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Understanding the Knowledge Management Impact in Organizational Agility Processes and in the Organizational Performance

Bruno Alves de Sousa

Master in Computer Science and Business Management

Supervisor:

Professor Florinda Maria Carreira Neto Matos, Assistant Professor, ISCTE-IUL.

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Department of Information Science and Technology

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I dedicate this work to my family and to everyone who believes that there are no impossible dreams,

for those who fight until the end

Acknowledgment

Resumo

O objetivo principal desta pesquisa é aferir se a gestão do conhecimento pode influenciar os processos de Agilidade Organizacional, ajudando a melhorar o Desempenho Organizacional.

Esta pesquisa foi realizada usando os métodos revisão de Literatura Sistemática e Caso de Estudo. O Caso de Estudo foi realizado numa em uma empresa multinacional de tecnologia com cerca de 3.000 funcionários. Utilizando o Caso de Estudo, foi identificada a importância da gestão do conhecimento na performance organizacional, através da melhoria da eficiência pela otimização de processos internos, estímulo da inovação e da facilitação da tomada de decisão, baseada em informações, reduzindo riscos. Também foi verificada uma melhor capacidade de resposta rápida a mudanças.

A grande contribuição desta pesquisa é o alcance dos resultados da aplicação da Gestão de Conhecimento, para influenciar na agilidade organizacional e melhorar a Performance Organizacional, uma vez que este é um assunto com pouco estudo até o momento.

Palavras-Chave: Gestão do Conhecimento, Performance Organizacional, Agilidade Organizacional.

Abstract

The main objective of this research is to assess whether knowledge management can influence organizational agility processes and help improve organizational performance.

This research was carried out using systematic literature review and case study methods. The Case Study was carried out in a multinational technology company with approximately 3,000 employees. Through the Case Study, the importance of knowledge management in organizational performance was identified through improving efficiency by optimizing internal processes, stimulating innovation, and facilitating information-based decision making, reducing risks. Improved ability to quickly respond to changes was also seen.

The greatest contribution of this research resides in extracting the results of applying Knowledge Management to influence Organizational Agility and improve Organizational Performance since this is a subject that has received little study so far.

Keywords: Knowledge Management, Organizational Performance, Organizational Agility.

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List of Abbreviations and Acronyms

DOR - Definition of Ready

GLl - Grey literature

KPI - KEY PERFORMANCE INDICATOR

MAXQDA - Software for qualitative data analysis and mixed methods in academic, scientific and commercial research.

SECI - Socialization, Externalization, Combination, and Internalization

SLR - Systematic Literature Review

WL - White literature

Introduction

1.1 Contextualization

In a modern business environment, characterized by greater complexity and unpredictability, organizations are constantly confronted with the question of what information, competencies, and expertise are required to take advantage of available opportunities (Idrees et al., 2022). This challenging context results in the accelerated expansion of the knowledge-based economy. Knowledge is regarded as a crucial factor in achieving prosperity and success. Knowledge is the most effective catalyst for entrepreneurial and organizational success. For an organization to achieve a competitive advantage and maximal output, knowledge is essential (Li et al., 2020).

However, to ensure the continued survival of an organization in the current competitive business environment, the performance of the organization cannot be neglected when formulating corporate strategies (Muthuveloo et al., 2017). The organizational performance consists of both financial and non-financial performances, with the former referring to tangible or monetary benefits such as return on investment, revenue, and profit margins, and the latter to customer satisfaction, growth, and other intangible benefits (Muthuveloo et al., 2017).

In terms of the influence of Knowledge Management on organizational performance, it has been stated that the administration of knowledge has attracted a great deal of attention from business organizations and management circles, due to the capabilities it can provide to organizations. Studies have emphasized the importance of managing knowledge effectively and efficiently to ensure organizational survival, competitive differentiation, the globalization effect, and an aging workforce. (Janadari, 2020).

Consequently, Organizational agility is a crucial ability that enables organizations to capture and exploit emergent opportunities swiftly by modifying the activities of ongoing new product development initiatives (Idrees et al., 2022). Organizational agility refers to a company's capacity to recognize and respond to market fluctuations (Idrees et al., 2022). Also, Organizational agility enables organizations to appraise market information in a timely and appropriate manner to make value delivery decisions. Moreover, it facilitates the implementation and execution of innovative strategies developed on the premise of acquired knowledge (Idrees et al., 2022).

