01 - Since 2008

NOTE: APM user for 8 years

ARS - Have you attended any type of Agile Project Management training? If positive, please list them.
OD01 - (...) absolutely scrum master like everybody else

NOTE: Training – scrum master

ARS – In the market sector or industry the company you’re working for or providing service is a bank and public transport, and both you use Agile?

OD01 - Yes first one (...) bank in Europe the second one is a public transportation buses and trams

ARS - What type of service or product the project will deliver?

OD01 - Both project are delivered to the customer (customer service), everything I am involved is software development (...) in the public transport for example that I have to do (...) for the bus drivers and also platforms for communication with the suppliers, delivers, buses and chauffeur and all those platforms we develop. Everything which is linked immediately directly and customers is done with Agile.

NOTE: Customer service/ communication platforms

ARS - Can you mention what type of practices you utilise in the project management processes in these projects you are involved?

OD01 - Ah the methodologies! Bank is a PMI based waterfall methodology and the public transport is Prince2 waterfall methodology, which are rather similar for me. (...), If you look from a high perspective they are rather similar systems. The Agility is being used in the bank because they are doing pilot, is not completely rolled out yet we are just in pilot phase. It is scrum based is quite pure scrum for the moment. For the public transport it is pretty scrum for the moment, and looking forward to scale it up as we are looking as systems as SAfe or hybrid.

NOTE: Presence of traditional but Agile used separated, implementation phase, Scrum presence and intention for hybrid and Safe. Intention for scale.

ARS - I understood that this both environment they are not pure agile the both they have hybrid or only the second one?
OD01 - The two systems have Waterfall systems still and they have the Agile systems. There is no hybrid is either Waterfall or Agile.

ARS - so is pure?

OD01 - (...) we are more not at the start phase anymore, but still in the learning phase, still learning how we are going to do the scale it up. Scale means bring it to a bigger part of the organisation.

NOTE: Pure Agile

ARS - The agile approach that you most utilise is?

OD01 - Scrum

ARS - Could you mention the main reason for the choice of this methodology? The use of agile in the projects you are involved at?

OD01 - (...) so first of all we choose scrum because is highly discrete and quite directive in the way you have to do. In the traditional have to do this meetings this meeting takes so long these people have to be available, these are the roads etc., etc. you know the framework. Scrum is quite descriptive so is the easiest one to implement I think, so that’s why we choose scrum in both cases.(...) why we chose Agile that’s also is quite easy. The reason we chose agile there are several reasons, first of all we want this business to be closer, all this projects they are using agile have change, very much change requirement, is not stable not because they don’t know what they want to but they just change and we want to answer to that. Second point which is very important, is that we want to eliminate the waste in the deliverable, because we know from a Waterfall perspective that we deliver things that will be never used and that costs money and we want to avoid to create things that we never use, avoiding is probably not possible but we want to limit the chances we deliver parts that will never use. Those are the two main reason I would say.

NOTE: Scrum is easiest to implement. Agile is chosen to keep the business closer, change is constant in the projects and eliminate waste – cost reduction.

ARS – Could you relate the methodology choice with the business strategy? Is there any with strategy the business is requiring at the moment and the methodology they chose?
OD01 - I do think there is a relationship, absolutely, but there also different layers in this question. First of all you should take the strategy or the objectives of the project be much more aligned with objectives or changing objectives of the project, so that is one that is also strategy of course. But if you go further to company strategy there is no system today that align with the strategy of the bank, scrum doesn’t do that, XP does not do it. That’s why scale up becomes very important and that’s we are looking. I am looking to get the systems as Safe (..) that can be the answer problems, problems that just scrum doesn’t acknowledge. They say to solve things with scrum, there is a moment that scrum does not work anymore.in this big companies we have layers of portfolio management and program project management and Safe stand to it. Then we are doing that of course we align within the methodology also with the strategy and vision of the company. Today is the business that do it without us (his company) in the future are doing it indeed yes.

NOTE: Relations between method choice and nature of the project; current approaches present limitations related with business strategy, necessity of adaptation (Safe) and Scale.

ARS - Have you taken part in a transition process (Agile implementation)?

OD01 - Yeah doing 2 right now

ARS - Could you describe briefly why the reason for the change was, why they decided to implement Agile?

OD01 - We feel that there is lot of waste in the Waterfall methodology we want to get rid of the waste because just don’t have the money to follow this heavy procedures of the Waterfall model. we don’t have the money to deliver features that will never be used, in the waterfall model you make a big plan everybody signs the plan and agree about it but everybody understand everything different. the interpretation of the documentation is very very different, and you have as consequence the things will be created following the plan and these things are no 100% understood, or this is moved on and the things are not necessary anymore but you still develop it and then it costing a lot of money and you have to redesign or redevelop other features. Really is eliminating waste. All different levels they want to make this projects shorter, faster and cheaper.
NOTE: Traditional Method (Waterfall) does not set a clear goal therefore generates unnecessary features, or re-work impacting on budget (increase). Agile implementation seek for shortening and budget control.

ARS – What as the biggest challenge for the implementation?

OD01- Mentality, because the framework is really easy, is very easy to understand. You read a couple of pages and you understand it but is a completely mental shift. It is a change management on the human side, which is dramatic. Because the way you want to do Agile is self-organise the teams so this people need to be able to self-organise themselves and not everybody can do that, is just a fact. When u have self-organised teams it means the management have to let go some power and that’s is not easy because they feel they have to say and also feel their position. So it is a huge mental shift for me that is the biggest (...) you have to solve the human side.

NOTE: Human factor impact on change, mind-set and methodology alignment; presence of power dissolution can affect implementation process.

ARS – Could you see improvements at the implementation phase?

