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The Role of Agile in Customer Satisfaction Case study: Ooredoo Algeria

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ABSTRACT

There is an increased need for modern development methods that emphasize flexibility in customer's requirement changes. Agile project management has emerged as a solution to those constantly changing requirements by adopting customer satisfaction as a key principle. This research aims to determine which factors contribute to customer satisfaction within an agile project, a quantitative method was used, through distributing a questionnaire survey to 42 experienced employees of Ooredoo Algeria. The results of the study indicated that customer collaboration and improving quality contribute significantly to customer satisfaction; however, prioritizing value creation isn't correlated with customer satisfaction. As a conclusion, collaboration and improving quality are the key factors that enhance customer satisfaction in the context of agile project management.

Key words: project management, agile, customer focus, customer satisfaction, quality

RESUME

Un besoin croissant apparait pour l'utilisation de méthodes de développement moderne mettant l'accent sur la flexibilité face aux changements induits par les exigences des clients. Le management des projets agile est devenue une solution à ces exigences en constante évolution, en adoptant la satisfaction des clients comme un principe clé. Cette recherche vise à déterminer les facteurs qui contribuent à la satisfaction des clients, à travers une méthode quantitative, en distribuant un questionnaire à 42 employés expérimentés d'Ooredoo Algérie. Les résultats de l'étude indiquent que la collaboration avec les clients et l'amélioration de la qualité contribuent d'une manière significative à la satisfaction des clients ; cependant, il n'existe pas, à priori, une corrélation entre la création de la valeur et la satisfaction. En conclusion, l'amélioration de la qualité et la collaboration avec les clients sont les facteurs clés qui contribuent à la satisfaction de ces derniers au sein d'un projet agile.

Mot clés : Management des projets, agile, orientation client, satisfaction client, qualité

المخلص

إن الاحتياج لطرق حديثة التي تركز على المرونة بغرض مواجهة متطلبات الزبون المتغيرة، في تزايد مستمر، ولذا ظهرت إدارة المشاريع المرنة كحل لهذه المتطلبات، عن طريق تبني رضا الزبون كمبدأ أساسي لها. تهدف هذه الدراسة إلى تحديد الطرق التي تساهم في رضا الزبون في نطاق مشروع مرن، حيث تم الاعتماد على دراسة كمية، عن طريق توزيع استبيان ل 42 عامل ذو خبرة في إدارة الأساليب المرنة لدى شركة "أوريدو" الجزائر. تشير النتائج إلى أن التعاون مع الزبون وتحسين الجودة مرتبطين مع رضا الزبون، في حين أن إعطاء الأولوية لخلق القيمة ليست ذو فعالية في تحسين رضا هذا الأخير. كخاتمة لهذه الدراسة، يعتبر التعاون مع الزبون وتحسين الجودة الوسيلتين الأساسيتين اللتان تساهمان في تحسين رضا الزبون في إطار مشروع مرن.

الكلمات المفتاحية: إدارة المشاريع، المرونة، التركيز على الزبون، رضا الزبون، الجودة

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TABLE OF CONTENTS

Abstract	I
Résumé	II
الملخص	III
Acknowledgments	IV
List of tables	VIII
List of figures	IX
Abbreviation list	X
INTRODUCTION	1
1 Context and theme interest	2
2 The purpose of the study	2
3 Research problem	3
4 Hypothesis	3
5 Research field	4
6 Method	4
7 Plan announcement	5
CHAPTER 01: CUSTOMER SATISFACTION IN THE CONTEXT OF AGILE PROJECT MANAGEMENT	
Section 01: Literature review	
1 The agile approach:	7
2 Customer satisfaction	9
3 The relation between Agile and customer satisfaction	11
Section 02: Conceptual framework	
1 Generalities about Project management	15
1.1 Definition	15
1.2 The importance of project management	15
1.3 The standards used in project management	16
1.3.1 PM BOK Guide	16
1.3.2 PRINCE	17
1.3.3 ISO 21500:2012	17
1.4 The difference between project management traditional and modern methods	
18	

2	The agile methodology	19
2.1	The agile notion	19
2.2	The agile team roles	20
2.3	Most known agile frameworks	22
2.4	Agile advantages and enablers.....	24
2.4.1	Agile advantages.....	24
2.4.2	Agile enablers	27
3	Customer satisfaction.....	29
3.1	The significance of customer satisfaction.....	29
3.2	Customer focus	30
3.2.1	Customer focus from quality management perspective	31
3.2.2	Customer focus from lean management perspective.....	31
3.2.3	Customer focus from agile perspective.....	31
3.3	Customer Engagement	32
3.4	Service quality	33
3.5	Brand loyalty.....	36

CHAPTER 02: RESEARCH APPROACH AND ORGANIZATIONAL CONTEXT

Section 01: Approach and data collection

1	Epistemological Posture	41
2	Methodological approach	42
3	Data collection instruments	44
3.1	Documentary study:	44
3.2	Questionnaire.....	45
4	Data sampling and analysis	46
4.1	Data sampling	46
4.2	Data analysis.....	46

Section 02: Organizational context

1	General presentation of Ooredoo	47
2	Vision, values, and objectives	48
3	The organizational chart	48
4	Customer experience service.....	50

CHAPTER 03 : RESULTS AND ANALYSIS

Section 01: Findings and results

1	Customer satisfaction in Ooredoo Algeria	53
2	Preliminary tests	54
2.1	Reliability test	54
2.2	Extreme values.....	55
3	Sample description	55
4	Descriptive analysis	57
4.1	The agile variable	57
4.2	Customer satisfaction variable.....	59
4.3	Agile and customer satisfaction.....	60
5	Bivariate analysis:	63
5.1	Correlation tests	63
5.2	Regression analysis:	64
6	Multivariate analysis	65

Section 02: Discussion

CONCLUSION	70
1 Summary.....	71
2 Main obtained results	71
3 Theoretical implications	71
4 Managerial implications	72
5 Limits	72
6 Possible extensions of the study.....	72
6.1 From the agile context.....	72
6.2 From a marketing context.....	73
BILBIOGRAPHY	74
APPENDIX	74

LIST OF TABLES

Table 1: Traditional VS modern methods.....	18
Table 2: Agile frameworks	22
Table 3: Key agile drivers	28
Table 4: Key features of positivism and interpretivism paradigms.....	41
Table 5: the difference between qualitative and quantitative research	43
Table 6: Documentary study.....	44
Table 7: reliability test.....	54
Table 9: Respondents profile	56
Table 10: Experience.....	56
Table 11: factors that influence customer satisfaction	62
Table 12: correlation 01	63
Table 13: correlation 02.....	64
Table 14: linear regression 01.....	65
Table 15: linear regression 02.....	65
Table 16: linear regression 03	65
Table 17: relation between collaboration, quality and value	66
Table 18: Hypothesis testing.....	68

LIST OF FIGURES

Figure 1: Customer value.....	12
Figure 2: PM BOK structure	16
Figure 3: ISO 21500:2012 structure.....	17
Figure 4: Agile Roles	21
Figure 5: The Scrum process.....	23
Figure 6: Agile effect	25
Figure 7: Agile benefits	26
Figure 8: Project success rate	26
Figure 9: Project performance	27
Figure 10: Organization's experience in practicing agile	28
Figure 11: Agile Practices.....	32
Figure 12: Quality benefits	34
Figure 13: Service quality dimensions.....	36
Figure 14: Nedjma 2004-2013.....	47
Figure 15: Actuel logo	48
Figure 16: organizational chart	49
Figure 17: CSAT before and after the agile adoption	54
Figure 18: Bloxplot graph.....	55
Figure 19: Agile Framework	57
Figure 20: Agile benefits	58
Figure 21: Success factors	59
Figure 22: customer satisfaction benefits	60
Figure 23: the frequency of collaboration	61
Figure 24: factors that impact customer satisfaction	61

Abbreviation list

APM: Agile Project Management

CS: Customer Satisfaction

DAD: Disciplined Agile Delivery

ERM: Enterprise Risk Management

ISO: International Standards Organization

LeSS: Large Scale Scrum

PMI: Project Management Institute

PM BOK: Project Management Body of Knowledge

VUCA: Volatility, Uncertainty, Complexity, Ambiguity

XP: Extreme Programming

INTRODUCTION

1 Context and theme interest

The success of any organization is determined by the satisfaction levels of their customers, since the cost of attracting a new customer is five times more than the cost of keeping a pleased one (Alzoubi, Alshurideh, Kurdi, & Inairat, 2020). Companies are trying to thrive by providing their customers with high-quality products and services that meet their needs, in order to enhance their satisfaction and thus increase their loyalty toward the business (Ikramuddin & Mariyudi, 2021).

In today's competitive environment characterized by volatility, uncertainty, complexity, and ambiguity (Eilers, Peters, & Leimeister, 2022), traditional project management can no longer address the needs of modern development (Huang, 2022), since it focuses on delivering the outcomes within the time, budget and quality (Noteboom, Ofori, Sutrave, & El-Gayar, 2021), by following a strict plan (Hirner, 2019). Organizations have to adopt new working methods that emphasizes flexibility and adaptability (Tena Žužek, 2020).

The agile methodology is a customer-oriented approach, that paved its way from software development to various disciplines such as project management (Radhakrishnan, Zaveri, David, & Davis, 2022), which led to the emergence of agile project management. APM is considered a modern approach that focuses on iterative development, collaboration, and responding to changes rapidly (Fowler & Highsmith, 2001).

In order to provide the customers with high quality products that satisfy their needs, it is important to focus on creating value for them, through understanding their expectations ,working closely with them, and quickly addressing their concerns by adapting the product to their requirements (Amirova, Khomyakov, Mirgalimova, & Sillitti, 2019). Therefore, APM has emerged as a promising solution to the customer's constantly changing requirements (Noteboom, Ofori, Sutrave, & El-Gayar, 2021) by emphasizing collaboration, continuous improvement, and customer satisfaction.

2 The purpose of the study

The aim of this study is to discover in which ways the agile approach contributes to customer satisfaction; the secondary objectives of the research are:

- Satisfying the customers is one of the ultimate goals of any organization (Alzoubi, Alshurideh, Kurdi, & Inairat, 2020) (Ikramuddin & Mariyudi, 2021), our study focuses on understanding the importance of the customer satisfaction notion.
- Since the customer satisfaction is highly related to other concepts, such as service quality, and brand loyalty (Agbeyegbe & Salihu, 2022), (Shrestha, 2021), this study aims to explore the relation between these variables.
- The agile approach comes up with various advantages; however, the transition from traditional methods to the agile is not an easy process, and it has its own challenges (Dong, Dacre, Baxter, & Ceylan, 2022). The present research aims to identify the advantages, and the success factors for agile adoption.
- There are many standards concerning projects management (Kabeyi, 2019), this study aims to provide an overview about the most known ones.

3 Research problem

The research question is stated as follows:

How does the agile approach contribute to customer satisfaction?

The main research problem is divided into two sub-questions:

Q1: How to create an agile environment? (PMI & Alliance, 2017)

Q2: What is the relation between customer satisfaction, quality, and brand loyalty?

4 Hypothesis

According to the studies of (Radhakrishnan, Zaveri, David, & Davis, 2022),(Cartaxo, Barreto, Araujo, & Soares, 2013), (belkacem & toufik, 2021), (Sambinelli & Borges, 2022), (Barraood, Haslina, & Baharom, 2021) and in order to answer our research question , we have developed three hypothesis, suggesting that there is a link between customer satisfaction and agile (Buresh, 2008), (Bambauer-Sachse & Helbling, 2021), (Amirova, Khomyakov, Mirgalimova, & Sillitti, 2019), (Fowler & Highsmith, 2001).

- **Customer collaboration**

According to (Radhakrishnan, Zaveri, David, & Davis, 2022) customer collaboration is the participation of the customer during all the phases of the project, from the requirement analysis until the delivery of the product, hence the first hypothesis is:

H01: The agile approach contributes to customer satisfaction through customer collaboration.

- **Improved quality**

Belkacem & toufik, (2021) and Cartaxo, Barreto, Araujo, & Soares, (2013) claim that the agile impacts quality positively, mainly through the continuous feedback, and the tests, which will lead to increased customer satisfaction, as a consequence, the second hypothesis is:

H02: The agile approach contributes to customer satisfaction through improved quality.

- **Prioritizing value creation**

According to (Sambinelli & Borges, 2022) the agile methodology prioritizes creating value for customers, and responding to their requirements' changes, hence the third hypothesis is:

H03: The agile approach contributes to customer satisfaction through prioritizing value creation.

5 Research field

Our host company is Ooredoo Algeria, a subsidiary company of the Ooredoo Group, the aim of this internship is to discover the relation between the agile and the customer satisfaction practically. So, the commercial department, and more precisely the customer experience service was the most suitable option to carry out this study, since it's the service that interacts the most with costumers, through various projects that are managed using the Scrum method.

6 Method

This study focuses on a quantitative research methodology, a questionnaire survey is the main research instrument, that was distributed to 42 employees of Ooredoo, the main criteria for accepting answers is the prior experience with agile.

7 Plan announcement

The research is structured as follows: it begins with an introduction providing the motivation behind the chosen topic. It follows by three chapters:

The first one “customer satisfaction in the context of agile project management” presents the theoretical framework, it’s divided into two sections: literature review, which contains a brief presentation of related studies, the conceptual framework aims to provide a comprehensive understanding of the research’s key concepts.

The following chapter “research approach and organizational context” is about the methodological framework, where the employed methodology, data collection instruments, and data analysis are presented in the first section, the second section provides a general presentation of the host company, including their vision and objectives, organizational chart, and the customer experience service.

The third chapter “findings and discussion” concerned with the results and discussion of the empirical study.

Finally, the conclusion summarizes the main obtained results, along with theoretical and managerial implications, it clarifies the limits of the study, and it ends with suggesting possible extensions of the study.

**CHAPTER 01: CUSTOMER
SATISFACTION IN THE CONTEXT OF
AGILE PROJECT MANAGEMENT**

Section 01: Literature review

The aim of this section is to understand the relationship between agile methodology and customer satisfaction, based on previous literature, starting with an overview of the agile methodology, moving on to a brief presentation of the customer satisfaction notion and its importance, and lastly highlighting the relationship between these two variables.

1 The agile approach

In 2001, seventeen software engineers met in order to find an alternative to heavyweight software approaches (Hirner, 2019), this meeting resulted in the appearance of “the agile manifesto” (Al-Saqqa, Sawalha, & AbdelNabi, 2020), which consists of four values and twelve principles (Kakar, Kakar, & Kakar, 2022).

The agile approach started with software development, and since it has gained a lot of interest due to its benefits, it’s now applicable to other types of projects as well. It’s considered as a learning-oriented approach. (Tena Žužek, 2020).

Implementing agile has many advantages in terms of improving quality, enhancing customer satisfaction, reducing costs, and adapting to change easily. (Hirner, 2019), Dong, Dacre, Baxter, & Ceylan, (2022) add reducing risks, shortening delivery time, and increasing team productivity. Tena Žužek, (2020) highlights other benefits, such as increasing flexibility, improving communication, and encouraging effective problem-solving skills. Eilers, Peters, & Leimeister, (2022), consider continuous learning as one of the most valuable agile benefits.

The transition from plan-driven methods to agile isn’t an easy process, and it has its obstacles, such as resistance to change, lack of understanding, and insufficient participation from the management. (Dong, Dacre, Baxter, & Ceylan, 2022). A number of authors outlined other challenges and success factors, such as leadership, communication, culture... a further description of these researches are listed below:

The agile methods are characterized by the autonomy of their teams; however, leadership plays a crucial role in developing agile in the organizational context (Weichbrodt, et al., 2022). Leaders are considered the representatives of the agile values and principles, mainly through improving the team’s capability to managing change (Charef, 2022).