Therefore, the organizations must generate, acquire, store, communicate, and apply knowledge for problem-solving and exploring available opportunities in order to sustain a competitive advantage in relation to your competitors (Idrees et al., 2022).

1.2   Motivations and Research Aims

An agile company should be able to prosper in a volatile business environment by adapting effectively to a fluctuating market stimulated by consumer preferences (Gyemang & Emeagwali, 2020). Multiple studies have identified and investigated the organizational factors that influence knowledge management (Marchena Sekli & De La Vega, 2021). In the present day, leadership, senior support, organizational human resources practices, organizational culture, structure, climate, and technology are the most frequently studied knowledge management factors (Marchena Sekli & De La Vega, 2021).

Not only do knowledge management practices contribute significantly to business performance, but they also drive business performance (Li et al., 2020). The operation of knowledge management in an organization is a complex process that is managed by entrepreneurs (Li et al., 2020).

Under these circumstances, the author of this dissertation aims to understand how knowledge management influences Organizational agility processes and consequently contributes to better organizational performance since this is not a subject of much study so far.

1.3   Research Questions and Research Objectives.

To achieve the aim mentioned above, the present research is going to answer the following question:

RQ₁: How does knowledge management influence organizational agility processes, helping to improve organizational performance?

In this regard, the investigation has the following objectives:

a. Understand the role of knowledge management in organizational agility processes;

b. Understand the impact of knowledge management on organizational performance;

c. Understand the impact of Organizational agility on organizational performance.

1.4 Structure of the dissertation

This dissertation contains five chapters. The first chapter provides an overview of the study by discussing the context, the significance of the study, the research purpose, questions, and objectives, as well as the current dissertation structure.

The second chapter is the stage of the literature review, in which previous publications are analyzed and the necessary concepts are contextualized. The procedure for analyzing a collection of articles is presented, taking into account databases, keywords, search periods, languages, research fields and research protocols. The data collection is described in detail. The third chapter presents the research methodology used and its purpose. The fourth chapter corresponds to the findings, describes what was done and found, including the discussion and analysis of the study, where results are presented and interpreted.

In the fifth chapter, the study's conclusion is presented, and research findings are discussed and compared to the literature evaluation. In addition, limitations, suggestions for future research, and contributions to knowledge management are discussed.

Literature Review

2.1 Methodology

For the research goals a Systematic Review of Literature (SLR) based on the Kitchenham and Charters guidelines (Hosseini, Turhan e Gunarathna, 2019) was adopted. This includes the grey (GL) and white (WL) literature. The first is non-peer-reviewed scientific information, and the main reasons to include it during information synthesis are: minimizing the risk of any biases in publication, since positive results are more likely to be covered than negative results; have more up-to-date, detailed and quality information, since it is prepared by professionals and made available before commercially published literature (Yasin, Fatima, Wen, Afzal, Azhar e Torkar, 2020).

This need arose from the dissemination, and access to scientific literature coming from the Internet, communities, forums, and blogs run by prominent scientists online are a valuable resource for the most recent research findings information. However, most of the information published is often referred to as "fugitive literature" as it is semi-published and difficult to locate. (Yasin, Fatima, Wen, Afzal, Azhar e Torkar, 2020).

In short, the SRL summarizes and interprets all available research relating to a point, follows a methodological approach, that is, it must be transparent as to the procedures of its preparation, so that it is additive and can be duplicable by others who follow the same protocol (Soares, 2022).

2.2 Research protocol

A research protocol was applied to three large databases, IEEEXplore, Scopus, and Web of Science, to assess the research' scope and address the posed questions. The selection of these databases was based on their availability of current, high-quality scientific data from publications.

Description of inclusive and exclusive criteria (Table 1) demonstrates the inclusion and exclusion criteria used.

Table 1. Description of inclusive and exclusive criteria

Inclusive criteria	Written in English
	Full text electronically available
Exclusion criteria	Not written in English
	Full text is only partly electronically available

Description of quality criteria (Table 2) demonstrates the quality criteria used.

Table 2. Description of quality criteria

Inclusive criteria	Articles only from Q1 and Q2 journals
	Articles only from A and B conferences

The structure of the review (Table 3) covers the three major phases: planning the review, conducting the review, and reporting the review.