OD01- (...) absolutely, in the projects that we are working with Agile completely, ah completely. Most of them, because we didn’t start yesterday, we started a quite a while ago. Those teams are fulfilled of agility. However there is management just still take decisions when they really complain about it and they see as impediment, they just say “we cannot do like that”. The developers and analysts ask more for agility. The big challenges are in more structured hierarchical domain (business), they are very structured, difficult teams to work with. People that work in this organisation tend to be old, your boss gives an order and you execute it and report direct to him, and we changed completely this philosophy. Remember the older population have more challenges with that than the younger population, definitely the really young people that are leaving universities they are basic trained in this way of think.

NOTE: Presence of maturity; necessity of a mediator to take complex decisions/problem solving; Agile intrinsic within information systems team; resistance from other areas; older professionals present resistance; young (graduates) Agile mind-set is taken for granted.
ARS - How could you evaluate in the projects that you are implementing or implemented with Agile in terms of budget and time?

OD01 - We do measure at the bank, but (public transport) we don’t measure at the moment. At the bank we have the KPI - cost of project, how long the project takes, and we see that projects they tend to be cheaper and shorter, actually dramatically shorter, cheaper is not that dramatically but definitely shorter. Shorter because they tend to respect the deadlines. Typically project is delivered in 9 months if you don’t deliver they just stop it in Waterfall is 1.5 year. You don’t know what will be delivered but you know that in 9 months you have to deliver, in Waterfall you also don’t know what you will deliver but they assume they know. Is shorter and cheaper we have in this KPI`s.

NOTE: Presence of KPI’s to measure efficiency; significant decrease on deliver time (around 8 months); decrease but not significant on budget.

ARS - Can you relate the results you mentioned in the previous question with the methodology?

OD01 – Is not only we can we do. (...) evaluate the KPI’s. We are thinking now about other maturity KPI’s, we are looking into how many Agile teams really do their retrospective, their stand up daily meeting, this is more maturity. We do not measure the maturity today but just these two major KPI’s (cost and time). When we started the transformation program we have objectives and the project (...) time was more than 2 years and is dramatically down is partly done because of Agile

NOTE: KPI’s suggests relation Agile and improvements on time and budget; further steps measure maturity of the method within the teams.

ARS - How could you mention the client satisfaction with the projects delivered with Agile.

OD01- We don’t measure the quality today, than whatever I’m going to say are assumptions. When we are in the meetings at the beginning was difficult, but to give new guidelines and to evaluate what has been delivered and also they acknowledge the value of the project, also the fact that they are always there, giving us more directions and making us more aligned with what they want, and they know what they will receive. In that perspective I believe we are in the good track. But a thing that they are not really happy with is they
wonder if really necessary do is every 2 weeks meetings. They spend all day with governance, and retrospective and planning meeting and whole day is gone. Yeah in the waterfall this is hidden you don’t see it, so you probably spend more time with it than in Agile that is the feedback we get.

NOTE: Quality is not officially measured but client behaviour and participations suggests satisfaction.

ARS – How is the customer involvement in the project life cycle?

OD01 - That is an excellent question, so we have is mostly of team are there in the stand meeting they are allowed to talk and mostly of them are part of the team, all they come together to decide that will be created, especially in documents, it is minimum but still to have them.

NOTE: High client involvement; need for (minimum) documentation

ARS – About the change in the Agile environment, how is change processed and implemented during the project?

OD01 - For us (team) during the project just mean a change in the backlog, if they decide this user story is losing its priority or I have to change its uses story just do it there is no formal change process for that, just don’t. Change its priority there is not a formal process, it can be out of the iteration by the business is business is product owned. Is owner of the product backlog, whenever they want to change they do it. We just ask them to let us know as soon as possible. No process for that is not necessary.

NOTE: No formality for change; treated as priority; not limited by time or stage.

ARS - What do you regard as fundamental in an organisation for the use of the agile practice?

OD01 - First of all management support, if u want to use Agile you have to have management support on the highest level, he communicates his sponsors to the necessary level of the organisation otherwise you don’t make a chance. Good sponsorship to change because it is a dramatic change to the whole organisation, not just the project team. Is critical without it, you can’t start without the product owner (business) they need to commit
to be there, not just for the meetings they need to be available for us we need to be able to ask them questions on most of the project on daily basis, that is not necessary the product owner but someone delegated by the product owner. Certain mind-set from people, not everybody can do it, and not everybody is able to learn it. Actually everyone is able to learn it but not able to do it, i.e. one of analysts that became scrum master he was really negative about it, now he is one of the main pushers of it (Agile), is more the older population are against (55`s) mind-set to be able to put your customer on the front not yourself. Maybe the older people say is procedural and the young people say screw the procedure let’s make the client happy.

NOTE: High level Management support; preparation on organisation level; customer high involved; customer’s satisfaction over procedures; change management – educate the professionals.

9.2.2 PARTICIPANT GB02

INTERVIEW 02 – LinkedIn Profile

METHOD: E-MAIL - QUESTIONNAIRE METHOD

PARTICIPANT ID: GB02

DATE: 15.07.2016

1. What is your position at the current company?

GB02 - Scrum Master and Agile coach.

2. What is your education background?

GB02 - BEng Aeronautical Engineering, MSc Computing

3. How many years of experience with project related activities do you have?

GB02 - 25 years of project related activities

4. How long have you been using the Agile Project Management (APM) practices?
GB02 - 12 years of Agile. Please note that Agile includes a great deal more than just “Agile Project Management”. There are many Agile frameworks (Scrum, Kanban, XP, etc.) that impact on activities other than Project Management. As an example, Scrum is focused on Products rather than Projects.

5. Have you attended any type of Agile Project Management training? If positive, please list them.

GB02 - I am Scrum Master certified.

6. What is the market sector (industry sector) of the actual company you are working for or providing services? Could you give some examples of products/services you provide?

GB02 - My company is a consultancy. I provide Agile coaching and Scrum Master services to many market sectors. This includes finance, healthcare, IT and charities. These organisations provide all kinds of products and services.