According to (Marnada, Raharjo, Hardian, & Prasetyo, 2021) ensuring coordination and maintaining communication with the team and stakeholders is one of the most crucial challenges within an agile environment, they suggested organizing workshops and playful training and creating a collaborative environment, as a solution to strengthening the team's bond. Loiroa, Castroa, tnikc, Cruz-Cunha, & Goran D. Putnikc, (2019) further claims that successfully implementing agile methods depends on the communication between the stakeholders, the agile team, and the supporting cast.

Hirner (2019), points out the engagement of the top management, and adapting the agile method to fit the organizational structure are the most critical success factors for implementing agile.

Noteboom, Ofori, Sutrave, & El-Gayar, (2021) assert there are three main critical success factors for adopting APM approach, which are project: it's important to break down the project into smaller and more manageable sprints, team: since the agile approach prioritizes the interaction between the individuals over process and tools (Kent Beck, 2001-2022), it's essential to ensure collaboration and coordination within the team, culture: top management needs to be engaged in the process of adoption, by establishing a favorable work climate, training employees, and sensitizing them about the benefits of agile practices.

Eilers, Peters, & Leimeister, (2022) outlines the importance of an agile mindset in today's business environment, which is driven by VUCA (volatility, uncertainty, complexity, and ambiguity), using a mixed method, consisting of 15 interviews and a survey distributed to 499 participants in Switzerland, he found that agile mindset is a particular way of thinking, that is related to multiple factors, such as learning spirit, collaborative exchange, and customer value creation, the agile mindset improves strategic agility, and thus has a positive impact on organizational performance.

Based on (The second state agile culture report , 2021), telecom companies have the weakest change management, and agile culture.

There are many different agile methods, each method consists of practices that support the values and principles (Al-Saqqa, Sawalha, & AbdelNabi, 2020). According to the (State of Agile Report, 2022), the most used agile frameworks are scrum (87%) and Kanban (56%), while SAFe is the leading method in the scaled framework (53%).

Scrum is an incremental and iterative method, it can be used for all project sizes, the sprint duration is up to four weeks, with less than ten team members (Asma Akhtar, 2022), it has many benefits in terms of simplicity, productivity, and transparency (Al-Saqqa, Sawalha, & AbdelNabi, 2020).

Kanban was first presented in 1947 at Toyota, it can be defined as a visual management system, that takes the just-in-time delivery method into account while managing knowledge and work, due to its two core principles: limiting work in progress (WIP), and visualizing the workflow, through the use of different tools, such as the agile board. The Kanban method improves visibility, understanding, and controlling workflows (Alaidaros, Omar, & Romli, 2021).

SAFe is a scaling agile method, which is suitable for large environments, it incorporates agile and lean practices, and it's divided into three sections: portfolio, program, and team. The SAFe team is similar to the Scrum team, it's referred to as ScrumXP; however, it may be specialized, and not always cross-functional (Almeida & Espinheira, 2021).

The study of (Tena Žužek, 2020) conducted on a Slovenian non-software medium-sized manufacturing company, with the purpose of exploring the effects of implementing some APM practices (project team, stand-up meetings, customer collaboration, iterative planning), taking into consideration the financial situation of the medium-sized companies, the results show that agile impacts positively stakeholders satisfaction, improves communication and flexibility.

Hirner, (2019) explains in his study regarding the use of agile in telecommunication industry, that the implementation of any agile method should be tailored, in order to fit in the context of the environment, he resulted based on his case study at an Austrian network operator, that more time flexible agile methods, like SAFe or Kanban are more suitable for telecommunication industry, in contrast to the suggestions of using scrum, LeSS or DAD in the research literature.

2 Customer satisfaction

Customer satisfaction is a crucial component of the marketing concept, since it might affect future consumer purchasing behavior (Ikramuddin & Mariyudi, 2021). Retaining a pleased customer, would save the company five times less the cost of attracting a new one (Alzoubi, Alshurideh, Kurdi, & Inairat, 2020), customer satisfaction is considered as key determinant of financial performance in telecommunication industry (Ikramuddin & Mariyudi, 2021).

Businesses are starting to consider establishing client connections more than just increasing sales, they must prioritize building mutually beneficial connections with their customers, rather than focusing solely on maximizing revenues at the expense of their customers (Tyagi, Sakharam, Dodiya, Patel, & Sharma, 2023). In order to develop successful business strategies for customer retention, telecommunications service providers must be aware of the various factors which influence customer satisfaction, and loyalty (Ikramuddin & Mariyudi, 2021).

Shrestha, (2021) employed quantitative method, through distributing a questionnaire to 500 consumers in Nepal, the study analyzes the role of service quality on customer satisfaction and loyalty, using five dimensions of quality (assurance, reliability, empathy, responsiveness, and tangibles), the results indicates a strong relationship between customer satisfaction and the dimensions of service quality, especially reliability, which is considered the most impactful, while empathy is the strongest in terms of customer loyalty, the findings also approved that customer satisfaction has a positive impact on customer loyalty.

According to (Ikramuddin & Mariyudi, 2021), perceived value has a significant impact on customer satisfaction and brand trust. Telecom service providers must always offer services that meet or exceed customer expectations in order to increase customer satisfaction and trust. Customer satisfaction and brand loyalty also have a significant impact on each other, this finding was based on a quantitative study of 304 telecom services users in Indonesia.

Koo, Kim, Shin, & Song, (2021) claim that customer privacy, and security are the main service quality factors which affect customer trust, satisfaction, and loyalty positively, in the Korean telecommunication companies. Close to that Abdullah, Prabhu, & Othman, (2022) find that connectivity, quality of networks, and price are the critical service attributes that influence customer satisfaction in Kurdistan telecommunication service providers.

A quantitative study was done by (Alzoubi, Alshurideh, Kurdi, & Inairat, 2020) using a questionnaire distributed to 420 customers of the Etisalat company in UAE, with the objective of analyzing the factors which influence customer satisfaction and delight, the results of the study indicated that customer satisfaction can be measured using perceived value, price fairness, and service quality. Those elements are considered as the key success factors in telecom sector.

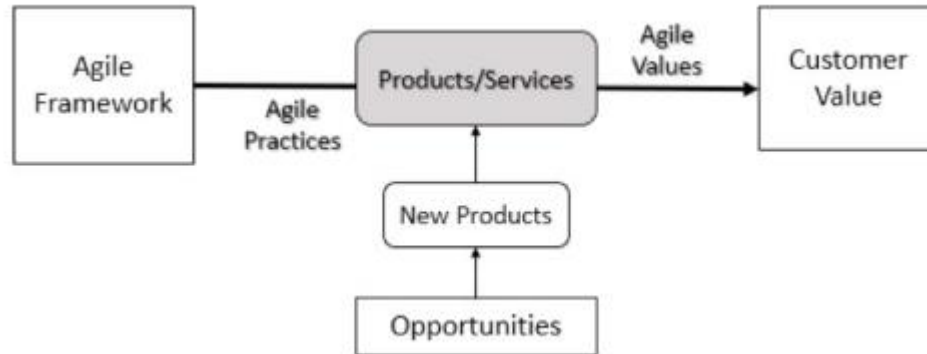
Diputra & Yasa, (2021) aim to examine the role of brand trust, brand image, and product quality on customer satisfaction, through quantitative study, using a sample of 185 Samsung smartphone users in Indonesia, the finding showed that brand loyalty is resulted from increased customer satisfaction, which is mostly influenced by product quality. Cuong (2020), support the finding of (Diputra & Yasa, 2021), based on his quantitative study of 272 customers in Vietnam. Albari (2020), further claims that customer satisfaction is positively impacted by service quality, whereas loyalty is mostly affected by product quality, based on a questionnaire distributed to 96 clients in Indonesia.

Jeeva Venkatakrishnan, (2023) has gathered data from 650 regular e-buyers in India, aiming to examine the impact of e-service quality on customer satisfaction and loyalty, the findings show a positive correlation between customer loyalty, customer satisfaction and e-service quality. The results also imply that increased customer satisfaction depends on the price and trust.

3 The relation between Agile and customer satisfaction

Several studies (Dong, Dacre, Baxter, & Ceylan, 2022); (Charef, 2022); (Eilers, Peters, & Leimeister, 2022); (Hirner, 2019) have pointed out that agile has a considerable impact on improving quality, and enhancing customer satisfaction, through early, rapid and continuous product delivery (Sambinelli & Borges, 2022), the direct interaction between customers and developers (Al-Saqqa, Sawalha, & AbdelNabi, 2020),the incorporation of customers input (Buresh, 2008), and the creation of customer value (Loiroa, Castroa, tnikc, Cruz-Cunha, & Goran D. Putnikc, 2019).

Customer involvements means closely working with customers during all the stages of the project (Siddique & Hussein, 2019).Based on his study, which is done in Norway through 24 interviews with practitioners, aiming to investigate the factors influencing customer involvement, the finding showed that building trust and transparency, being forthcoming, understanding costumer's perception, and establishing effective communication are considered the enablers for an effective customer collaboration.

Figure 1: Customer value

Source: (Loiroa, Castroa, tnikc, Cruz-Cunha, & Goran D. Putnikc, 2019)

The figure shows how the customer value is created, within an agile environment, using various agile practices, which helps delivering product and services in accordance with customer preferences.

It's confirmed by (Sambinelli & Borges, 2022) that creating customer value leads to higher customer satisfaction and loyalty levels, customer value can be seen as the capability of responding to customer requirements changes, through the use of agile methods.

Customer collaboration is crucial to the success of an agile project (Tena Žužek, 2020). The results of a cross sectional survey done by (Radhakrishnan, Zaveri, David, & Davis, 2022) which covers 292 agile projects, indicates that project agility has a positive relationship with project team autonomy, team diversity, and client collaboration. Close to that, a qualitative method using a 27 case studies was employed (Ciriello, 2022), at a Danish service provider showing that an effective customer collaboration requires a mutually beneficial relationship, which is based on trust and flexibility, he concluded that the awareness of each other's influence is a key factor to project agility.

The importance of customer collaboration resides in building a product that will provide specific benefits to the customer by involving them in the early phases, which will lead to increased customer satisfaction (Siddique & Hussein, 2019).

Shuib & Hassan, (2021) highlight the relation between agile and software quality, since the agile methodology is based on iterative development, continuous testing, and the use of customer feedback, the deliverable can be reviewed by customers at early stage for improvement, defects

can be identified and addressed before becoming serious problems, and the conformance of the product or the increment can be assessed, and thus more effective solutions are provided based on the understanding of the customer's needs, which will lead to the development of high quality products. Barraood, Haslina, & Baharom (2021) consider the testing within an agile project as a quality assurance activity, that is crucial to improve the quality of the end product.

Belkacem & toufik, (2021) find that putting the individuals at the center of the system, helps with providing the best conditions for each team member to contribute effectively to the team's goal, which will lead to increased customer satisfaction.

According to (Buresh, 2008) there is no significant difference in customer satisfaction, between the use of agile or traditional project management methods, this result was based on a study of 185 projects using a quantitative approach, including four variables: customer satisfaction, product quality, project management effectiveness, and project team effectiveness.

Cartaxo, Barreto, Araujo, & Soares, (2013) support the finding of (Buresh, 2008), and claim that using scrum doesn't lead to improved customer satisfaction than the traditional approaches, according to the responses of a cross sectional survey, which they conducted using 19 Brazilian software development projects, assuming that there are seven factors effecting customers satisfaction: time, goals, quality communication and transparency, agility, innovation, and benchmarking.

In contradict to these results, a literature review was done by (Amirova, Khomyakov, Mirgalimova, & Sillitti, 2019) using 34 references, aiming to analyze the studies related to agile and customer satisfaction, the results indicated that application of agile is considered one of the main factors which affects customer satisfaction, mainly due to involving customer during the whole process.

Bambauer-Sachse & Helbling, (2021) further claims that agile approaches can result in higher customer satisfaction, than plan driven approaches based on his survey which analyzes the experience of 361 customers in Switzerland.

In summary, the agile approach is mainly characterized by the iterative development, customer collaboration, and managing change (Fowler & Highsmith, 2001), based on the literature and current trends, agile and customer satisfaction have gained a lot of interests, since the agile

manifesto focuses on involving the customers and ensuring their satisfaction which is clearly shown in their third core value “*customer collaboration over contract negotiation*” and first principle “*Our Highest Priority is to satisfy the Customer through Early and Continuous Delivery of Valuable Software*” (Kent Beck, 2001-2022)

In other words, the agile approach aims to facilitate collaborating with costumers, in order to satisfy their needs effectively (Siddique & Hussein, 2019).

The application of the agile can be done through various frameworks, each one of them has its own practices (Al-Saqqa, Sawalha, & AbdelNabi, 2020), the host company “Ooredoo” apply the practices of scrum.

Section 02: Conceptual framework

This section provides further explanation of the main concepts regarding the research, which are project management, the agile approach, and customer satisfaction.

1 Generalities about Project management

Whether an organization is small or large, project management plays a critical role in increasing the chances of project success (XUE, 2016).

1.1 Definition

“Projects can be observed as a set of unique procedures and processes which are coordinated and controlled” (Bakator, Terek, Boric, Petrović, & Ivetić, 2017). According to (PMBOK, 2017) *“a project is a temporary endeavor undertaken to create a unique product, service, or result”*. The value of projects can be seen through meeting customer needs, aligning the outcomes with the company’s strategy, and increasing return on investment. (Badewi, 2015).

“Project management is a process that incorporates various tools and techniques that help achieve goals and business objectives” (Bakator, Terek, Boric, Petrović, & Ivetić, 2017). The (PMBOK, 2017) define project management as *“the application of knowledge, skills, tools, and techniques to project activities to meet the project requirements”*.

There are several definitions of project management, one thing they have in common is that the project manager must use tools, techniques, and skills to accomplish the project goals. (Marnewick, L, & Marnewick, 2022). In other words, project management encompasses all project guidance tasks, that are necessary to provide the desired results within the constraints of costs, quality, and time. (XUE, 2016).

1.2 The importance of project management

Project management aims to improve project results, through more effective and efficient management, since it allows the control of many factors, including costs, schedules, and risks, efficient project management benefits organizations by increasing the likelihood that they will achieve their goals. (Eliane Gonzales Meirelles, 2019).

According to (PMBOK, 2017) the significance of project management resides in:

- Accomplishing the company’s objectives

- Satisfying stakeholders' needs
- Improving the chances of success
- Resolving issues and difficulties
- Responding quickly to risk
- Optimizing the use of resources
- Balancing the effect of project constraints.

From a practical point of view, the (PMI, 2021) demonstrates the importance of project management through numerous case studies, such as Gordie Howe international bridge, which is an infrastructure project that aims to improve several roadways, and local bridges. The delivering project company stated that the project is making good progress due to the use of project management standards. Vadofane is another project within the telecommunication industry, that was successfully delivered respecting the schedule, it was managed using the PMI project management approach.

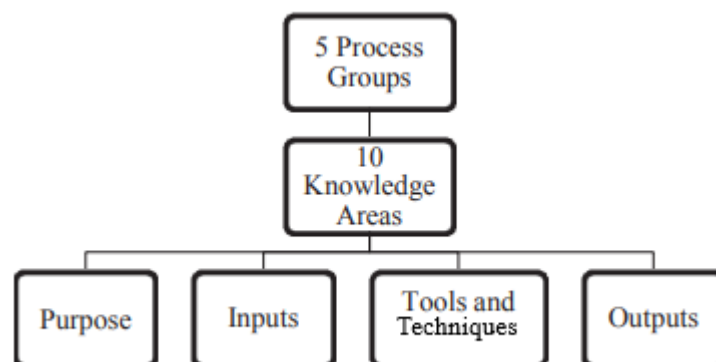
1.3 The standards used in project management

1.3.1 PM BOK Guide

Was first released by the PMI as a white paper in 1987, the first edition was released in 1996 (Kabeyi, 2019). The PM BOK harmonizes project management process due to its generality and extensive coverage of best practices. (XUE, 2016).

The manual is one of the most important resources for project managers today, and it's considered the standard for the project management profession. (Kabeyi, 2019).

Figure 2: PM BOK structure



Source: (XUE, 2016)

The figure illustrates the structure of the PM BOK, which consists of series of inter-related activities known as process groups, and ten knowledge domains, describing the techniques and tools, the purpose, and the inputs and outputs for each domain (PMBOK, 2017).