Table 3. Phases of the SLR

Planning the Review	Conducting the Review	Reporting The Review
Need for the Review - The Knowledge management influence in Organizational agility processes, helping to improve organizational performance is little studied	*Selection of Studies* - 19 articles - 10 Snowballing	*Summarization of Extracted Data* - *Synthetize data*
Objectives - Understand the role of knowledge management in organizational agility processes - Understand the impact of knowledge management on organizational performance - Understand the impact of organizational agility on organizational performance	*Extraction & Analysis of Data* -Sample characteristics	*Reporting of the Findings* - Answer the proposed research question
Review Protocol - Search strings, inclusion/exclusion criteria, filters, quality criteria, databases		

The research was based on the following steps: Identification of keywords based on search objectives, use of Boolean OR to unite alternative words or synonyms, and use of Boolean AND to join terms. I applied five filters: Initially I did the search for the title "TITLE (knowledge AND management AND organizational AND performance OR business OR agility)", the keyword sequence represents a combination of words connected by logical operators, which aims to retrieve articles that contain at least one of the words "business" or "agility" and all the words "knowledge", "management", "organizational" and "performance".

In the first filter, I added to the sequence "(LIMIT-TO (OA, "all")", which limits the search to Open Access. As for the second filter, I added "(LIMIT-TO (DOCTYPE, "ar")", which restricts research to academic papers; in the third filter I added "(limit-to (LANGUAGE, "English")," which limits research to articles written in English. As for the fourth filter I incorporated the filters of Q1 and Q2, as they were

"considered, respectively, the 25% and 50% best journals in their area of knowledge" (Gavinho, B., et al., vol. 29 to 49). Finally, in the last filter, I removed duplicate articles from the databases.

Additionally, a backward snowballing procedure was applied to a set of papers, resulting in the inclusion and examination of more publications. This indicates that the author utilized the reference list to identify and incorporate new papers (Wohlin, 2014). The research was carried out using the Scopus, Web of Science and IEEE Xplore databases. The research was carried out between March 6th, 2023 and May 31st, 2023.

Table 4 shows the results of the filtering process:

Table 4. Article filtering process

	No filter	Filter 1	Filter 2	Filter 3	Filter 4	Filter 5	Snowballing
Scopus	285	55	47	45	12	12	
Web of Science	158	38	33	30	14	7	10
IEEE Xplore	24	0	0	0	0	0	
Total	467	93	80	75	26	19	29

In table 5, it is possible to check the relevance of the subject through the number of publications in recent years:

Table 5. Article filtering process by year of publication

Publication year	Number of publications
2023	1
2022	5
2021	3
2020	5
2019	6
2018	1
2017	3
2016	1
2013	1
2011	1
2005	1
2003	1

We can observe through the graph that represents the numbers in table 5 a peak in publications in recent years between 2018 and 2022. The number of publications for 2023 might not be fully represented since the research was done before the end of the year.
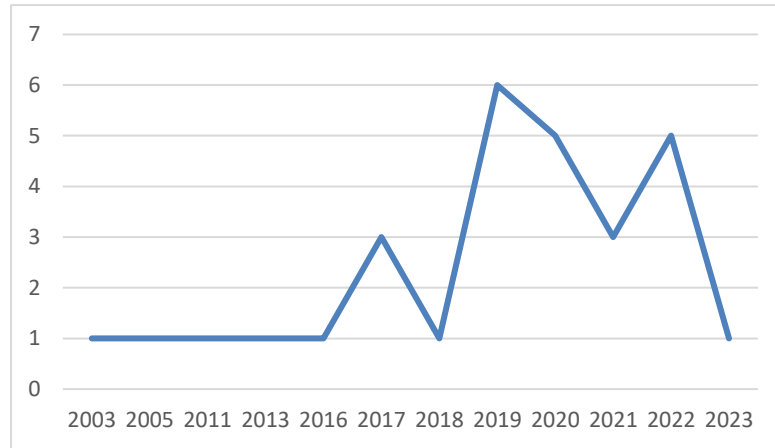
Figure 1. Article filtering process by year of publication