7. At the present moment are you taking part in a project, a programme or a portfolio? What is the final product/service or result the project has as objective? Is it an innovative project?

GB02 - I am currently working (…) Bank on a number of internal projects. I’m afraid I can’t go into it in detail as it is confidential.

8. In the endeavour you are involved at the moment, are APM practices utilised as part of the Project Management processes? In what stage(s) of the project?

GB02 - The projects I am involved in now are using Scrum. Scrum is used across the full extent of a project.

9. In what extent APM is applied at? Pure Agile or Hybrid (traditional or other approaches in conjunction with APM)? Please specify.

GB02 - This is a hybrid Agile approach. They are in the process of adopting Agile and still have a mixture of traditional project management and new Agile practices.

NOTE: Hybrid in transition process

10. What Agile approach is utilised (i.e. Scrum, Kanban, Lean, XP, TDD or others)?
11. What is the main reason for the current project management methodology choice?

GB02 - My current client wants to adopt Agile so that they have a shorter time-to-market. In other words, they want to be able to introduce changes and get it to production quickly.

NOTE: Schedule shortage, presence of change

12. How could you relate the current project management methodology choice with the business strategy?

GB02 - I’m not sure of the relationship between the organisation strategy and the project management approach in my current role as I only recently started working with them. In previous organisations there has often been little relationship between strategy and the adoption of an Agile approach. It is more often a result of organisations wanting to improve their development practices to become more efficient.

13. Considering the current context did you take part in a transition process (implementation of the APM Practices) or APM was already ongoing?

GB02 - In my current role I am assisting with a transition process (this is the typical role I play).

14. In case interviewee took part of the implementation process:

Describe briefly the implementation process: the reason for change, how implementation was carried out and the biggest challenge of the transition process.

What improvements could you see after implementation?

What are the pitfalls after the implementation?

GB02 - When an organisation transitions to Agile it is often quite a traumatic experience. There are many aspects of Agile that are not easily understood. A common misconception is that Agile impacts only on technical development teams. In fact many organisations initiate an Agile transformation from within the technical development department and then quickly realise they have to bring the rest of the organisation on board.
NOTE: Methodology impacts on the entire organisation; presence of chaos transition process.

I coach the following approach to Agile transformation:

Firstly the organisation should identify the reasons why they are adopting an Agile approach.

Secondly the organisation should come up with some way to measure if the adoption of Agile is giving them the results they desire. Typically this involves identifying and measuring metrics such as time-to-market and production quality.

NOTE: Measure method efficiency: quality and time-to-market – relation with schedule

Next the organisation should get extensive coaching across the whole business. This is to ensure that the concept of Agile is widely understood and that the implications of adopting Agile are acceptable.

There are numerous pitfalls when adopting Agile. The most common ones are:

Failure to identify why Agile is being adopted and as a result not being able to justify the value of the Agile transformation.

Inability of an organisation to prioritise.

Adopting Agile in some departments but then having them work closely with other departments that are not using Agile practices.

Not realising the impact on the time of important business users.

15. How could you evaluate the results of delivered projects implemented with APM, in terms of budget and time? If you can not give an example of a delivered project give a most recent one.

GB02 - Typically project delivered using Agile are:

More predictable (i.e. less likely to have nasty surprises on cost/schedule).

Better adapted to the user’s real needs. Agile is more focused on eliciting feedback and so tends to produce a product that matches user’s expectations.
Less likely to result in blame and recriminations.

More engaging for the business users. They feel they have a lot more impact on the final result.

NOTE: Implementation results predictability cost/schedule; customer satisfaction.

16. In what extent would you relate Agile practices with the results you previously mentioned?

GB02 - Agile is critical to these results.

17. In relation to delivered projects where Agile was utilised in the project management process, how would you evaluate the client satisfaction in terms of project quality and final deliver acceptance? Did occur any recalls or modification after the final deliver?

GB02 - In my experience projects delivered using Agile usually result in a high client satisfaction and a high level of quality.

18. How is the client involvement during the project execution (initiation until sign off)?

GB02 - When using Agile (and Scrum in particular) there is a great deal of customer involvement. This is quite often a daily involvement and it is not unusual to collocate the customer to sit with the team doing the work so that they can be fully engaged.

19. How is the change management process carried out? How the changes are processed, assessed and implemented?

GB02 - Typically when using Scrum there is no change management process. This is because the Scrum framework expects there will be continuous change as the project proceeds. In fact Scrum encourages change so that the product being developed is a good match for the customer’s needs.

The exception to this is when Scrum is being used but where the customer is outside the organisation and the work is being provided under contract. Sadly Scrum works best for internal development work (where the customer is a part of the same organisation).

20. What factors present in the actual environment (organisation, team and type of project) do you regard as fundamental for effective use of APM practices?
GB02 - Important factors in adoption of Agile include:

Flexibility in the organisation

Open minded and collaborative people

Projects that are not subject to a great deal of compliance or regulation (particularly when this is time-consuming)

Strong support from the organisation’s executive

NOTE: Executive support, mind-set, not high regulated project

21. What is the team size?

GB02 - I work mostly with Scrum which has teams in the range 3-9 people. Some Kanban teams are larger, but 9 is generally seen as the limit in team size due to issues with communication in teams that are larger.

NOTE: team size impact on communication quality

22. Is the team co-located or geographically distributed?

GB02 - I have worked with teams that are collocated and with teams that are distributed. Both can be made to work, but the most effective Agile teams tend to be collocated.

23. Is the team full-time dedicated to the project (programme or portfolio) or part-time? (i.e. they execute other functions within the company and work in the projects in parallel)

GB02 - I have worked with teams that are full time and teams that have some part-time members. Agile is much more effective when teams are full time.

24. Was the environment physically modified to accommodate the project team and facilitate communication? Give examples.

GB02 - Typical environmental changes:

Team seated together in such a way that they can talk freely

Space for a task board and for the team to gather around the board

Use of dual keyboard/mouse to allow pair working
A lot of use of wall space to display information radiators such as product backlogs.