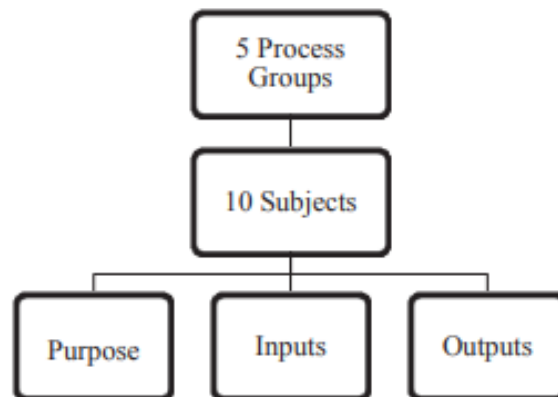
1.3.2 PRINCE

The prince method (1989), or Projects IN Controlled Environments (PRINCE), which was published by the UK government agency CCTA, became the standard for all government information systems projects in the UK. A change to the PRINCE technique was made in 1996 as a result of the approach's reputation for being too inflexible and limited to large projects. (Kabeyi, 2019).

1.3.3 ISO 21500:2012

After five years of work by experts from more than 50 countries, the International Organization for Standardization published "ISO 21500:2012, Guidance on Project Management" in September 2012 (Kabeyi, 2019). The purpose behind this standard is to provide a set of project management concepts and processes that can have a positive impact on project performance (Kristinsdóttir, 2015).

Figure 3: ISO 21500:2012 structure



Source: (XUE, 2016)

The figure above shows the structure of ISO 21500:2012, which is similar to the PM BOK, the main difference between them is that the tools and techniques are not given in this standards, due to its page limitations (XUE, 2016).

This standard was updated on 2021, with another version that concerns projects, programs, and portfolio management. It provides guidance and general concepts for managing and improving projects, programs and portfolio, that can be applicable to most of the organizations regardless of their type and size. (ISO21500:2021, 2023)

As shown above, project management has an important role in exploiting the needs, fulfilling the consumer's demand, and delivering the outcomes, within the timeline, budget, and quality (Shakya & Shakya, 2020). There are various standards that helped with the development of project management, namely the PM BOK which is a process-oriented guide, based on 5 process groups which are: initiating, planning, controlling, executing, and closing, and 10 knowledge areas that help with managing all the aspects related to the project.

1.4 The difference between project management traditional and modern methods

The key distinctions between project management traditional and modern methods are outlined in the table below:

Table 1: Traditional VS modern methods

Parameter	Traditional methods	Modern methods
Ease of modification	Hard	Easy
Development approach	Predictive	Adaptive
Project Size	Large	Small or medium
Planning Scale	Long term	Short term
Management Style	Command and control	Leadership and collaboration
Learning	Continuous learning while development	Learning is secondary to development
Documentation	High	Low
Organization Type	High revenue	Moderate and low revenue
Organization's Number of Employees	Large	Small
Budget	High	Low
Number of Teams	Multiple	One

Team Size	Medium	Small
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Source: (Al-Saqqa, Sawalha, & AbdelNabi, 2020)

The table above summarizes the differences, based on various parameters, traditional methods are based on a control management, with extensive documentation, and long-term planning, whereas the agile methods are based on leadership, and adaptiveness. The main objective of traditional project management approaches is to achieve the goals respecting the cost, quality and time constraints, while the modern approach focuses on developing solutions that meet customer requirements under continuous changing circumstances (Noteboom, Ofori, Sutrave, & El-Gayar, 2021). Modern approaches are more appropriate in medium or small size projects, while the traditional methods are more effective in large projects. (Al-Saqqa, Sawalha, & AbdelNabi, 2020). Buresh, (2008) finds that losing sight of the big picture, and impeding innovation, are the main limitations of the traditional methods.

2 The agile methodology

“Facilitating change is more effective than attempting to prevent it. Learn to trust in your ability to respond to unpredictable events; it's more important than trusting in your ability to plan for disaster.” (Fowler & Highsmith, 2001). Encouraging change is more important than exhaustive planning for disasters.

2.1 The agile notion

17 software developers gathered in February 2001 to talk about lightweight software development techniques at The Lodge, Snowbird, and Utah resort, they produced the Manifesto for Agile Software Development (Kabeyi, 2019). This manifesto paved the ground for a change in the software industry's processes (Hirner, 2019), the agile method is considered as a response to the challenges associated with software development (Cartaxo, Barreto, Araujo, & Soares, 2013).

The primary objective of the agile methodology is to expedite development, and implement the necessary adjustments effectively (Al-Saqqa, Sawalha, & AbdelNabi, 2020).

The agile manifesto stated its purpose and values: "We are uncovering better ways of developing software by doing it and helping others do it. We 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." (Kent Beck, 2001-2022)

The agile methods can be seen as *“lightweight processes that employ short iterative cycles; actively involve users to establish, prioritize, and verify requirements; and rely on tacit knowledge within a team as opposed to documentation”*. (Buresh, 2008)

The agile approach has gained a lot of interest because of its capacity to adapt to change, and therefore, it has extended to initiatives outside of the software sector, such as project management, marketing, or engineering, by contributing to rapid development and stakeholder’s satisfaction. (Noteboom, Ofori, Sutrave, & El-Gayar, 2021)

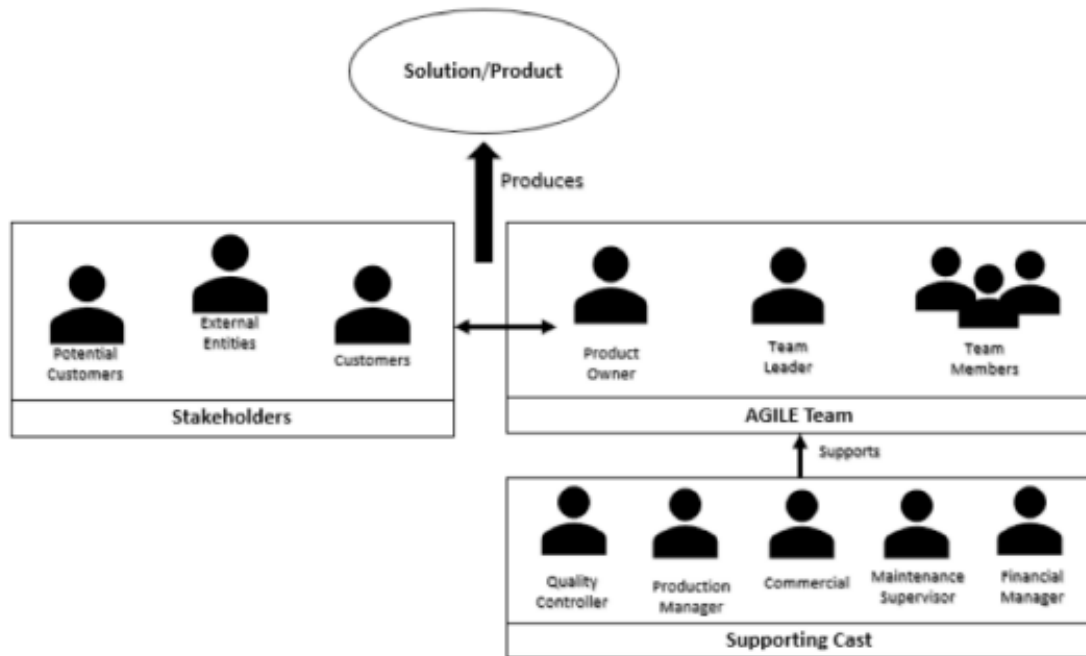
Agile project management can be defined as *“an approach based on a set of principles, whose goal is to render the process of project management simpler, more flexible and iterative in order to achieve better performance (cost, time, and quality) with less management effort and higher levels of innovation and added value for the customer”* (Tena Žužek, 2020).

Organizational agility is known as the capacity of the organization to identify unanticipated changes in the environment and respond properly, rapidly, and effectively by rearranging its internal resources in order to achieve a competitive advantage (Missoum, 2022).

Customer satisfaction, adapting to changes, flexibility, communication and collaboration, motivation, and teamwork are the key agile principles. (Kent Beck, 2001-2022)

2.2 The agile team roles

Since the agile manifesto emphasizes people over processes and tools (Kent Beck, 2001-2022), it’s important to understand the components of an agile team

Figure 4: Agile Roles

Source: (Loiroa, Castroa, tnikc, Cruz-Cunha, & Goran D. Putnikc, 2019)

The figure (4) shows the agile roles, which is divided into three: agile team, stakeholders, and supporting cast.

The product owner: he's the representative of customers, and the mediator between them and the agile team (Loiroa, Castroa, tnikc, Cruz-Cunha, & Goran D. Putnikc, 2019).

Team members: cross functional and self-organized members with various backgrounds and skills, who are responsible for delivering the end products rapidly, and with the highest quality (PMI & Alliance, Agile practice guide, 2017)

Team leader: who is considered as the facilitator, his main role is to guide and minimize the obstacles for the team (Loiroa, Castroa, tnikc, Cruz-Cunha, & Goran D. Putnikc, 2019).

Stakeholder: can be defined as a *“person, group or organization that has interests in, or can affect, be affected by, or perceive itself to be affected by, any aspect of a project”* (ISO2152, 2020)

Supporting cast: their main role is to provide services that can help the agile team (Loiroa, Castroa, tnikc, Cruz-Cunha, & Goran D. Putnikc, 2019).

2.3 Most known agile frameworks

The following table summarizes various agile frameworks based on their key features, which differs based on the duration, the team, and other factors.

Table 2: Agile frameworks

Framework	Key features
Scrum	<ul style="list-style-type: none"> ▪ The work is broken down into small development sprints ▪ The duration of the sprint is from 1 to 4 weeks ▪ a work plan should be followed for each sprint
Kanban	<ul style="list-style-type: none"> ▪ The work visualization is the basis of development ▪ The focus has to be on “work in progress” ▪ There are no timeboxed cycles
Lean	<ul style="list-style-type: none"> ▪ The product should be developed in the shortest time ▪ The product should be improved continuously ▪ The team has more responsibilities
XP	<ul style="list-style-type: none"> ▪ Focuses more on technical aspects ▪ 1 to 3 weeks is the duration of the sprint ▪ Multiple testing are performed (unit, integration, and acceptance)
TDD (Test Driven Development)	<ul style="list-style-type: none"> ▪ During each iterative, small functionalities are developed ▪ Testing is carried out while developing ▪ The quality is enhanced because of the testing
FDD (Feature Driven Development)	<ul style="list-style-type: none"> ▪ It’s characterized by the high adaptation ▪ The duration is from 1 to 4 weeks ▪ It requires an expert, in order to deliver high quality products rapidly
SAFe	<ul style="list-style-type: none"> ▪ It’s a scaling agile method that incorporates the lean and agile principles ▪ It’s more appropriate for large environments ▪ The team isn’t always cross-functional

Source: made by the researcher, based on (Asma Akhtar, 2022), (altexsoft, 2016), (Al-Saqqa, Sawalha, & AbdelNabi, 2020), and (Almeida & Espinheira, 2021)

The agile approach is considered as an umbrella, which covers various frameworks. It's a descendant of the lean thinking, since it shares various lean principles such as focusing on value (PMI & Alliance, 2017).

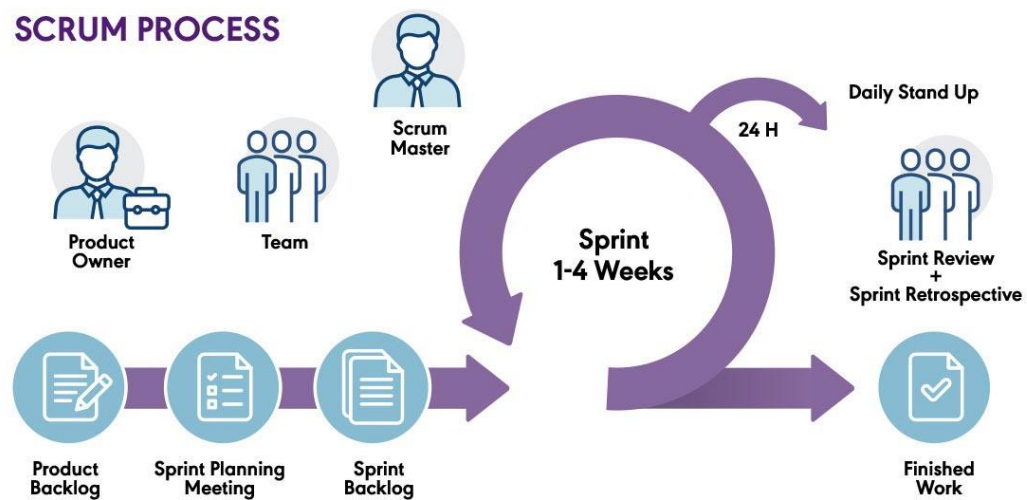
Scrum: the origins of scrum goes to Sutherland and Ken Schwaber, in 1995, they developed an iteration-based methodology, which is known today as scrum, it's considered the most used agile framework due to its simplicity (Asma Akhtar, 2022), and benefits in prioritizing tasks, delivering increment at the end of each sprint, emphasizing communication, and continuously improving the deliverable. (Mireca, 2019)

Scrum can be defined as” *a lightweight framework that helps people, teams and organizations generate value through adaptive solutions for complex problems*” (ScrumAlliance, 2023). It's built around three pillars:

- **Transparency:** it's important to give the team a clear view about the project
- **Inspection:** it's needed in order to prevent deviation
- **Adaptation:** in case of deviations, the product needs to be adjusted quickly

In the scrum framework, continuous improvement approach is adopted, in order to ensure that the deliverable satisfies the customers through meeting quality requirements, and delivering business value. The product backlog is prioritized based on the customer requirements, and constantly updated to keep up with changes. (SBOK, 2016)

Figure 5: The Scrum process



Source: (The Agile Journey: A Scrum overview, 2023)

The figure shows the scrum framework, which is characterized by:

- **A product backlog:** a list of prioritized tasks based on the end user requirements (MIRCEA, 2019)
- **Sprint planning:** involves the stakeholders, in order to set the sprint goal, and plan the work (Muhammad Asaad Subih & Ali, 2019)
- **Daily scrum:** it's a mandatory daily meeting, for about 15 minutes (MIRCEA, 2019)
- **Sprint review or retrospective:** examine the sprint outcome, and define the future improvements

2.4 Agile advantages and enablers

Implementing agile comes up with various advantages; however, in order to ensure a successful adoption of agile, that are many drivers that needs to be taken into consideration.

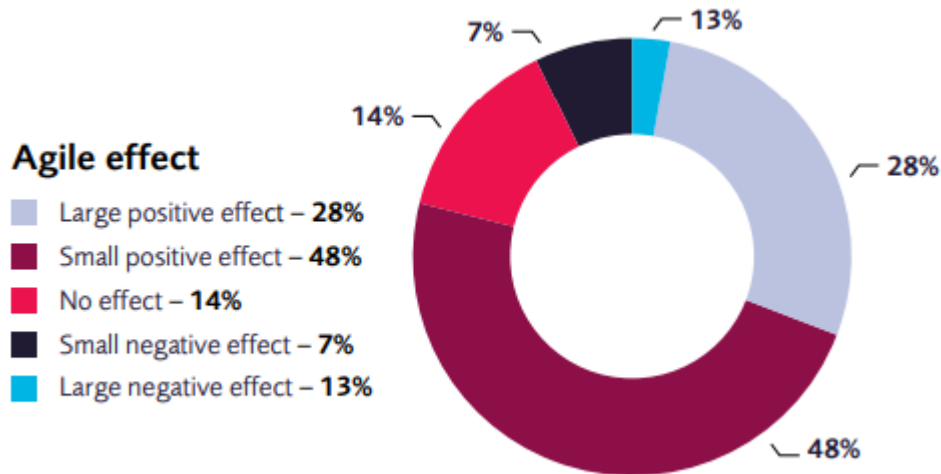
2.4.1 Agile advantages

Since their early introduction in the software development business, agile approaches have demonstrated their potential to increased customer satisfaction, cost reduction, time to market compression, productivity, and quality improvement (Hirner, 2019); in addition to reducing risks, improving the project visibility (Ruk, Khan, Khan, & Zia, 2019), and increasing team's productivity (Dong, Dacre, Baxter, & Ceylan, 2022).