25. How project objectives, plan and changes are communicated to the team?

GB02 - With the Scrum approach objectives, plans and changes are decided by the team itself. There is no need to communicate these things to them as they are initiating them!

26. What Agile Practices are adopted in the communication process within the team?(i.e. inception deck, dashboards, burn down chart, etc)

GB02 - Typical communication approaches:

Use of chat tools (like Skype)

Break-out areas so that impromptu meetings can be held

Strong reliance on verbal communication and less emphasis on documentation

27. How would you define the communication flow among team members, informal (face-to-face, emails, ad hoc) or formal (reports, briefings)?

GB02 - Most Agile teams will have a very informal communication flow. The emphasis is on verbal communication.

28. How would you evaluate the team understanding of the project goals and customer requirements?

GB02 - When using Scrum the team has a very detailed understanding of requirements. Project goals can be a bit tricky. When using Scrum a lot of emphasis is put on the Product Owner (the business user who injects requirements into the team) to communicate the project goals to the team.

29. How would you assess the effectiveness and quality of communication within the team?

GB02 - Successful Agile teams have very effective communication. Teams that struggle with communication rarely succeed with Agile.

30. In which aspects would you relate the results previously mentioned with the APM practices?

GB02 - Sorry, I don’t understand this question.
31. How would you evaluate the team maturity regarding the Agile practices utilisation?

GB02 - The team I am currently working with is immature when it comes to Agile practices. In the past I have worked with a range of teams from those that have little experience to those that have been using Agile for many years.

32. In case you took part in the transition process (APM implementation) could you mention any improvements or downside in the communication processes within the team comparing with the previous methodology?

GB02 - Improvements with Agile communication:

Communication is more frequent and there are fewer misunderstandings

Because the team communicates so frequently they often bond together

Team members find their communication skills improve

Downside with Agile communication:

Introverted team members may feel uncomfortable with the amount of communication going on

Some team members get frustrated by the amount of talking and feel it reduces the time available to do project work

9.2.3 PARTICIPANT CD03

INTERVIEW 03 – LinkedIn Profile

METHOD: FACE-TO-FACE INTERVIEW

PARTICIPANT ID: CD03

INTERVIWER: ARS

DATE: 19.07.2016
ARS - Have you taken part of a project that is not just software development using Agile Project Management?

CD03 – I’ve been in tech since 98. Since 07 been in the insurance sector in Ireland, and the last few years has been focused on data analytics and the company I’m working for is using very modern tech not nascenting but new and established like amazon clouding, infrastructure, using new software techniques reacting redocs stuff like that, but the end consumer is a community of brokers, insurance brokers. In that regard is delivering a piece of software to enable to have a community of brokers have an effective conversation with their clients, in that regard is not entirely software project.

NOTE: Market sector – insurance, customer service related.

ARS - So the final deliverable is not just a software is a set of services?

CD03 - Effectively our end consumer is someone that is sitting down having conversation with a someone who has control on a very large budget and who is trying to make some decision about how they are their companies is building in a market place for a brokers portfolio. The software is a visualization of certain scenarios, so the conversation is a human conversation, the brokers they are responsible to manage the engagement they are specialist in certain skills, but the key is the visualisation in the end product that has been produced. In that regard is not a retail phasing product, so is not an app, is not something regular consumer would use, is very much to facilitate a business to business engage.

ARS – How is Agile applied during the project life-cycle? Is it limited only to the software development stage?

CD03- It is an interesting question, because at the moment I’m conducting an audit how the agile has been used in (...), and one the things we have found is that it’s been used across the board. We are using there is probably, the department I work in is effectively a sub, is a part of umbrella company the (...) insurance broking this particular unity specialised in produces data analysis, there is a community of about 140 people there proxy 10 teams “10ish, 10 or 12”.They are all using a framework of Agile, you have guys using Kanban, Scrum and Scrumban is a subtle variation (mix scrum/Kanban). When I joined this
organisation about 1 year ago, I was asked to help a particular department of 30 people transition (traditional to Agile).

ARS – Have you taken part on an implementation process?

CD03 - Yeah and it was very very very difficult, but it was all about the mecaniques at that stage. Who are the teams, how they were made up with the product owners or Scrum master, profile work, what is the backlog, build all that stuff out, get all the ceremonies in place. You know how very difficult for people to adjust the change and we got through it, is very much go off and do that. I took few weeks out, at that stage I was initially engaging as a consultant, I was asked to comeback to lead the Agile practice. (...) there are certain areas where agile is actually causing problems for people, and a lot of that is to do with the desire to transition was so strong, that a lot of, that are simple legacy, simple artefacts that were missing there so simple things like how do they start this team, what are they doing, what are they endpoint, what’s the budget, how do we know they are on track or out of track, simple things like that. The previously organisation was using elements of Prince2 stage-gate that obviously it wasn’t working in further, they felt the need for transition.

NOTE: Challenge in the transition process; need to have a clear vision before implementation; limitation of traditional lead to Agile adoption.

ARS - Why did they decide to change, were you given a reason?

CD03 - Well, ok at the moment what I can say is that was changing, 2 seniors leaders changed. The head of the unit and the head of the department and came in a new head of IT, and two of them, they knew that was some big challenges there. Primarily on transparency, and also around legacy on infrastructure. So they took on two very smart, two very brave moves. We are going to go to cloud, get away from our legacy infrastructure, and we are going to adopt Agile so we can get transparency across the board. So that was a very, very brave move and it succeed it. They are now in a position where after a year/year and half they are having that sense of chaos, that all organisations have, so for me now that I’ve been work on this I’ve came back an assessment to say if it was a smart move, but I need to remind you why was the right move. The single biggest reason I’ve come up with was the right move is because the product you are building are unpredictable in nature, in so far as
you can not be certain of what the customer wants, you can not be certain of the finish product will look like, and in that scenario Agile is the right fit. That clarified thinking, and I also introduced the phrase “waterfall is not a bad word”, because if the outcome is predictable it might be the right fit if you can be clear what the requirements are upfront waterfall work, might work. (...)

NOTE: Presence of high level management support; methodology delivers transparency; unpredictability linked with methodology choice

ARS – How is the change process dealt, how do you react on an ongoing project when new exigencies come from the customer?

CD03 - There are number of products being build out, and in one area in particular because of the engagement with the end consumer, it is commercially impossible to engage with them directly, there have to layers of abstraction across the globe so in that scenario where fundamentals of Agile in that space they are struggling with them. Because a really well structured Agile team it is closer to the customer as possible and has a way to get them to validate the potentially shipped product. Or whatever it is, you made it what do you think? We built this what do you think? If that customer is very far away from you is going to be a challenge to be as purely Agile as possible. This is a scenario, we’ve been counting on in one area particular where, teams, scrum masters and products owner with different stakeholders 3 in North America, 4 Asia, and those stakeholders have their own stakeholders. In that scenario what they are trying to do is say look work so that you can internally get your requirements as clear as you can with Agile execution.

NOTE: Challenge regarding change with overseas customer; need for engagement.

ARS - In terms of budget and time and especially in the quality of the product could you see any improvements? Could you relate the Agile with those results?

CD03 - Specifically in terms of time ok, but budget went off, completely off, completely over spent. So there was definitely a loss of control in there in spent, but it was over a short term, it was over couple of quarters spend went to the roof. There was a negative impact in there, but it was quickly curtailed, in the third quarter was curtailed. Timewise the overall lead time of a project disappeared a way off into the future, so it really impacted on timing.
Quality wise though I think the overall quality of the deliver dramatically increased. So that would be my initially assessment of this in terms of end user feedback. So there was an initial deployment of a product switched out to Australia, and the feedback was out of the charts, the feedback of this community of brokers out there were they thought was the best thing they came across. After a period of in a previous approach they were using waterfall the sense was the things were going off radar for 9,12, 18 months and they when it came back (customer) I forgot what I asked for I don’t need half of that anymore, I don’t remember what I asked for, that looks a bit useful, how much did this cost me? (...)

NOTE: Initial negative impact on budget (overspent); dramatic positive impact on time shortening; dramatic increase on customer satisfaction.

ARS - About the communication could u see any improvements within the team?

CD03 - Dramatically improved, absolutely improved, dramatically.

ARS - How many members in the team?

CD03 - In the community 140 people, I was working a group of about 24/25 split across 3 teams. That was a mistake I will never now have a scrum master working across anymore than 2 teams unless they were 2 likewise product features set, 3 would be absolutely the max, but it did have to be 3 small teams, 2 is preference you have to have a home based. The one if is very heavy load, if got very serious, challenges internally or the project itself, its behaviour is really hard to fit in the Agile framework (...) I split across 3 initially and helped them get set up, initially we were working on functional based teams, so that was obviously a mistake as well and so we switched to cross-functional teams which improved things significantly but it then created communication problems, collaboration issues, but we got through those as well. But in general, I mean primary possible the most important ceremony, in Scrum space anyway is retrospective. I tell to the scrum masters I work with to live and die by it.

NOTE: Methodology better applied in small teams; large teams lead to communication issues; presence of controversy cross-functional work better but have communication issues;
CD03 - I think to overall issue if Agile would work in Agile in non-software if you would work on building, creating, maybe if it can be done in stages. But the plan would have to do up front and you have to stick to a specific budget, but I think that are other areas that could work. I that think the key to success is the feedback on the retrospective, taking that information seriously and creating an environment, if you got brainy people working with you and then you listen what they have to say. That was really new for people I was working with, they thought new that someone was listen what they got to say on a regular basis, really giving that information back to them on a every couple of weeks every couple having, grouping data in actual change, cataloguing that over period of 6 months or whatever. I had a little wall, this is one thing we said we would change and then over time we would periodically point back to that goal do you think that has improved, the first things that come up was collaboration.

NOTE: Good communication can foster better collaboration;

ARS- Was the space used by the project team physically modified?

CD03 - That’s a great question actually, it was yes largely. It happened that the building was refitted so that was an open plan office, then what occurred was the new C.E.O. had no problem reshuffling the desks on the regular basis, shuffling people around, that was partly because there was a lot of staff turn, he would go move all this people over there we need to make space for this guys, whatever that created a culture of mobility, stopped people to get attached to their desks. There is pros and cons with that once you get used with it you think is not such a big deal. Actually, you integrate more with the entirely community so is actually very functional but then that helped people start thinking actually this team started be formed now maybe we can start to stick somewhere as long as we sit together we don’t mind where we sit, that has sort of happened there is more common now.

NOTE: Support high executive level; physical environment can impact on integration; pitfall formation of “closed groups”

ARS - Do you make use of visual tools to communicate the projects?

CD03 - What we started initially an electronic board, there is a tool called Jira the developers love it, it is very easy to use make a lot of sense there is a lot of features to integrate with
other software pieces. But it has a component that allows you to visualise the work within a

...
ARS - How long have you been using the Agile Project Management (APM) practices?
KD04 - 3+ years

ARS - Have you attended any type of Agile Project Management training? If positive, please list them.
KD04 - Certified Scrum Master Training

ARS - What is the market sector (industry sector) of the actual company you are working for or providing services? Could you give some examples of products/services you provide?
KD04 - Industry: Financial Service, provides products such as loan, overdrafts, deposit accounts, mortgages.