Moreover, agile methods are known for increasing flexibility (Eilers, Peters, & Leimeister, 2022), enhancing learning (Tena Žužek, 2020), and encouraging innovation (Loiroa, Castroa, tnikc, Cruz-Cunha, & Goran D. Putnikc, 2019).

The following figure demonstrates the agile effect

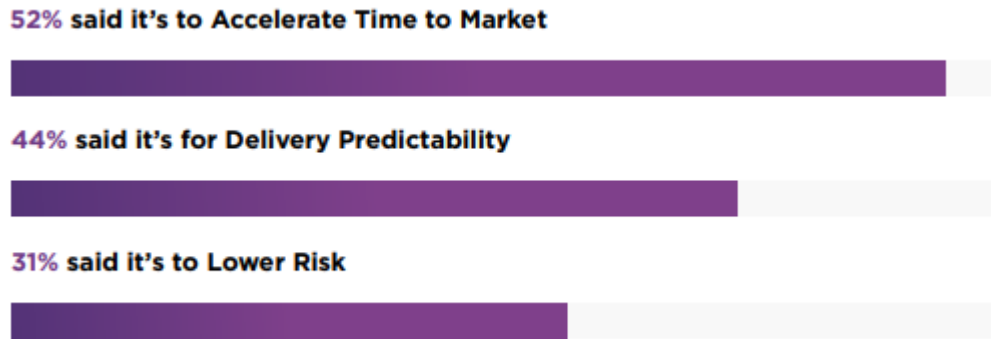
Figure 6: Agile effect



Source: (Dong, Dacre, Baxter, & Ceylan, 2022)

The chart represents the agile effect (positive, negative, and neutral), it can be seen that overall agile has a positive effect on the organization (76%).

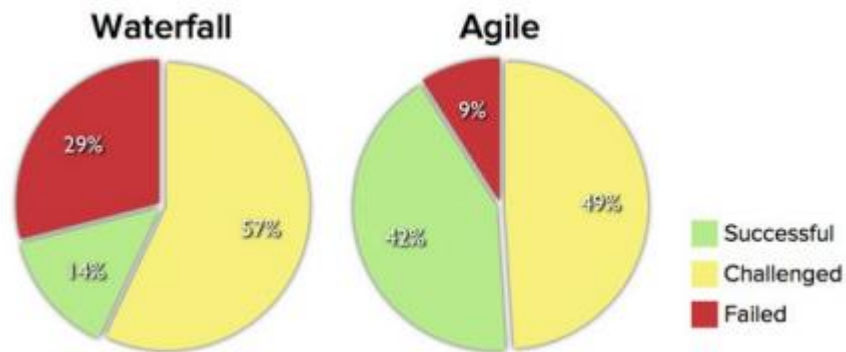
The next figure represents three significant advantages of agile:

Figure 7: Agile benefits

Source: (State of Agile Report, 2022)

The figure shows that the main agile advantage is accelerating time to market, which can be achieved through the fast and continuous delivery of the product (Kent Beck, 2001-2022) ; the second benefit is about predictability, while the third is about reducing risks.

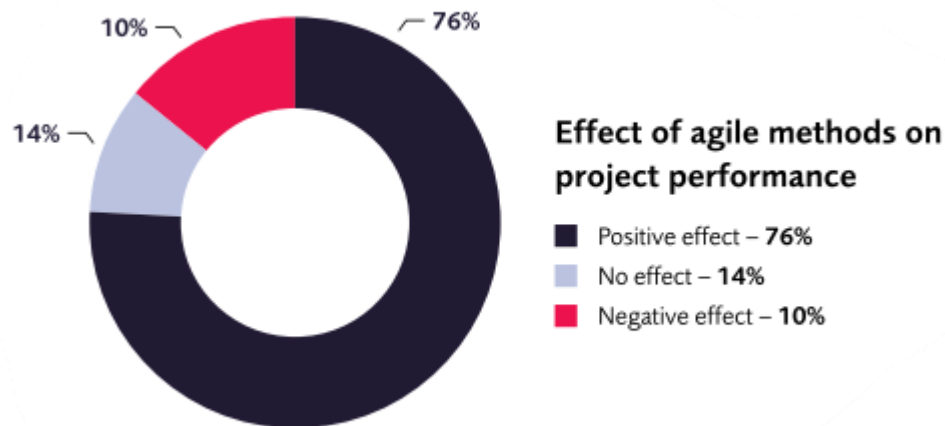
The following pie chart demonstrates project success rate between the agile and waterfall:

Figure 8: Project success rate

Source: (Cartaxo, Barreto, Araujo, & Soares, 2013)

It can be seen that using the agile methods would increase the chances of project success than waterfall approaches. The success rate is 42% within agile, and 14% with waterfall.

Project performance is about describing the outcomes related to a product (Głodziński, 2019), the chart below represents the effect of agile on project performance.

Figure 9: Project performance

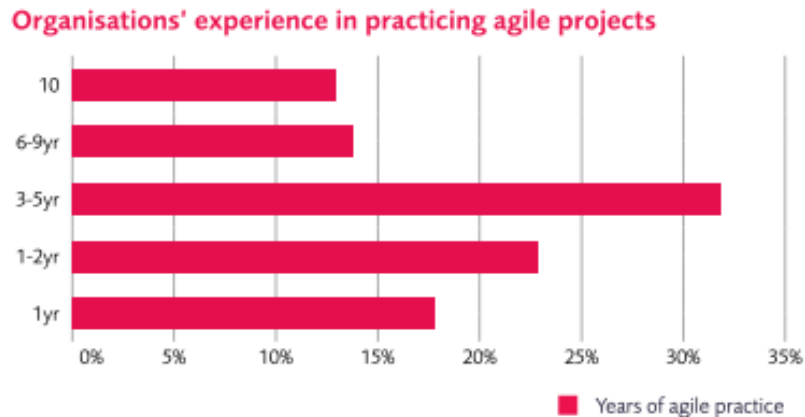
Source: (Dong, Dacre, Baxter, & Ceylan, 2022)

Based on the figure, agile methods have a positive impact on project performance (76%). Only 10% represents a negative effect, whereas the neutral effect is 14%.

It's apparent from the figures shown above, that the agile methods have a positive effect, in terms of project success, project performance, time to market, and risks reduction. Being agile means prioritizing value over costs when making decisions. Agile is known for providing increased transparency, and visibility. Adopting agile increases team's productivity, discipline and accountability toward each other; furthermore, it improves stakeholder communication and collaboration. (Dong, Dacre, Baxter, & Ceylan, 2022).

2.4.2 Agile enablers

Although the agile approach was first introduced in 2001 by the agile manifesto (Kent Beck, 2001-2022), most of the organizations don't have much experience with it, the following graph shows the years of agile practice in different organizations.

Figure 10: Organization's experience in practicing agile

Source: (Dong, Dacre, Baxter, & Ceylan, 2022)

Based on the graph, most of the organizations have 3 to 5 years' experience with the agile, less than 15% of them have 10 years of experience, while more than 20% have 1 to 2 years' experience. Since the agile remains relatively new, it's crucial to understand the drivers for an agile environment, so that the project goals can be achieved effectively.

Table 3: Key agile drivers

Drivers	Description
Engagement of the top management	The adoption of any agile method requires a strong commitment from the company's management, at all the hierarchical levels
Mindset	It's a way of thinking, and an attitude, based on continuous improvement, trust, and responsibility, which supports the agile manifesto values and principles.
Culture	It's important to emerge the agile mindset into the organization, and tailor the practices to fit in the company's culture
Team	The agile team consists of highly motivated and skilled individuals from different fields.
Communication	It's essential to ensure communication between the team members, and also with the external stakeholders, an effective communication helps with updating information, clearing the doubts, and accomplishing activities.

Training	Training will facilitate the transition into the agile, improves the skills, motivate the team, and enhance flexibility.
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Source: made by the researcher, based on (PMI & Alliance, 2017), (Hirner, 2019), (Eilers, Peters, & Leimeister, 2022), and (Loiroa, Castroa, tnikc, Cruz-Cunha, & Goran D. Putnikc, 2019)

The table summarizes six agile drivers, which are the commitment of the management, developing an agile mindset, emerging the mindset into the organization's culture, providing training, coordinating the teams, and ensuring an effective communication.

3 Customer satisfaction

The success of any company depends on providing high-quality services, which increases customer satisfaction, and leads to brand loyalty. (Shrestha, 2021)

3.1 The significance of customer satisfaction

Customers are the primary driver of a company's existence and market development. Therefore, the businesses who want to compete must provide their clients useful and distinctive terms which meet their needs. This satisfaction encompasses not only the emotions felt during the purchase procedure but also the environment both before and after the transaction (Agbeyegbe & Salihu, 2022).

Satisfaction is defined as *“a person's feeling of pleasure resulting from comparing a product's perceived performance with his or her expectations”* (Altangerel & Munkhnasan, 2019). Ikramuddin & Mariyudi, (2021) refer to satisfaction as *“the level where customers feel happy after using a product that suits the needs and desires of customers”*.

Customer satisfaction is defined by Kotler and Keller as *“the personal feelings of customers, which could be pleasure or disappointment towards customer expectation or the perceived products performed by the service provider”* (Abdullah, Prabhu, & Othman, 2022). Alzoubi, Alshurideh, Kurdi, & Inairat, (2020) defines customer satisfaction as *“the individual's perception of the performance of the product or service in relation to his or her expectations”*. Agbeyegbe & Salihu, (2022) define it as *“pleasurable degree of the experience associated with specific products or services”*.

In other words, customer satisfaction is an emotional reaction to a product, or a service experience following a purchase, which is resulted based on the difference between how well a product or service performs and what customers expect. (Agbeyegbe & Salihu, 2022); (Altangerel & Munkhnasan, 2019).

Customer delight is another related concept of customer satisfaction, it can be seen as “*going beyond satisfaction to delivering what can be best described as a pleasurable experience for the client*” (Alzoubi, Alshurideh, Kurdi, & Inairat, 2020). To put it differently, satisfaction is about meeting the customer’s expectation, whereas delight is about exceeding those expectations.

Since the main objective of any company is to thrive in a competitive market, customer satisfaction should be the central component of its business strategy (Abdullah, Prabhu, & Othman, 2022). Customer satisfaction is crucial because it attracts new consumers through word-of-mouth marketing and encourages repeat purchasing from existing clients (Agbeyegbe & Salihu, 2022), satisfied customers are the promoters of the company through the recommendations, and social media (Abdullah, Prabhu, & Othman, 2022), they are more likely to generate positive word-of-mouth, which helps to lower marketing cost and attract new customers, they are highly motivated to make additional purchases from a specific business, and they provide the company with steady revenue (Altangerel & Munkhnasan, 2019); Moreover, customer satisfaction can serve as the foundation for the development of a long-lasting competitive advantage (Diputra & Yasa, 2021).

In addition, increasing customer satisfaction would improve the financial situation of a company (Alzoubi, Alshurideh, Kurdi, & Inairat, 2020). Dissatisfied customers typically tell between 5 and 15 individuals about their negative experiences (Ikramuddin & Mariyudi, 2021). According to (Abdullah, Prabhu, & Othman, 2022) dissatisfied consumer helps the business in identifying dysfunctions, and finding the right solutions for them.

3.2 Customer focus

Organizations tend to become more responsive to the changing wants of customers in today's fiercely competitive business environments. Therefore, focusing on customers, and building a strong relationship with them is essential to attaining the objectives of both the firm and the customers. (Madhani, 2020)

3.2.1 Customer focus from quality management perspective

Quality management can be seen as a philosophy based on principles, that are operationalized through its tools and practices. (BIRCH-JENSEN, 2020)

Customer focus is a fundamental aspect of the quality management. It involves continuously improving the quality of products and services to meet or exceed customer expectations, which can lead to higher levels of organizational performance and competitive advantage (Ullah, Ajmal, & Aslam, 2016).

There are various actions the organization should take in order to implement a customer focused strategy, such as understanding the customer's needs, aligning the company's objectives with customers' expectations, communicating those expectation throughout the organization, measuring customer satisfaction, and managing the relationship with costumers. (ISO9000, 2015)

3.2.2 Customer focus from lean management perspective

Lean management refers to creating value to customers, and eliminating all sources of waste (earley, 2016). According to the lean thinking, customers will only pay for value-adding actions; hence, non-value-adding actions should be avoided and considered as waste. These wastes were divided by Ohno into seven categories: overproduction, waiting time, transportation, over processing, inventory, unnecessary movement, and defects. (Sertyeşilışık & Tezel, 2019)

The application of lean management impact customer satisfaction positively, since it emphasizes on a greater customer focus, through defining the value from the customer perspective, using a pull system which means ensuring that the products are produced only when they are demanded by customers, and thriving for continuous improvement. (Assen, 2021)

3.2.3 Customer focus from agile perspective

Agile is considered as an iterative development method, that focuses on collaboration, flexibility, and customer satisfaction, through understanding the customer needs, delivering value to them, quickly responding to their changing requirements, incorporating and prioritizing the tasks based on the customer feedback, and embracing collaboration and direct interaction with customers. (Al-Saqqa, Sawalha, & AbdelNabi, 2020) and (Fowler & Highsmith, 2001).

In summary, the customer focus notion is related to prioritizing the customers satisfaction based on the understanding of customers' needs, creating value for them, and continuously improving the product in order to exceed their expectations.

An effective customer-focused strategy emphasizes encouraging customer engagement, which will provide them with a unique customer experience. (Madhani, 2020)

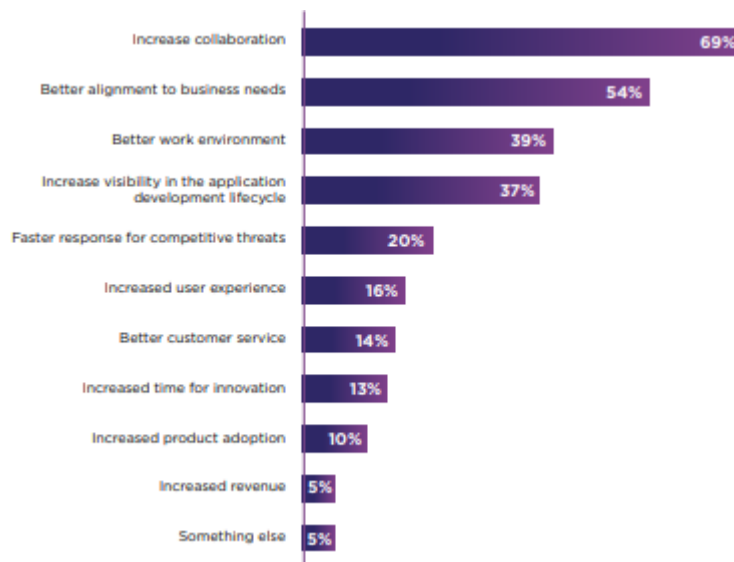
3.3 Customer Engagement

Customer engagement refers to potential consumer's connections and interactions with a brand's or company's products and services (Agbeyegbe & Salihu, 2022). Siddique & Hussein, (2019) refers to customer engagement as the supplier's effort to establish a relationship with the client, so that he can listen to their expectations and needs.

Customer collaboration, end-user involvement, client driven iterations... all these terms refer to the engagement of the customer, mainly through providing feedbacks, and requirements (Sandstø & Reme-Ness, 2021).

The following figure represents various agile practices:

Figure 11: Agile Practices



Source: (State of Agile Report, 2022)

The figure shows the most useful agile practices, increasing collaboration is the leading agile practice with 69%.