ARS - At the present moment are you taking part in a project, a programme or a portfolio? What is the final product/service or result the project has as objective? Is it an innovative project?
KD04 - The current project represents one stream within an overall programme, of which there are 4 streams in total. Both the project and programme are indeed innovative, attempting to deliver real time, contextualised digital sales and marketing material to customers across multiple channels from in branch to mobile phone

ARS - In the endeavour you are involved at the moment, are APM practices utilised as part of the Project Management processes? In what stage(s) of the project?
KD04 - Yes, the current project is following the scrum framework in the planning and execution phases of the project. With a strategy defined, portfolio and product planning already conducted, the team use release planning to define the backlog of user stories for each release which are typically eight to twelve weeks apart. Sprint planning is conducted at the start of every sprint, so every two weeks in our case, which focuses on the stories to be delivered in each sprint. As there are four scrum teams operating in parallel, all on the same cadence, the daily stand up meetings take place at 09:15, 09:30, 09:45 and 10:00am. At these meetings the teams provide updates including work completed the previous day, work to be completed the next day, and raise any blockers/impediments they are facing. After each sprint a sprint review is conducted, where various stakeholders presented an
update on the deliverables from the last sprint. As the product being developed here is not software, these deliverables can include analysis showing the success or otherwise of various pieces of content, the latest marketing content designs or documentation outlining the various experiments to be conducted after the deployment of each piece of content.

ARS - In what extent APM is applied at? Pure Agile or Hybrid (traditional or other approaches in conjunction with APM)? Please specify.

KD04 - In terms of the execution of the project, the project is very much aligned to the Scrum framework, therefore reflecting the principle of Agile to a high degree. There is an element of hybrid to the approach, as the team are not fully in control of the release of content to the banks online channels (ownership issue within the organisation), so are unable to deliver some solutions as early as they would like.

ARS - What is the main reason for the current project management methodology choice?

KD04 - The consultancy who introduced agile to the organisation recommended this framework

ARS - How could you relate the current project management methodology choice with the business strategy?

KD04 - As Agile and in turn Scrum are customer focussed, the approach aligns very closely to the overall organisational strategy which is also heavily customer focussed and uses Net Promoter Scores as a key metric in measuring customer satisfaction. The constant engagement of the customer in scrum, has a positive impact on these scores.

ARS - Considering the current context did you take part in a transition process (implementation of the APM Practices) or APM was already ongoing?

KD04 - With the introduction of scrum to the organisation over three years ago, I was selected as part of a small team of individuals who were trained in a one to one capacity by a top consultancy for a period of three months in the framework. This acted as the transition period after which the consultancy exited and the in house team continued to grow the model.
ARS - Describe briefly the implementation process: the reason for change, how implementation was carried out and the biggest challenge of the transition process.

KD04 - New technology focussed Chief Operating Officer was employed by the organisation and quickly identified the issues regarding the agility of the organisation in terms of IT. With the threat of new entrants, as well as potential competition from the Googles and Facebooks, with their ability to develop and deploy solutions at speed, it was decided a change was required. This change was brought about with the introduction of a top consultancy for a period of three months who using products such as current account opening and mortgage application process, implemented scrum in delivering these solutions.

ARS - What improvements could you see after implementation?

KD04 - Many. From a project team perspective the business and IT really enjoyed working together, creating a very open working environment, where people were visibly empowered. From a product perspective, the business felt much more in control in the design and development process.

ARS - What are the pitfalls after the implementation?

KD04 - The major pitfall after the implementation was the uncontrolled roll out of the framework, resulting in varying standards of application. With political issues also at play, a key area of the organisation never fully bought in to the approach, resulting in the issues regarding the actual release of the products on to the organisations online channels.

ARS - How could you evaluate the results of delivered projects implemented with APM, in terms of budget and time? If you can not give an example of a delivered project give a most recent one.

KD04 - As with scrum projects, with a fixed budget and timeline per release, the releases are generally delivered in line with budget and time. It is the scope that has flexed to allow both to be maintained.

ARS - In what extent would you relate Agile practices with the results you previously mentioned?
KD04 - The results previously mentioned are very much related to the agile approach to project management. With requirements in the format of user stories, in a priority order, the flexibility provided in terms of scoping is greatly increased. This then allows budget and timeline restrictions to be adhered to.

ARS - In relation to delivered projects where Agile was utilised in the project management process, how would you evaluate the client satisfaction in terms of project quality and final deliver acceptance? Did occur any recalls or modification after the final deliver?

KD04 - Client satisfaction is very high, as there are generally no surprises due to their ongoing involvement in these projects, represented by the Product Owner. As the Product Owner reviews the backlog on an ongoing basis, and assess the user stories for acceptance criteria, the chance of successfully delivery are greatly increased. In terms of modifications, yes there are almost always modifications as it is not until the product is actually in people’s hands that their complete understanding of how the product will work is reached. However this is also expected and aligns to the framework and the regular release of product.

ARS - How is the client involvement during the project execution (initiation until sign off)?

KD04 - Not sure I understand this question. Should that be “How involved is the client”? If so, from recent experience, heavily involved, from being central to the product design and the scoping of the minimal viable product, collocated with other team members, responsible for the backlog, prioritising user stories, review acceptance criteria, managing other stakeholder, communicating with the business, approving releases, seeking feedback from customers and updating the team.

ARS - How is the change management process carried out? How the changes are processed, assessed and implemented?

KD04 - Changes are managed in standard way:

i. A change is identified, usually by the product owner

ii. The change is documented in the form of user story and estimated by at least two team members
iii. The change is then prioritised by the product owner over other stories that currently sit in the product backlog

iv. Should the user story fit into the requested sprint, it is accepted by the team. Should it not fit into the requested sprint, the product owner de-prioritises another story

v. The new story is then taken into sprint planning and on through the development cycle

ARS - What factors present in the actual environment (organisation, team and type of project) do you regard as fundamental for effective use of APM practices?

KD04 - Organisation that is not afraid to try new things; Investment in appropriate tools such as Jira etc; Investment in facilities, such as crating wall space, collaborative areas etc.; Introductory training for the people involved; The type of project in my opinion is irrelevant, scrum in particular is just a framework to help us manage our work, so project type can be technology focussed or otherwise.

Communication

ARS - What is the team size?

KD04 - I have four teams running simultaneously, all with 3 – 4 people in each team

ARS - Is the team co-located or geographically distributed?

KD04 - Co-located

ARS - Is the team full-time dedicated to the project (programme or portfolio) or part-time? (i.e. they execute other functions within the company and work in the projects in parallel)

KD04 - Fully dedicated

ARS - Was the environment physically modified to accommodate the project team and facilitate communication? Give examples.

KD04 - Yes, the floor on which we are based was redesigned to allow the scrum teams to sit together, encouraging daily discussion. The walls in the office were upgraded to “white walls”, providing teams with the space required to collaborate, brainstorm and make their
work visible by installing their scrum boards and capacity planners. The daily stand ups are therefore also facilitated around these walls.

ARS - How project objectives, plan and changes are communicated to the team?

KD04 - Project objectives and plans are communicated to the team during release and sprint planning meetings by product owner. The changes required to the solutions delivered, as discussed earlier, follow a standard change management process.

ARS - What Agile Practices are adopted in the communication process within the team? (i.e. inception deck, dashboards, burn down chart, etc.)

KD04 - A release goal is printed and stuck up on the wall of every team, aligning each team to the overall goal. A spring goal is also printed and stuck up on the wall of every team, focussing each team on the goal at hand. Each of the teams has a scrum board on their wall, providing all team members and stakeholders with a view as to the progress of the work at any one time. Each team member has access to Jira, where the product backlogs, sprint backlogs and burndown charts are maintained.

ARS - How would you define the communication flow among team members, informal (face-to-face, emails, ad hoc) or formal (reports, briefings)?

KD04 - In the main informal, more formal at the daily stand up and sprint planning meetings

ARS - How would you evaluate the team understanding of the project goals and customer requirements?

KD04 - Very good and very clear, supported by the agreed release and sprint goal

ARS - How would you assess the effectiveness and quality of communication within the team?

KD04 - With the team collocated and physically sitting beside each other, the communication is pretty effective as there are no misunderstandings or misinterpretations that come when email etc. is introduced.

ARS - In which aspects would you relate the results previously mentioned with the APM practices?
KD04 - I would say in this instance the commitment of the organisation in committing to agile, the physical changes made to the working environment outweigh the APM practices themselves. The APM practices without commitment are just practices.

ARS - Could you mention any improvements or downside in the communication processes within the team comparing with the previous methodology?

KD04 - In my opinion no, communication is one thing that agile really brings to the fore, so no downsides for me

9.2.5 PARTICIPANT ZS05

INTERVIEW 05 – LinkedIn Profile

METHOD: SKYPE

PARTICIPANT ID: ZS05

INTERVIEWER: ARS

DATE: 18.07.2016.

ZS05 – Its worth me talk a little bit about the methodology, here because it’s a bit confusing Agile confuse a lot of people. When we talk about agile we are talking about an approach to team development work it’s not a methodology it’s not a framework is not anything so if you talk about project management or anything like that Agile has really nothing to do with that it’s a mind-set really, and the mind-set is around adapting to change so what we say in the traditional development work there is a tendency to plan a lots up-front, do some work and at the end deliver the work. With the Agile approach we saying we can adopt an approach where we not only accept the change will happen but we encourage to happen because we feel that having an approach that adapts well to change will get a best product at the end of the day, because then we can get feedback from people as we are doing the work and based on that feedback we can make changes. So that’s is Agile, is an approach is very broad. You can leave the room now being an Agile person all you need to do is be very
open to change and favour communication over process, etc. It is not an easy thing to adapt to but what I mean is a very broad area. But within Agile there is a bunch of frameworks, one of them is called Scrum that is the most popular and there is another Kanban which is quite popular, and there is several other ones as well. Scrum is very much focused on project management, where a lot of the others is aren’t i.e. XP there is nothing about Project Management is focused on software development practices. But what they say is Scrum is an approach to do in Project Management which is very compatible with Agile way of working. So if you want to say to someone: - Do you work with Agile? They say yes we work with Scrum or Kanban. But you don’t have to, you can be an Agile person and not work with Scrum or Kanban you don’t have to worry about frameworks.

NOTE: Adaptability and change encouraged; work based on feedback

ARS - Do you think Agile is successfully applied to other type projects where the final deliverable is not a software rather a product?

GB02 - This is quite new, so if you went back 5/6 years ago everything to do with Agile was software development, in the recent years there is been a real move of agile outside of that area, and a lot of in areas like marketing, sales even, a lot of non-technical areas particularly disciplines that are not delivering software development but have a lot of process, a lot of workflow so an example of that I worked for a medical evidence team they had medical evidence researchers, they had editors, approves very complicated workflow a lot of steps, a lot of interactions and we found that Agile was very well suited to that. We’ve use the framework of Kanban, which is you have a big task-board you have columns reach to different disciplines and then you move your each individual work task across the board as you go, that helps you coordinate within a team and then produces a lot of benefits, a lot of immediately benefits. Because Kanban originally came from a Japanese manufacturing it came from this idea of making your production lines more efficient more effective so it works great in this type of environment.

NOTE: Agile in non-it newness; methodology spreading for other areas; i.e. marketing, sales and medical evidence; high presence of iterations and workflow on these environment.

ARS - After the implementation, what improvements you could see?
ZS05 - Typically, when I coach organisations that are about to adopt Agile what I always say to them is first of all you need to decide why you are doing this and what would do is will right down a list of the things they expect to gain from Agile and I also coach them to have some measurement for it so as an example of that the organisation I am working at now the main target is around reducing time to market and by that they mean the time of a requirement is put forward to when that requirement is satisfied in the production so what they decided to do is to measure how long it currently took and then they started their adoption of Agile and then they measured the gains as they go along so in that example the benefit that Agile has delivered is a reduction in time to market so a fast turnaround and a dramatic fast turnaround time, while in the past was over a year now that can be reduced just in a few months or even less. That is a very common one. There is a lot of other reasons that people would go for agile, other one I can think of some of them they feel they have to adapt very quickly to change, so a lot of organisations like in the media business they start working on the pieces and within a week they might need to change it several times so they might measure the success as the ability to change direction quickly on to different areas of the development.