User stories are one of the most effective ways in involving the customers, due to their simplicity (Kose & Aydemir, 2023).

Mike Cohn proposed a predefined format for user stories: “*As a [type of user], I want [some goal] so that [some reason]*” (Kannan, et al., 2019). In other words, user story is a single sentence which describes the end user simply.

Supporting the customers’ needs within an agile environment is done by collaborating with the customers and involving them during the whole process, from establishing the projects goals, until getting feedbacks. This will help with re-scoping the requirements, and adapting to the customers’ requests easily (Siddique & Hussein, 2019), in addition to delivering the desired project outcomes (Radhakrishnan, Zaveri, David, & Davis, 2022). Furthermore, the focus on providing business value, over functionalities that may never be used is a significant advantage of collaborating with the customers. (Siddique & Hussein, 2019)

Dedicated customers are committed to participate in the project, by giving more energy and time, and providing feedbacks, which will lead to improved quality, and therefore increased satisfaction. (Siddique & Hussein, 2019)

3.4 Service quality

A higher level of customer satisfaction is maintained by better quality, which motivates customers to make additional purchases (Diputra & Yasa, 2021).

Quality “*is determined by the ability to satisfy customers and the intended and unintended impact on relevant interested parties*” (ISO9000, 2015).

The following figure demonstrates key quality advantages:

Figure 12: Quality benefits

Source: made by the researcher, based on (ISO9000, 2015)

Quality has a strong relationship with customer satisfaction, mainly through creating value to customers, and satisfying their needs, which will lead to customer loyalty, increased market share, and good reputation.

Customer orientation is one of the quality principles, which aims to create value for customers by providing them with products and services that meet their needs (Duffy, Bruce, Moroko, & Groeger, 2020).

Product quality refers to the product and service characteristics that have the ability to satisfy the consumer's expectations. It includes the service ability dimension which means the ease of repairing the product (Sambo, Sunday, Mary, & John, 2022).

Product quality is highly related to perceived quality, and perceived value notions. Perceived quality means *“a consumer's judgment about the superiority of a product”*, while perceived value refers to *“the consumer's overall assessment of the utility of a product”* (Agbeyegbe & Salihu, 2022). In other words, perceived quality is about the product excellence, whereas perceived value focuses on utility and costs.

Service means “*any activity or benefit that one party can offer to another that is essentially intangible and does not result in the ownership of anything*” (N, Kowsalya, & Dharanipriya, 2019).

Service quality is defined as “*the delivery of excellent or superior service relative to customer expectation*” (N, Kowsalya, & Dharanipriya, 2019). Yasar & Özdemir, (2022) define it as “*the ability of an enterprise to meet or exceed the expectations of its customers to whom it serves*”

On the other hand, e-service quality can be seen as “*the consumers' overall evaluation and judgment of the service excellence*” (Chakkaravarthy, 2023).

To put it simply, service quality is the ability of providing services which meets the customer needs (N, Kowsalya, & Dharanipriya, 2019); (ISO9000, 2015)

Services are characterized by intangibility, heterogeneity, and inseparability; services cannot be touched, the customer has an active role during the consumption, and the degree of performance differs based on multiple factors. (Kenyon & Sen, 2015)

The following figure represents service quality dimensions:

Figure 13: Service quality dimensions

Source: (Dimensions of service quality, 2023)

Mainly, there are five dimensions of service quality, which are tangibles, empathy, reliability, assurance, and responsiveness.

According to (N, Kowsalya, & Dharanipriya, 2019), **reliability** is about providing the promised services in terms of: pricing, delivery, and problem resolutions; **responsiveness** refers to the willingness of helping the customers by being present, punctual, and quickly responding to their problems; **assurance** means the ability of the company in creating a relationship with their customers based on trust; **empathy** refers to providing attention to customers, through unique, personalized, and individualized services; **tangibility** is about enhancing the company's image, through communication, technology, and equipment.

3.5 Brand loyalty

The brand can be defined “a term, design, name, symbol, or any other features that distinguish one company's product to the others” whereas loyalty is defined as “assurance or commitment

to rebuy specific product or services in the future, regardless of competitor's efforts in the market" (Altangerel & Munkhnasan, 2019).

Brand refers to "a name, logo or symbol that is publicly distinguished from other product with the purpose to communicate and market the product to the ultimate consumer". Loyalty can be seen "as an attitude which is related to the level of re-purchasing devotion to a particular brand" (Agbeyegbe & Salihu, 2022).

According to (Cuong, 2020) **Brand loyalty** refers to "the psychological commitment of the clients toward that brand". Agbeyegbe & Salihu, (2022) define it as "attribute of customers who will adhere to the purchase of that brand rather than defecting to a substitute brand".

In simple words, brand loyalty is a deep commitment toward a particular brand, regardless of the substitute brand's marketing efforts. Clients won't just repurchase frequently; but, they will also refuse to buy any other brands, even if they are of equal or higher quality (Agbeyegbe & Salihu, 2022); (Cuong, 2020).

Loyalty is divided into two main types: **behavioral loyalty**, which can be measured through the frequency of repurchasing, and **attitudinal loyalty** that is shown through the attachment of the customer towards a product or a brand (Agbeyegbe & Salihu, 2022).

Brand loyalty is a trending marketing concept that emphasizes building a strong bond between consumers and brands. The main objective is developing strategies to boost brand trust, customer satisfaction and perceived value (Ikramuddin & Mariyudi, 2021).

Furthermore, building brand loyalty is considered as an effective strategy in counteracting competition in the newly marketing environment, it can reduce both marketing expenses and the threat of competitors. (Cuong, 2020); moreover, it is essential in terms of reinforcing the brand reputation, encouraging customer loyalty, ensuring quality, eliciting a sense of better value, and giving the buyer a sense of validation. (Agbeyegbe & Salihu, 2022).

loyal customers can assist marketers in determining service costs and creating marketing strategies (Altangerel & Munkhnasan, 2019), they have a close and long lasting relationship with the business (Agbeyegbe & Salihu, 2022).

Brand image can be seen as “*the full set of impressions that result when consumers interact with a brand through observation and consumption*”, while brand trust “*the customer’s belief in the ability of the service firm to deliver services of high quality*” (Agbeyegbe & Salihu, 2022).

Brand image, and brand trust are strongly related notions to brand loyalty, the first one is the representation of the business in the consumer mind, and the second is about the capacity of providing quality to the client. (Agbeyegbe & Salihu, 2022).

Chapter summary

In this chapter, we outlined the relation between the agile approach and customer satisfaction, providing generalities about project management, the agile approach, and lastly, the importance of customer satisfaction, in which we have discussed related concepts such as customer focus, service quality, and brand loyalty.

The term agile refers to a methodology that started from the software industry with the apparition of the agile manifesto, it focuses on customer collaboration, and prioritize customer satisfaction.

APM is the application of the agile values and principles in project management, it is considered as a modern approach that emphasizes flexibility, and adapting to changes, rather than rigidity, and following a strict plan.

On the other hand, it's known that satisfied customers are the promoters of the brand, they build a deep relationship with the company, and remain loyal despite the marketing efforts of the other brands.

The role of agile in enhancing customer satisfaction resides in understanding the costumers' needs, defining value from their perspective, collaborating with them, incorporating their feedback into the development process, and continuously testing the increment (partially developed product or service) which help in identifying and addressing the defects earlier.

**CHAPTER 02: RESEARCH
APPROACH AND ORGANIZATIONAL
CONTEXT**

Section 01: Approach and data collection

This section clarifies the employed research methodology, along with the data collection instruments, the sample, and how obtained results are analyzed.

1 Epistemological Posture

The term epistemology refers to the study of how we perceive the reality or the truth (Majeed, 2019).

Due to the development of human thought and the diverse explanations for the causes and effects of the events that exist in the world, there are numerous philosophical paradigms in use today. Positivism and interpretivism are considered the main research paradigm, which gave birth to other paradigms such as constructivism (Adom & Ankrah, 2016).

The following table demonstrates the key features of positivism and interpretivism paradigms:

Table 4: Key features of positivism and interpretivism paradigms

	Positivism paradigm	Interpretivism paradigm
Basic beliefs	<p>The world is external and objective</p> <p>Observer is independent</p> <p>Science is value-free</p>	<p>The world is socially constructed and subjective</p> <p>The observer is part of what is observed</p> <p>Science is driven by human interest</p>
What the researcher should do	<p>Focus on facts</p> <p>Look for causality and fundamental laws</p> <p>Reduce phenomena to the simplest events</p> <p>Formulate hypothesis and then test them</p>	<p>Focus on meaning</p> <p>Try to understand what is happening</p> <p>Develop ideas through induction from data</p>

Preferred methods	Operationalizing concepts so that it can be measured Taking large samples	Using multiple methods to establish different views of phenomena
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Source: (Zaborek, 2009)

According to (Blackwell, 2018) positivism is characterized by deductivism (generating hypothesis that can be tested), objectivity, and inductivism (knowledge is based on facts), whereas interpretivism is based on subjectivity which is resulted in from the researcher experiences that can't be separate from his own values.

Positivism believe in the objective reality, which can be explained through the causal relations and hypothesis testing. It was introduced in order to solve socio-economic problems, and eliminate decision making that is based on selfish interest (Eketu, 2017).

This research is based on a positivism paradigm, which can be justified through quantifiable data collection, statistical analysis, and the objectivity in the data interpretation (Majeed, 2019).

The aim of our study is to discover the way agile approach contribute to customer satisfaction, using the questionnaire as the primary research instrument, which will allow us to test the hypothesis, while staying objective in the process of data treatment and interpretation.

2 Methodological approach

According to (Apuke, 2017) research can be defined as “*a scientific and systematic search for pertinent information on a specific topic*”, which means understanding a certain topic based on the collect, analysis, and interpretation of data. Designing a research methodology is an important step, it can be seen as the holistic procedures a researcher uses to start a research project.

The following table shows the main differences between quantitative and qualitative research, based on various criteria:

Table 5: the difference between qualitative and quantitative research

Criteria	Qualitative research	Quantitative research
Purpose	To understand and interpret social interactions	To test hypotheses, look at cause & effect, and make predictions
Variables	Study of the whole, not variables	Specific variables studied
Type of Data Collected	Words, images, or objects	Numbers and statistics.
Form of Data Collected	Qualitative data such as open-ended responses, interviews, observations, field notes, and reflections	Quantitative data based on precise measurements using structured and validated data-collection instruments
Type of Data Analysis	Identify patterns, features, themes	Identify statistical relationships.
Objectivity and Subjectivity	Subjectivity is expected.	Objectivity is critical
Results	Particular or specialized findings that is Generalizable findings that can be applied less generalizable.	Generalizable findings that can be applied to other populations.

Source: (Apuke, 2017)

In our research, a quantitative method is used, since it's the most appropriate for large samples, numeral data, and hypothesis testing.

Quantitative research is characterized by the large samples, and quantified data. As for the results, statistics and mathematics are important for the analysis and generalization process (Queirós, Faria, & Almeida, 2017). It can be defined as *“the explaining of an issue or phenomenon through gathering data in numerical form and analyzing with the aid of*

mathematical methods” (Apuke, 2017). In other words, quantitative research is concerned with the analysis of numerical data, through the use of mathematics and statistics.

The use of quantitative methods is considered necessary when: (Younus & Zaidan, 2022)

- To verify hypothesis, based on the analysis of a large amount of measurable data.
- The research is carried out through a questionnaire, including short answers.
- Nothing is certain about the conceptions under consideration.

3 Data collection instruments

Data collection refers to the process of collecting and measuring information about the research variables, in a systematic way which enables answering the questions, testing the hypothesis, and evaluating the outcomes. (kabir, 2016)

3.1 Documentary study

It’s a research method that uses a wide range of topics, it can be combined with other research methods such as interviews and surveys, with the objective of providing more insights to the study phenomena (Ahmed, 2010).

The following table represents the main type of documents used in to conduct this research :

Table 6: Documentary study

Chapter	Document	Source
Theoretical framework	Articles	Google scholar, Science direct, Elsiwier, Researchgate, Emerald, Springer
	Books	Pdfdrive
Organizational context and finding	Presentation of the host company	Human resources departement
	Process mapping	ERM & quality department
	CSAT graph	Commercial department

Source: Made by the researcher

3.2 Questionnaire

The purpose of the questionnaire is to collect information based on a series of questions, it's considered as a cost-effective research instrument which allows the researcher to gather and analyze data rapidly, and scientifically (kabir, 2016).

There are several types of questions which can be used in the questionnaire: (leavy, 2017)

- **Multiple choice questions** a question with numerous response options; however, the respondent have to select only one answer.
- **Dichotomous** it is a statement that has just two response options.
- **Checklist** numerous response options, the respondent can select all that apply.
- **Rating scale** providing a question with a continuum response options.
- **Likert scale** providing a statement with several response options which indicates the level of agreement.

In order to conduct our research, and test the hypothesis, a questionnaire was elaborated based on the studies of (Radhakrishnan, Zaveri, David, & Davis, 2022), (Lautert, Neto, & Kozievitch, 2019) (Cartaxo, Barreto, Araujo, & Soares, 2013), (Dong, Dacre, Baxter, & Ceylan, 2022) (Amirova, Khomyakov, Mirgalimova, & Sillitti, 2019) and (Barraood, Haslina, & Baharom, 2021) using Google forms. The data collection took place from the 26th April till 10th May. It was done mainly by contacting employees via Linked-in, and distributing the survey to them personally in paper.

The questionnaire is divided into seven sections with fourteen questions in total, the structure of the questionnaire is described as follows:

It starts with a brief presentation, which aims to describe the purpose of the survey, and to inform the respondents that the answers will be treated confidently, only for academic purposes.

The first section contains general information about the respondent (the experience, role in an agile team...) using various question forms such as multiple-choice questions, checklist, rating scale, and Likert scale question.

The second section is about agile benefits and success factors, it's divided into 2 questions which express the degree of agreement using a Likert scale (from 1 to 5).

The third, fourth, and fifth sections aim to verify whether customer collaboration, improved quality, and value prioritization contribute to customer satisfaction, using a Likert scale questions.

The sixth section aims to discover which factor is the most impactful in enhancing customer satisfaction, and the advantages of satisfying the customers, using a checklist and Likert scale question.

The last section contains the profile of respondents (gender, age, and the department).

4 Data sampling and analysis

4.1 Data sampling

Sampling refers to the process of selecting a number of individuals from a large population. The population represents all the elements of the study, whereas the sample is the number of individuals narrowed down from the population (leavy, 2017).

Since the customer satisfaction is affected by the agile approach in this study, the dependent variable is the customer satisfaction, whereas the independent variable is the agile approach.

The population of our study are the employees of Ooredoo who have an experience with the agile methodology, which is located in Ouled Fayet. In order to determine our sample size, a non-probabilistic method was used, since the sample wasn't selected randomly (Kim, 2022), due to the absence of accurate information about the number of our population. The questionnaire was distributed based on snowball sampling technique, where the respondent could refer the researcher to others, it's mostly useful when the population is unknowable (Showkat & Parveen, 2017) .

4.2 Data analysis

The process of analyzing data is done with Microsoft EXCEL for the graphs and descriptive analysis, and the IBM SPSS software program, in order to carry out the other tests, it is considered as an effective software in quantitative data analysis.

Firstly, preliminary analysis was done to ensure the suitability of data, the descriptive analysis, which crucial to understand each variable, and lastly, we used regression analysis to test the hypothesis.

Section 02: Organizational context

This section aims to provide a general presentation of the host company, including the objectives and values, the organizational chart, and the customer experience service.

1 General presentation of Ooredoo

Ooredoo Algeria is a subsidiary company of the Ooredoo group, which is a multinational telecommunication firm headquarter in Qatar. It's positioned in several markets such as Kuwait, Tunisia, Palestine, Sultanate of Oman, Iraq, and Maldives.

Ooredoo is considered the first telecommunication company in Algeria. It was first presented in December 2003 as Nedjma, and then by August 2004, Nedjma was commercially launched. In 2013, Nedjma became Ooredoo, the adopted name was extracted from the word "I want" in Arabic.

The following figures represent the evolution of the company's visual identity:

Figure 14: Nedjma 2004-2013



2004-2009



2010-2013

Source : internal document

Figure 15: Actuel logo



Source: internal document

2 Vision, values, and objectives

Ooredoo, leader of innovation and mobile multimedia in Algeria, aims to offer the customers high quality products, through a customer-oriented performance approach based on continuous improvement.

The core values of Ooredoo are connecting, caring, and challenging.

Connecting: Stand for responsibility, trust, support, and respect.

Caring: the commitment to work collaboratively, and integrating the Algerian community.

Challenging: searching for difference, and continuously improving.

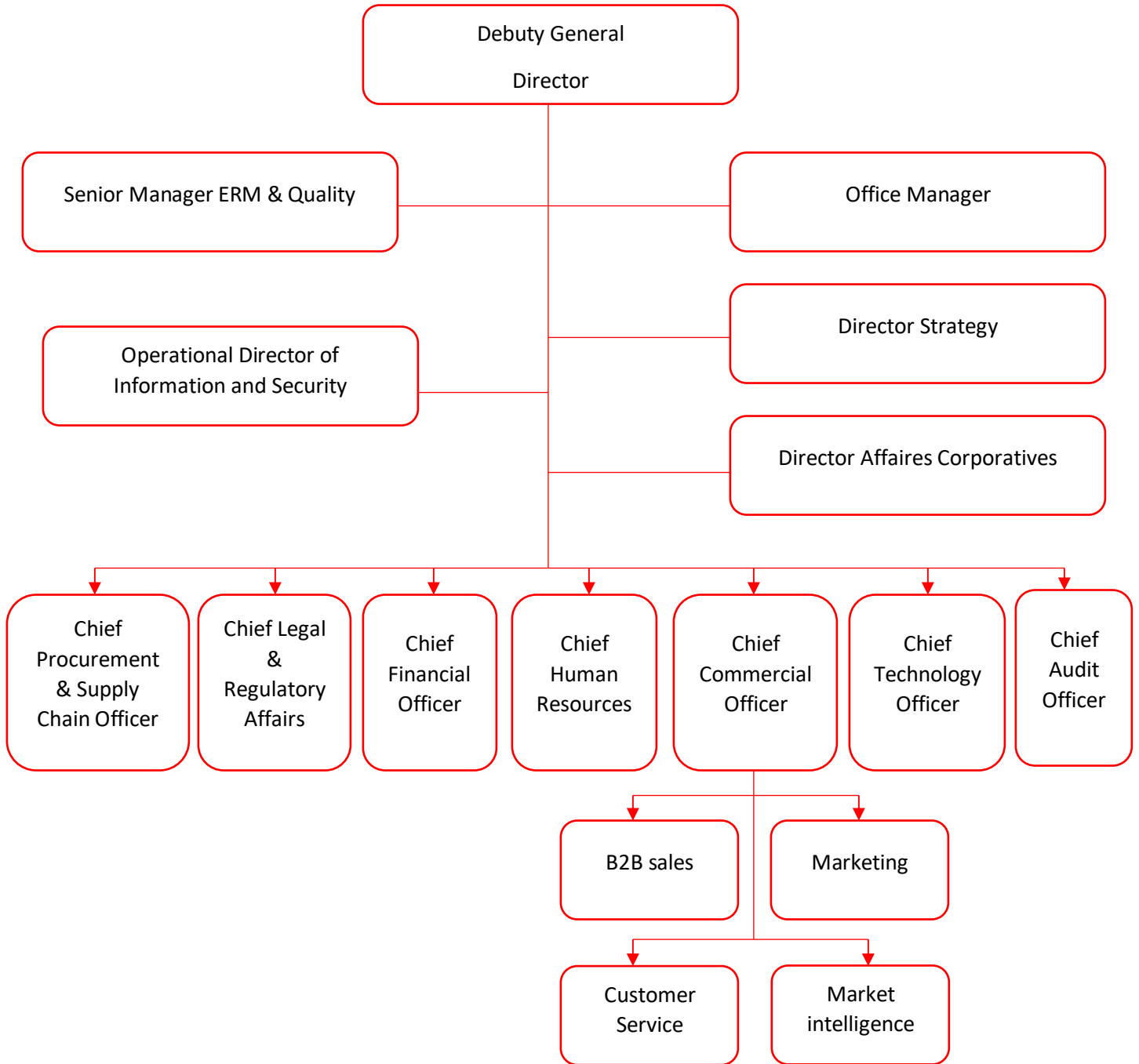
The principal objectives of the company are:

- To offer telecommunications services that enable the exchange and transportation of audiovisual, digital, text, and voice messages.
- To deliver a distinctive customer experience, by focusing on highly skilled human resources.
- To create, describe, and manage connections with network operators.

3 The organizational chart

The organizational chart of Ooredoo is shown in the figure below

Figure 16: organizational chart



Source: internal document

The figure illustrates the 13 departments of the company, which are the deputy department, quality, strategy, corporate affairs, information and security, supply chain, legal, finance, human resources, commercial, technology, and audit.

4 Customer experience service

The customer experience service is attached to the chief commercial officer, along with marketing, B2B sales, and market intelligence.

The main objective of the service is to create a solid relationship with the customers, and increase their satisfaction and loyalty.

“The voice of customers” is one of the services projects that involves collecting feedbacks about the customers, treating their problems, and providing solutions to them.

Feedback collection is done mainly through two types of surveys: the first one is instant, while the second one is 24 hours after the customer interaction with one of the company’s touchpoint (website, shop... ect)

Customer satisfaction levels are measured constantly, through various indicators, namely: CSAT (customer satisfaction score), CES (customer effort score), NPS (net promoter score).

A list of satisfaction drivers is done, based on the feedback analysis, and the problem detection. The importance of each driver will be measured, so that the most crucial drivers are prioritized.

Treating the problems is done through the scrum method, starting with a root cause analysis to identify the source of problems, moving on to constituting the scrum team, sprint planning...

Chapter summary

This research is part of positivism paradigm, where a quantitative method is used, for the data collection and hypothesis testing.

Data collection was primarily done through distributing a survey to the employees of the Ooredoo, who have a prior experience with the agile. The sample size was determined through a non-probabilistic method since there isn't an accurate information about the size of the population.

The process of data treatment was done mainly through IBM SPSS, where descriptive analysis, and correlation tests were carried out.

The second section of this chapter provides a general presentation of the host company "Ooredoo", which is considered as the leader in the Algerian telecommunication market, it aims to enhance customer satisfaction by increasing quality and assessing the conformance of their products and services, by following international standards.

CHAPTER 03: RESULTS AND ANALYSIS

Section 01: Finding and results

The objective of the research is to discover in which ways the agile approach contributes to customer satisfaction. In order to achieve this objective and answer our research question, an internship was done at Ooredoo Algeria, where a questionnaire survey was distributed to their employees.

Based on the collected data, this section aims to demonstrate the obtained results, starting with an overview about customer satisfaction in Ooredoo Algeria, moving on to the sample description, descriptive analysis, and correlation tests.

1 Customer satisfaction in Ooredoo Algeria

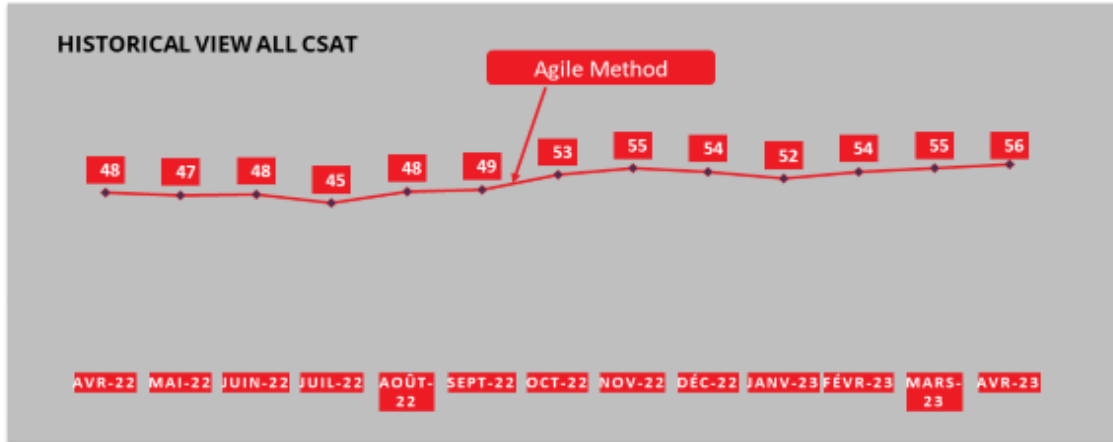
According to the “process mapping” of Ooredoo, the marketing process is in the operational stage, it starts with the market analysis, which includes the evolution, competition, and customer requirements. Based on the analysis, offers and services are developed and launched with the help of external communication in order to promote for the new products and related events. The commercialisation of the products is done by the sales service. After that, the customer service take charge of the after sales process to make sure that customers are satisfied, and to deal with any problems.

The quality management system process, aims to analyse the customer satisfaction levels, along with the performance, risks and opportunities. Based on those measurements and the conducted audits, corrective actions will be implemented in order to assess the conformance of the product, and to continuously improve it. The direction revue is submitted to the strategy process in order to get an overview about the company’s situation, and to align the strategy with the changing requirements.

The support processes such as supply chain, training and system’s maintenance provide the necessary help to the operational process in order to achieve the desired outcomes.

The following figure demonstrates the customer satisfaction score levels before and after the adoption of the agile method in Ooredoo:

Figure 17: CSAT before and after the agile adoption



Source: internal document

Based on the figure above, the customer satisfaction score has increased after the adoption of agile, moving on from 48 in April 2022 to 56 in April 2023.

2 Preliminary tests

The objective of preliminary analysis is to prepare the data for further tests

2.1 Reliability test

In order to make sure that scales and data are reliable, Alpha Cronbach test was conducted on the Likert scale questions:

Table 7: reliability test

Variables	Alpha Cronbach	Number of elements
Agile benefits and success factors, quality, value, customer collaboration & CS	,771	30

Source: IBM SPSS

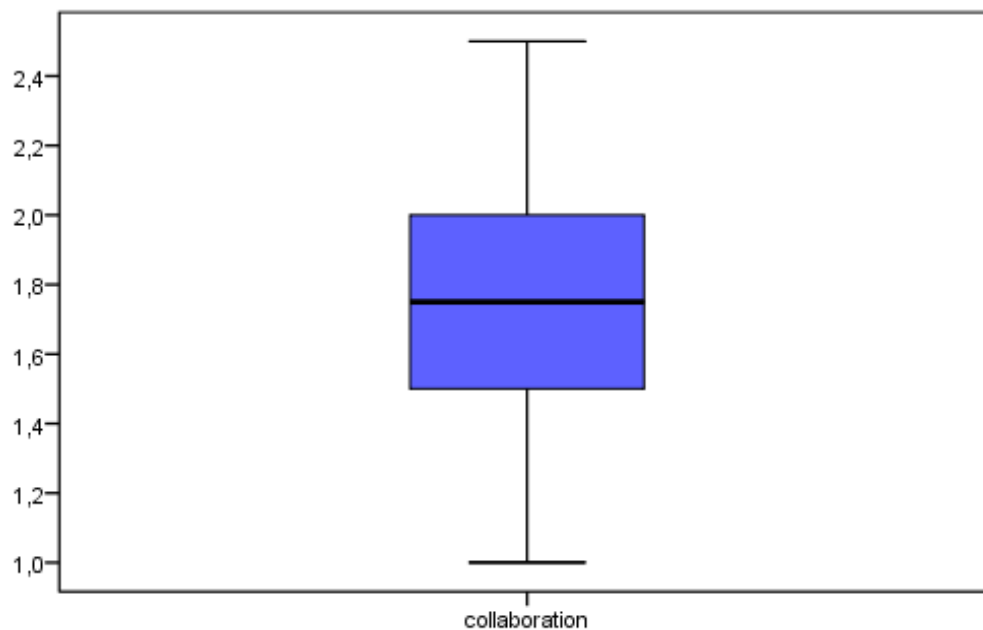
Since the result of Alpha Cronbach are higher than 0.6, the scales and data are considered reliable.

2.2 Extreme values

Extreme values or outliers refer to a data point that is far from the others one, it can be demonstrated through the use of Boxplot tool

The following figure represents the boxplot of the variable customer collaboration, the test on the other variables are quite similar to this one

Figure 18: Bloxplot graph



Source: IBM SPSS

The figure shown above confirms the absence of extreme values of the research data.

3 Sample description

The following table shows the effective and percentages of the gender, age and department variables:

Table 8: Respondents profile

Respondent's profile	Specifications	Effective	Percentage
Gender	Male	31	73.8%
	Female	11	26.2%
Age	From 25 to 34	22	52.4%
	From 35 to 44	12	28.6%
	45 and above	8	19%
Department	ERM & Quality	3	7.1%
	Commercial	15	35.7%
	Strategy	5	11.9%
	Audit	1	2.4%
	Technology	13	31%
	Legal and regulatory	1	2.4%
	Human resources	2	4.8%
	Supply chain	2	4.8%

Source: Made by the researcher, based on SPSS results

According to the table above, most of respondents are between 25 to 34 years old, 31 one of them are male, while 11 of them are female.

35.7% of respondents are currently working at the commercial department, 31% at the technology department, while the other 33.3% are working in the other departments (strategy, quality, supply chain, human resources, legal and audit).

The next table demonstrates the years of experience and the role of the respondents:

Table 9: Experience

Experience	Specifications	Effective	Percentage
Years of experience	Less than one year	14	33.3%
	From 1 to 2 years	15	35.7%
	From 3 to 4 years	8	19%

	Five years and above	5	11.9%
Role	Product owner	6	14.3%
	Team leader	8	19%
	Team member	15	35.7%
	Stakeholder	1	2.4%
	Support cast	12	28.6%

Source: Made by the researcher, based on SPSS analysis

Most of the respondents have one to two years' experience, 14 of them have less than one year, 8 of them have three to four years, while 8 of them have five years and more.

As for the role, 35.7% are team members, 28.6% represent the support cast, 2.4% are stakeholders, while product owners and team leaders represent 14.3% and 19% respectively.