NOTE: Suggests reduce of time to market; quickly adaptability to change.

ARS - In relation to budget and time how could you evaluate this project that were delivered with Agile

ZS05 - This is very difficult area, the reason is what you typically get with Agile you tend to do a lot more work than you would do in the traditional project because you tend to adjust a lot more, what the customers want. Is not that we deliver more functionalities what we would do is deliver a project which is close to what the end user wants. That is a quite difficult thing to measure, so I can compare a 6 months project one done with Agile one not done with Agile and what you typically finds is that the Agile project has made the end users happier because they got close things to what they want. So one of the things we often do with Agile project is measure customer satisfaction and this is one of our measurable so at the beginning of the project we would say how happy are you with the product do you miss uniqueness, etc., and then we measure that again the end and based on the feedback we can see whether or not the Agile process is working.
NOTE: Adjustability; customer satisfaction as KPI; projects delivered according to customer needs

ARS - When you work with these projects with Agile do you have a pre-defined budget at the beginning of the project?

ZS05 - That’s another good question, it vary a lot. A lot of traditional organisations, they do still have budgets but that is very difficult because if you remember the way I describe it with this adapting to change requirements is very difficult to keep that within a budget so other financial models, come around because of Agile a typical one would be a team would be funded for a product, annual bases you have a team of 9 people that would be working on a product and what the business users would have to show is that they are delivering sufficient value from that team at the end every year to warranty the cost, so is more on an ongoing cost as oppose to a single one payment for project. Another approach is you still have a fixed price but what you do is you vary the scope. “Let’s begin with a list of all the things you want we will work within a budget we will deliver as many as those as possible in a priority order”. but we won’t guaranty we deliver the entire scope you asked for within a budget but what will you do is deliver as much as possible meeting your requirement as best as possible. Is very controversial because a lot of organisation are not built for that kind of thinking, you think of most of organisation they work on budget at the beginning of each year they have budgets allocation of funds for project is very tight and controlled that is difficult to make that kind of way of thinking compatible with the Agile approach.

NOTE: Methodology suggests a variable (not fixed) budget due changes; mention solutions found to adapt the budget/methodology; rigidity of traditional companies not compatible with Agile.

ARS - When a company is adopting Agile for their project, the fact that they are implementing the methodology would impact on their budget and schedule?

ZS05 - Yes very much so, another conversation when you are introducing Agile to an organisation is you need to stop to think in terms of deadlines and you need to stop thinking in terms of fixed budget for projects and is one of the reasons why we tend to need buying from the top executives to do an Agile transformation because it can not be done just by the
project level is really need come from the top because it often impact on in the finance department, HR, and a lot of areas across the business.

NOTE: Change on mind-set; high management involvement in implementation; impact of method in other areas within organisation.

ARS - Related with change you mentioned that you work with scenario where the customer is inside of the same company, but if the customer it is outside the company how agile makes the change approach?

ZS05 - The answer is not many people do, is very hard, I work for consultancy where we planned to be Agile but we are working on behalf of other people and what we found was our Agility disappeared very quickly because you would typically agree a contract with a client and they want you to fix the scope so they would say you need to deliver this functionality by this date, and once you’ve done that Agile is gone on that stage, because you can’t now adapt to change, you can’t now get feedback and my change is based on that feedback. We did have some success with Agile contracts using what we call time and material which means rather than a fixed price contract we would bill by the day of the people we are using on the project and effectively you pay for a team of certain people this amount of money per day and you keep on paying as long as you feel like you are getting value from them and that worked quite well, I think that’s effective but unfortunately you find a lot of organisations do not like that style of payment they much prefer to have a fixed cost rather than a frozen cost.

NOTE: Project or customer requirement can limit the methodology; need for constant feedback.

ARS – Regarding communication what aspects would you relate the result with the agile practice? How do you think Agile is crucial for the quality of communication?

ZS05 - I think that communication is the most significant aspect of Agile, so when is successful you find that communication becomes far more productive across the organisation. In a traditional organisation you get a lot of progress meetings the really not adding a huge amount of value with agile a lot of the conversation is very very powerful, direct conversation this is what you want, so you find that is a lot more verbal
communication a lot less reporting and the verbal communication that takes place is very powerful in many ways is one of the big issues with Agile, because a lot of people do not like that level of verbal communication. There is a lot of theory in terms of line of communication an team sizes, in agile we tend to call the n+1 problem, which is the lines of communication within a team grows exponentially with the size of the team (...) with 9/10 there are about 50/60/70 lines of communication, and it becomes very difficult for a team to be coordinate so with Agile, particularly with Scrum, we limit the team size and we keep the number of voices to the minimum and that tends to clear away a lots of confusion, a lots of people not realizing what is going on and those are the things that cost you money, cost you efficiency and find on projects a lot of the time is person x didn’t no person y was doing and because of that something went wrong, with the Agile teams they tend to be smaller they communicate more and more efficiently and because of that there is less of those issues.

NOTE: Communication relevant factor; increase verbal and lean communication; presence of controversy people not feel comfortable with verbal communication; defends small teams communicate efficiently; misleading of communication impact negatively on cost.
9.3 GENERAL FINDINGS

9.4 INDUSTRY SECTOR

![Industry Sector Graph](image)

9.5 TYPE OF ROLE

![Consultancy x Position Graph](image)
9.6 APPROACH

![Graph 3 Methodology Approach](image)

9.7 ENVIRONMENT TYPE HYBRID X PURE

![Graph 4 Hybrid x Pure](image)