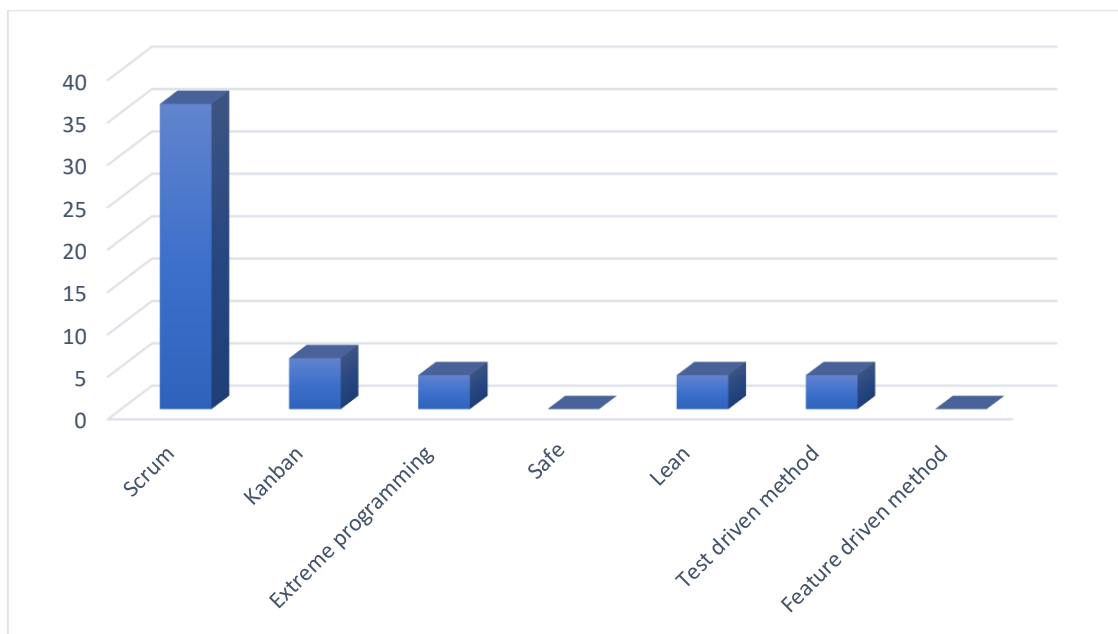
4 Descriptive analysis

Descriptive analysis aims to analyze the research variables separately:

4.1 The agile variable

The following figure represents the used agile methodologies:

Figure 19: Agile Framework

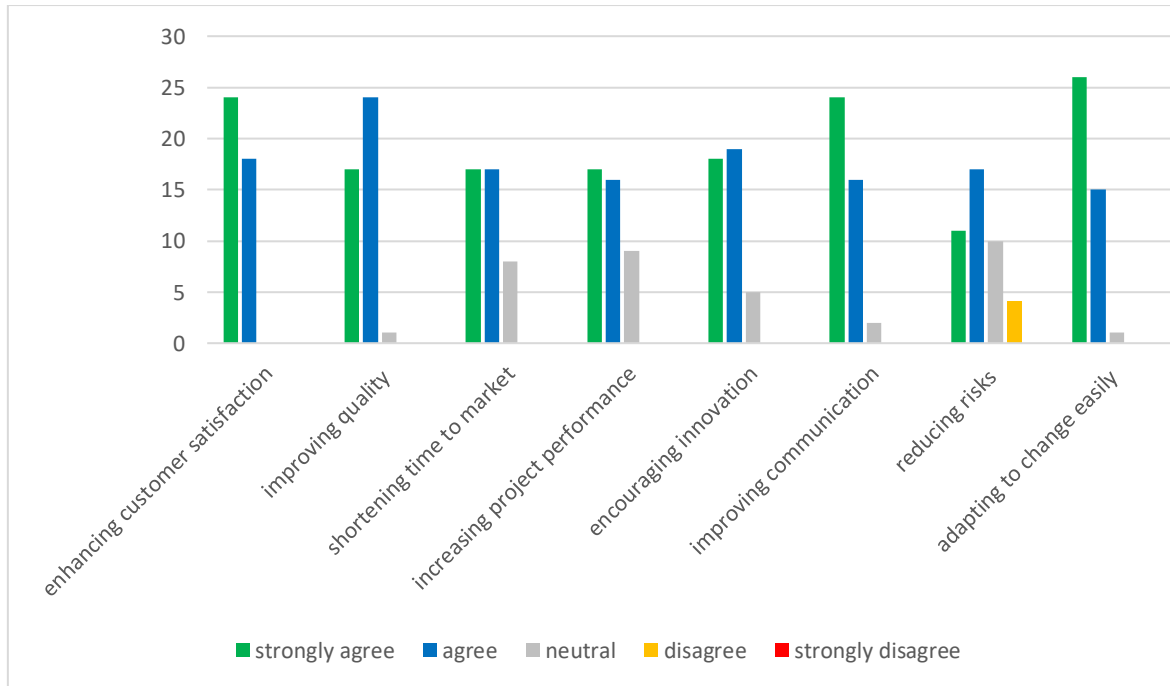


Source: made by the researcher, based on SPSS and EXCEL

According to the figure, scrum is the most used agile framework, followed by Kanban, Extreme programming, Lean, and Test-driven method. The respondents don't have experience with Safe and feature driven method.

The next figure demonstrates the level of agreement with the benefits of agile:

Figure 20: Agile benefits

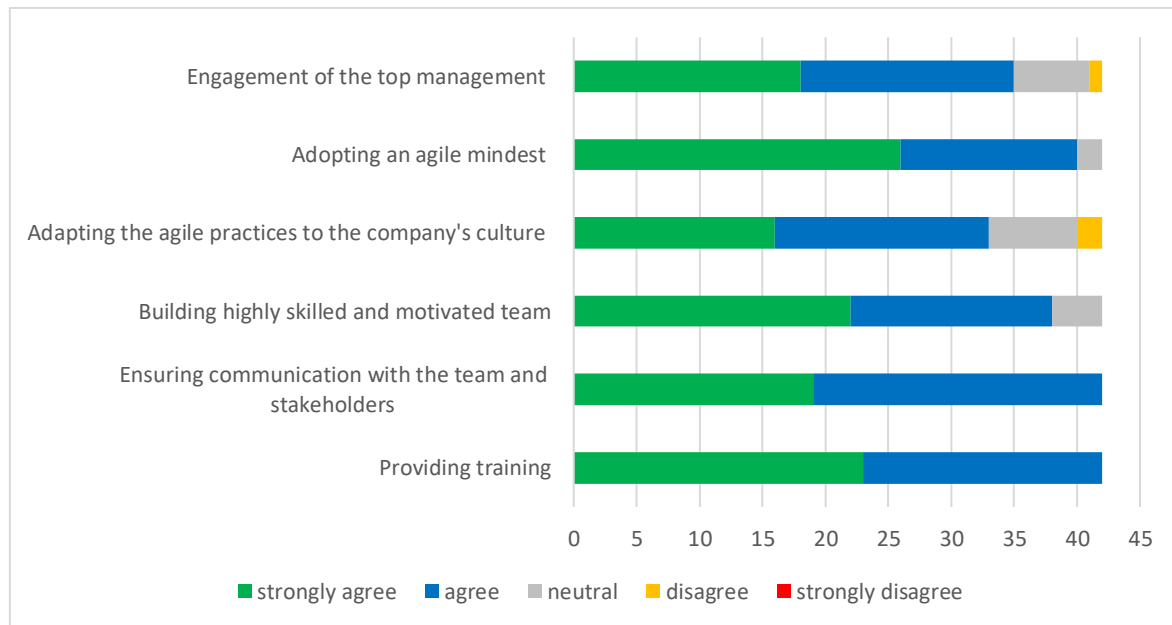


Source: made by the researcher, based on SPSS and Excel

According to the figure, the agile approach has benefits mostly in terms of adapting to changes easily, improving communication, and enhancing customer satisfaction. It helps also with shortening time to market, increasing project performance, encouraging innovation, and lastly reducing risks.

The following figure represents the success factors for agile adoption:

Figure 21: Success factors



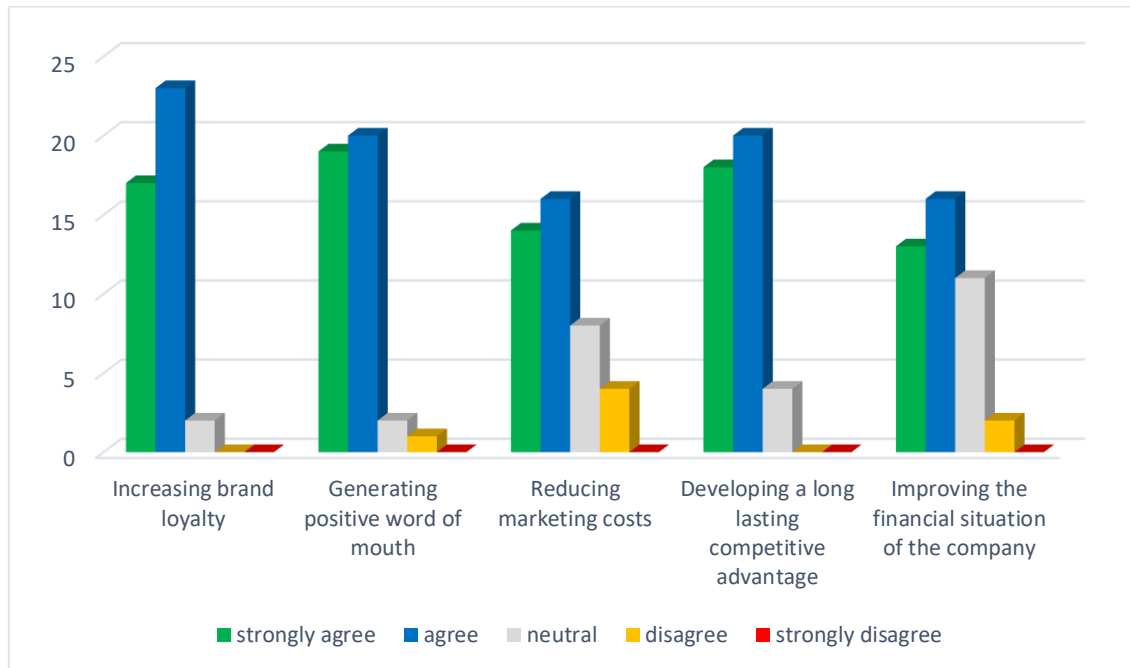
Source: made by the researcher, based on SPSS and Excel

Based on the figure shown above, adopting an agile mindset in the main success factor for adopting agile, followed by providing training and ensuring communication with the team and stakeholders; meanwhile, adapting the agile practices to the company's culture is the less agreed among the other benefits.

4.2 Customer satisfaction variable

The following figure illustrates customer satisfaction benefits:

Figure 22: customer satisfaction benefits



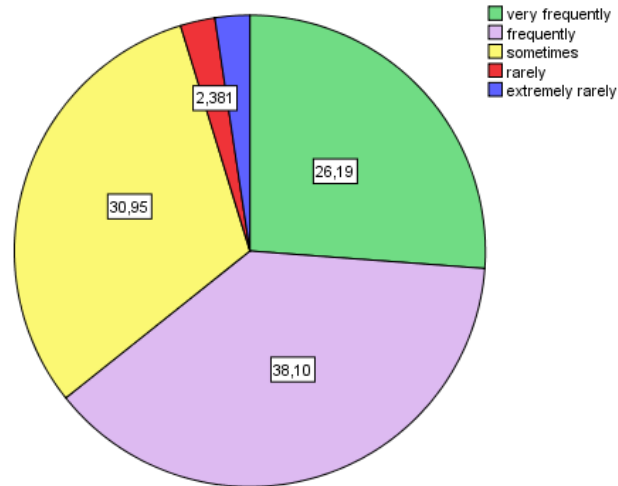
Source: Made by the researcher, based on SPSS and EXCEL

According to the figure, the most agreed benefits of satisfied customers are their loyalty toward the brand, generating positive word of mouth, and developing a long-lasting competitive advantage; however, reducing marketing costs, and improving the financial situation of the company are the least agreed benefits of satisfied customers.

4.3 Agile and customer satisfaction

The next figure illustrates how often the respondents collaborate with their customers

Figure 23: the frequency of collaboration

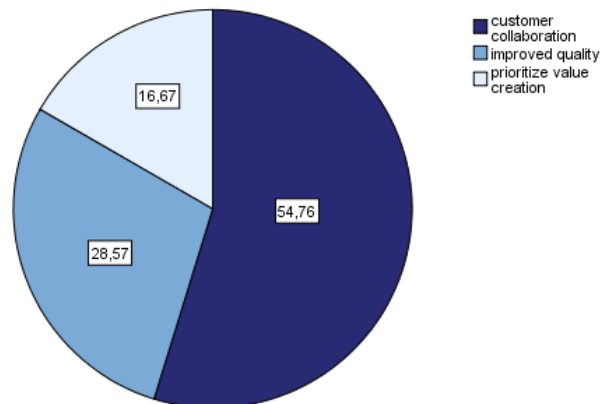


Source: Made by the researcher, based on SPSS results

Based on the pie chart, the respondents collaborate frequently with their costumers, with a percentage of 38.10%, 26.19% collaborate very frequently, while 30.95% sometimes collaborate.

The following figure illustrated the percentage of factors that influence customer satisfaction:

Figure 24: factors that impact customer satisfaction



Source: Made by the researcher, based on SPSS results

According to the figure, customer collaboration is the most impactful factor in enhancing customer satisfaction within an agile project with a percentage of 54.76%, followed by improving quality with 28.57% and lastly 16.67% for prioritizing value creation.

Table 10: factors that influence customer satisfaction

Variable	Statements	important	neutral	Not important
Customer collaboration	Customer feedback about the increment.	100%	0%	0%
	The direct interaction with costumers.	95.2%	4.8%	0%
	The participation of customers during the testing process.	88.1%	11.9%	0%
	Effective communication between the customers and the team.	78.6%	21.4%	0%
Improved quality	Understanding the customer's needs.	100%	0%	0%
	Incorporating the customers feedback into the product development process.	100%	0%	0%
	Continuously testing the deliverable et the end of each sprint.	95.2%	4.8%	0%
	Resolving defects early	73.8%	23.3%	2.4%
Prioritize value creation	Defining value from customer perspective.	90.5%	7.1%	2.4%
	The early delivery of value through the prioritized product backlog.	81%	19%	0%
	The continuous delivery of value through the iterative development.	81%	16.7%	2.4%

Responding to customers' requirements changes.	97.6%	2.4%	0%
--	-------	------	----

Source: Made by the researcher, based on SPSS results

Based on the table shown above, customer feedback about the increment is the most important factor for customer collaboration, followed by the direct interaction with customers, the participation of customers during the test process, and the effective communication, respectively.

As for improved quality, understanding the customer's needs, and incorporating the customers feedback into the product development process are 100% important, continuously testing the deliverable is 95% important, while resolving defects early is the least important factor with a percentage of 73.8%.

Responding to customers' requirements changes is 97% important, followed by defining value from their perspective, and the early and continuous delivery of value.

5 Bivariate analysis:

Bivariate analysis aims to demonstrate the relation between two variables

5.1 Correlation tests

The following table shows the correlation between the frequency of collaboration, and customer satisfaction

Table 11: correlation 01

		Collaboration frequency	Customer satisfaction
Pearson correlation	Collaboration frequency	1	-,027
	Customer satisfaction	-,027	1
Significance	Collaboration frequency		,867

Customer satisfaction	,867
-----------------------	------

Source: Made by the researcher, based on SPSS results

Based on the table, customer satisfaction doesn't have a significant correlation with the frequency of collaboration.

The next table represents the correlation between the success factors and customer satisfaction:

Table 12: correlation 02

	Success factors	Customer satisfaction
Pearson correlation	Success factors	1
	Customer satisfaction	,309*
Significance	Success factors	,047
	Customer satisfaction	,047

Source: Made by the researcher, based on SPSS results

According to the table, there is a positive correlation between the success factors for agile adoption and customer satisfaction.

5.2 Regression analysis:

Regression analysis shows the relation between two or more variables, the following tables demonstrate the relation between customer satisfaction, customer collaboration, improving quality, and prioritizing value creation:

Table 13: linear regression 01

Independent variable	Dependent variable	R2	R2 adjusted	A	β	t	Sig
Customer collaboration	Customer satisfaction	,119	,097	,389	,345	2,328	,025

Source: IBM SPSS

Based on Table 6, there is a significant relation between customer satisfaction, and customer collaboration, since sig value is (.025) which is less than the value of alpha (.05).

Table 14: linear regression 02

Independent variable	Dependent variable	R2	R2 adjusted	A	β	t	Sig
Customer satisfaction	Improving quality	,114	,092	,425	,338	2,273	,028

Source: IBM SPSS

Based on Table 7, there is a significant relation between improving quality and customer satisfaction, since sig value is (.028).

Table 15: linear regression 03

Independent variable	Dependent variable	R2	R2 adjusted	A	β	t	Sig
Prioritizing value creation	Customer satisfaction	,037	,013	,219	,135	1,247	,220

Source: IBM SPSS

Based on Table 8, there isn't a relation between prioritizing value creation and customer satisfaction, since sig value is higher than (.05).

6 Multivariate analysis

The following table demonstrates the correlation between three variables:

Table 16: relation between collaboration, quality and value

		Customer collaboration	Improved quality	Value creation
Pearson Correlation	Customer collaboration	1	,398**	,453**
	Improved quality	,398**	1	,343**
	Value creation	,453**	,343**	1
Significance	Customer collaboration		,009	,000
	Improved quality	,009		,026
	Value creation	,000	,026	

Source: Made by the researcher, based on IBM SPSS

According to the table shown above, customer collaboration, quality and value have a positive relation with each other, since Pearson correlation is positively strong, and the significance value is less than ($,05$).

It can be seen that customer collaboration has a strong positive ($,453^{**}$) and significant relation with value creation ($,000$), followed by improved quality with a positive relation ($,398^{**}$) and significant ($,009$).

Quality and value also have a positive ($,343^{**}$) and significant relation with each other ($,026$).

Section 02: Discussion

To summarize, the study that we conducted on the host company Ooredoo Algeria, in order to discover in which ways, the agile approach contributes to customer satisfaction, assuming that customer collaboration, improving quality, and prioritizing value creation are the main factors which enhance customer satisfaction within an agile project.

The results indicate that the majority of the study sample are male employees from the commercial and technology department, who have from one to two years' experience with agile.

Based on the descriptive analysis, the most used agile framework is scrum, followed by Kanban (State of Agile Report, 2022).

The most significant advantages with the agile is flexibility (Tena Žužek, 2020), improving communication (Dong, Dacre, Baxter, & Ceylan, 2022) and quality (Hirner, 2019).

There are various factors that help with the implementation of agile, according to the respondents adopting an agile mindset is the most critical factor for a successful adoption (PMI & Alliance, 2017) ; (Eilers, Peters, & Leimeister, 2022), focusing on the skills and competencies through building highly skilled team, and providing training is another important success factor (Noteboom, Ofori, Sutrave, & El-Gayar, 2021); (Marnada, Raharjo, Hardian, & Prasetyo, 2021)

According to the descriptive analysis of the customer satisfaction benefits, satisfied customers are loyal to the brand (Agbeyegbe & Salihu, 2022), they generate positive word of mouth (Abdullah, Prabhu, & Othman, 2022), and they help with developing a competitive advantage (Diputra & Yasa, 2021).

In accordance to the results of (Cartaxo, Barreto, Araujo, & Soares, 2013); (Amirova, Khomyakov, Mirgalimova, & Sillitti, 2019); (Buresh, 2008); (Bambauer-Sachse & Helbling, 2021) and based on the customer satisfaction scores, the use of the agile approach in Ooredoo helps with enhancing customer satisfaction.

The results of the hypothesis analysis indicate that the customer feedback about the increment, and the direct interaction with them are the most important factors in the customer collaboration process (Radhakrishnan, Zaveri, David, & Davis, 2022); (Siddique & Hussein, 2019). As for

improving quality, understanding the customers' needs and incorporating their feedback into the development process are the most critical factors (belkacem & toufik, 2021).

Lastly, responding to customer requirement's changes, and defining value from their perspective, are important in prioritizing value creation (Sambinelli & Borges, 2022).

The correlation tests show that there is a significant relation between the agile success factors and customer satisfaction, which means the more the company is committed, provide training, and ensure communication, the more customers are satisfied. On the other hand, customer collaboration is mostly related to value creation and improved quality. In other words, the feedbacks, the interactions and the participation of customers are highly related to the delivery of value, flexibility, and the continuous improvement via understanding the customer's needs and testing.

Finally, in order to test our hypothesis, linear regression analysis was conducted, the following table summarizes the whether the hypotheses are validated or rejected:

Table 17: Hypothesis testing

Hypothesis	Confirmation
H01: The agile approach contributes to customer satisfaction through customer collaboration	Validated
H02: The agile approach contributes to customer satisfaction through improved quality	Validated
H03: The agile approach contributes to customer satisfaction through prioritizing value creation.	Rejected

Source: Made by the researcher, based on regression analysis

Therefore, the results of this study synthesize that the agile approach contributes to customer satisfaction through customer collaboration, and improved quality.

Chapter summary

We demonstrated the results of our empirical study in the first section of this chapter, through multiple tests, firstly preliminary tests were conducted in order to prepare the data for further analysis, descriptive analysis aims to provide univariate test of each variable, then bivariate analysis was essential to identify the relation between the variables.

In the second section, we discussed the research finding while comparing it to the empirical results of the literature review, at the end of this section, the result of the hypothesis testing was demonstrated.

CONCLUSION

1 Summary

This research aims to discover the way the agile approach contributes to customer satisfaction, based on related studies, three hypotheses were developed: the agile approach contributes to customer satisfaction through customer collaboration, improved quality, and prioritizing value creation.

In order to carry out our study, an internship was done at Ooredoo Algeria, a quantitative method was conducted, by using a questionnaire survey as the main research instrument.

2 Main obtained results

Based on the answers of the 42 experienced employees, we could confirm the first hypothesis which claims that the agile approach enhances customer satisfaction through customer collaboration, that includes the customer feedback, interaction, participation during the tests and communication.

We have also validated the second hypothesis, which says that improving quality within an agile project contributes to customer satisfaction. Improving quality is about understanding the customer's needs, continuously testing the deliverable, incorporating the feedback into the development process and resolving defects early.

The third hypothesis concerning the value creation, was rejected based on the regression analysis, hence, based on our case study customer collaboration, and improving quality are the factors that contribute to customer satisfaction in the context of agile project management.

3 Theoretical implications

Since the previous studies focus on comparing between the agile and traditional methods in customer satisfaction, the present research contributes to the literature by highlighting the way agile approach contributes to customer satisfaction, rather than measuring the impact.

The theoretical framework aims to provide a comprehensive understanding of the fundamental concepts of our research, including constituting an agile team, benefits, and success factors for implementing agile, which will serve as valuable source for the organizations who consider the agile adoption.

4 Managerial implications

Being agile copes up with today's highly competitive and changing environment, which leads to higher customer satisfaction levels, and thus a long-lasting competitive advantage; however, it requires adopting an agile mindset which enables a smooth adoption of the agile approach, and maximizes its potential benefits.

In order to achieve the project outcomes, satisfy the stakeholders, and face the constantly changing requirements, project managers today have to develop an agile mindset, and consider agility as solution to those constraints.

5 Limits

APM is considered as a modern approach in project management, it remains relatively new in the Algerian context. The main limitation of the study is the small sample size, since the survey is addressed to the employees of Ooredoo Algeria who have a prior experience with agile on the first hand. The lack of accurate information about the population of our study, and the adoption of hybrid working strategy on the other hand, made the data collection process more difficult.

Another limitation of the study is the early stage of adoption, the host company is still in the process of agile implementation, so it's not applicable definitely.

6 Possible extensions of the study

In order to ensure a continuity to this research, we suggest possible studies from different contexts:

6.1 From the agile context

- A. Agile and customer satisfaction: in order to add value to this research, a qualitative study can be used in order to further explore the results of this study.
- B. Agile and quality: since the agile approach and quality are interrelated, we suggest a study on the relation between the agile and quality assurance.
- C. The agile approach in startups: another interesting research could be the application of the agile in the startups, since the nature of startups requires agility, and flexibility.
- D. Agile and lean management: future researches could contribute to the impact of the application of lean and agile principles in the value creation process.

- E. Agile in telecommunication sector: another possible study is to investigate the most suitable agile framework for the telecommunication sector.

6.2 From a marketing context

Further studies on the relation between perceived value, service quality, customer satisfaction, and brand loyalty, would be useful in demonstrating how those variables are connected.

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APPENDIX

I am a project management student at the High National School of Management Kolea, and this survey is part of my final dissertation for a Master degree, which aims to examine how does the agile contribute to customer satisfaction. The term agile refers to an approach which is based on iterative development, flexibility, and collaboration. This survey is addressed to employees who have a prior experience with agile.

I would be thankful if you can cooperate with me by taking a few minutes of your time (about 5 to 10 minutes) answering some questions. This survey is only for academic purposes so your answers would be treated confidentially.

If you have any comments or questions, contact us at: raniaismahanemedjoubi@gmail.com

Thank you once again.

Section 01: General information

1- How many years of experience do you have practicing agile?

- Less than one year
- From one to two years
- Three to four years
- Five years and more

2- Which agile methodologies do you have experience with?

- Scrum
- Kanban
- Extreme programming
- Safe
- Lean
- Test driven method
- Feature driven method
- Other (please indicate)

3- What is your role in an agile team?

- Product owner
- Developer / team member
- Team leader

- Stakeholder
- Support cast (quality controller, financial manager, maintenance supervisor...)
- Other (please indicate)

Section 02: benefits and success factors

4- Based on your experience, rate how much you agree or disagree about the following advantages:

	Strongly agree	Agree	Neutral	disagree	Strongly disagree
Enhancing customer satisfaction					
Improving quality					
Shortening delivery time “time to market”					
Adapting to change easily					
Increasing project performance					
Encouraging innovation					
Improving communication					
Reducing risks					

5- There are several factors which help with adopting agile successfully, rate how much you agree or disagree with the following factors;

	Strongly agree	agree	Neutral	disagree	Strongly disagree
Providing training					
Ensuring communication with the team, and the stakeholders					
Building highly skilled and motivated team					
Adapting the agile practices to the company’s culture					

Adopting an agile mindset					
Engagement of the top management					

Section 03: Customer collaboration

6- How often do you collaborate with your costumers?

○ ○ ○ ○ ○

Very frequently

Extremely rarely

7- Rate the degree of importance of the following action:

	Extremely important	important	Neutral	Not so important	Not at all important
Customer feedback about the increment (partially developed product)					
The direct interaction with costumers					
The participation of customers during the testing process					
Effective communication between the customers and the team					

Section 04: improved quality

8- Rate the importance of these actions in improving the quality within an agile project:

	Extremely important	important	Neutral	Not so important	Not at all important
Understanding the customers' needs					
Continuously testing the deliverable at the end of each sprint					
Incorporating the customers feedback into the product development process					
Resolving defects early					

Section 05: prioritizing value creation

- 9- There are multiple ways by which the value is created with the minimum of time using agile, rate the degree of importance of the following ways:

	Extremely important	Important	Neutral	Not so important	Extremely important
Defining the value from the customer perspective					
The early delivery of value through the prioritized product backlog					
The continuous delivery of value through the iterative development					
Responding to customers' requirements changes					

Section 06: customer satisfaction

10- Which factor do you consider the most impactful in enhancing customer satisfaction within an agile project?

- Collaborating with customers
- Improving the quality
- Prioritizing value
- Other (please indicate)

11- Since satisfying the customers has many advantages, rate how much you agree or disagree about the following advantages:

	Strongly agree	agree	Neutral	disagree	Strongly disagree
Increasing brand loyalty					
Generating positive word of mouth					
Reducing marketing costs					
Improving the financial situation of the company					
Developing a long-lasting competitive advantage					

Section 07: Respondent's profile

12- What is your gender:

- Male
- Female

13- What is your age group?

- Less than 25
- From 25 to 34
- From 35 to 44
- 45 years and above

14- Which department do you work in?

- ERM & Quality
- Operational & Information Security
- Affaires Corporative
- Strategy
- Audit
- Technology
- Commercial
- Human Resources
- Financial
- Legal & Regulatory
- Procurement & Supply Chain

Je suis étudiante en Management des Projets, à l'Ecole Nationale Supérieure de Management de Koléa, et cette enquête fait partie de mon mémoire de fin d'étude, qui vise à examiner comment peut contribuer la méthode agile à la satisfaction des clients. Ce questionnaire est destiné aux personnes qui disposent de connaissances préalables de l'approche agile.

Je serai reconnaissante pour toute coopération, en prenant quelques minutes de votre temps (environ 5 à 10 minutes) pour répondre à quelques questions. Cette enquête a des objectifs uniquement académiques. Vos réponses seront donc traitées d'une manière confidentielle.

Si vous avez des commentaires ou des questions, contactez-nous à l'adresse suivante :

raniaismahanemedjoubi@gmail.com.

Je vous remercie encore une fois.

Section 01 : Informations générales :

1- Depuis combien d'années utilisez-vous la méthode « agile » ?

- Moins d'un an
- D'un à deux ans
- De trois à quatre ans
- Cinq ans et plus

2- Quelles sont les méthodes « agile » utilisées par vos soins ?

- Scrum
- Kanban
- Extreme programming
- Safe
- Lean
- Test driven method
- Feature driven method
- Autre (à préciser) :

3- Quelle est votre rôle dans une équipe agile ?

- Propriétaire de produit
- Développeur/ membre d'équipe
- Chef d'équipe

- Partie prenante
- Support (contrôleur de qualité, financier, superviseur de maintenance...)
- Autres (à préciser)

Section 02 : Avantages et Facteurs de réussite :

4- Sur la base de votre expérience, évaluer dans quelle mesure vous êtes d'accord ou non avec les avantages suivants :

	Tout à fait d'accord	D'accord	Neutre	Pas d'accord	Pas du tout d'accord
Améliorer la satisfaction des clients					
Améliorer la qualité					
Réduire le Time To market					
S'adapter facilement aux changements					
Augmenter la performance du projet					
Encourager l'innovation					
Améliorer la communication					
Réduire les risques					

5- Il existe plusieurs facteurs qui contribuent à la réussite de l'adoption de la méthode agile.

Indiquez dans quelle mesure vous êtes d'accord ou non avec les facteurs suivants :

	Tout à fait d'accord	D'accord	Neutre	Pas d'accord	Pas du tout d'accord
La formation					
Assurer la communication avec l'équipe et les parties prenantes					
La mise en place d'une équipe hautement qualifiée et motivée					
Adapter la méthode agile à la culture d'entreprise					
Adopter un état d'esprit agile					
L'engagement de la direction					

Section 03 : Collaboration avec les clients

6- A quelle fréquence collaborer-vous avec vos clients ?



Très fréquemment

Très rarement

7- Évaluez le degré d'importance des actions suivantes :

	Très important	Important	Neutre	Pas important	Pas du tout important
Feed-back des clients sur l'incrément (Produit partiellement développé)					
L'interaction directe avec les clients					

La participation des clients au processus d'essai					
La communication efficace entre le client et l'équipe					

Section 04 : Améliorer la qualité :

8- Evaluer l'importance de ces actions pour améliorer la qualité au sein d'un projet agile :

	Très important	important	Neutre	Pas important	Pas du tout important
Comprendre les besoins des clients					
Tester continuellement le produit livrable à la fin de chaque cycle					
Intégrer le feed-back des clients dans le processus de développement des produits					
Résoudre au préalable les défauts					

Section 05 : Prioriser la création de la valeur

9- Il existe multiples façons de créer la valeur en minimum de temps grâce à l'approche agile. Évaluez le degré d'importance de ces méthodes :

	Très important	Important	Neutre	Pas important	Pas du tout important
Définir la valeur du point de vue du client					
La livraison rapide de la valeur par le biais d'un back log de produit priorisé					
La fourniture continue de la valeur par le biais du développement itératif					
Répondre aux changements d'exigences des clients					

Section 06 : Satisfaction du Client

10- Quel facteur considérez-vous comme le plus important pour améliorer la satisfaction du client dans le cadre d'un projet agile ?

- Collaborer avec les clients
- Améliorer la qualité
- Prioriser la création de la valeur
- Autre (à préciser)

11- Etant donné que la satisfaction des clients présente des nombreux avantages, indiquer dans quelle mesure vous êtes d'accord ou non avec les avantages suivants :

	Tout à fait d'accord	D'accord	Neutre	Pas d'accord	Pas du tout d'accord
Accroître la fidélité de la marque					

Générer d'une bouche à l'oreille positive (l'ouïe-dire)					
Réduire les coûts de marketing					
Améliorer la situation financière de l'entreprise					
Développer un avantage concurrentielle durable					

Section 07 : Profil des répondants :

12- êtes-vous ?

Homme

Femme

13- Dans quelle tranche d'âge situez-vous ?

Moins de 25 ans

25 à 34 ans

35 à 44 ans

45 ans et plus

14- Dans quel service travaillez-vous ?

ERM & qualité

Sécurité des opérations et d'information

Affaires corporatives

Stratégie

Audit

Technologie

Commerciale

Ressources Humaines

Finance

Juridique et réglementation

Achats et Chaine d'approvisionnement