Elaborated by the author

In figure 2, it is possible to visualize the SLR activity flow that makes up this literature review:
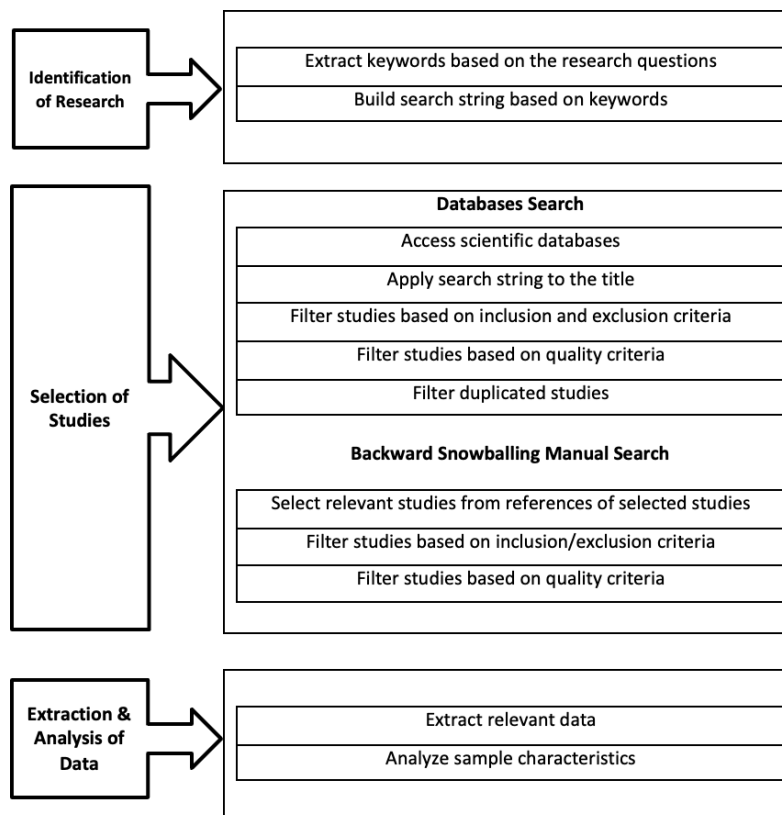
Figure 2. Review protocol

Elaborated by the author

In table 6, we can see that the management area is the most relevant regarding the number of studies found in this literature review:

Table 6. Articles by area of knowledge

Department	number of studies	References
Engineering	4	Kokkaew, N., Jokkaw, N., Peansupap, V., & Wipulanusat, W. (2022)
		Rezaei, F., Khalilzadeh, M., & Soleimani, P. (2021)
		Clauss, T., Abebe, M., Tangpong, C., & Hock, M. (2019)
		Hoonsopon, D., & Puriwat, W. (2019)
Psychology	1	Idrees, H., Hynek, J., Xu, J., Akbar, A., & Jabeen, S. (2022)
Economy	2	Sekli, G. F. M., & De La Vega, I. (2021)
		Slavković, M., & Babić, V. (2013)
Management	20	Li, C., Ashraf, S. F., Shahzad, F., Bashir, I., Murad, M., Syed, N., & Riaz, M. (2020)
		Shabbir, M. Q., & Gardezi, S. B. W. (2020)
		Gyemang, M. D., & Emeagwali, O. L. (2020)
		Abubakar, A. M., Elrehail, H., Alatailat, M. A., & Elçi, A. (2019)
		Ullah, I., Mirza, B., Kashif, A. R., & Abbas, F. (2019)
		Rasool, S. F., Samma, M., Wang, M., Zhao, Y., & Zhang, Y. (2019)
		Abusweilem, M. A., & Abualoush, S. (2019)
		Muthuveloo, R., Shanmugam, N., & Teoh, A. P. (2017)
		Ubeda-Garcia, M., Rienda, L., Zaragoza-Saez, P. C., & Andreu-Guerrero, R. (2021)
		Evangelista, P., Kianto, A., Hussinki, H., Vanhala, M., & Nisula, A. -. (2023)
		Haas, M. R., & Hansen, M. T. (2005).
		Bawono, I., Maulina, E., Rizal, M., & Purnomo, M. (2022).
		Cai, Z., Liu, H., Huang, Q., & Liang, L. (2017)
		Cepeda-Carrion, I., Martelo-Landroguez, S., Leal-Rodríguez, A. L., & Leal-Millán, A. (2017)
		Rafi, N., Ahmed, A., Shafique, I., & Kalyar, M. N. (2021)
		Teece, D., Peteraf, M., & Leih, S. (2016)
		Theyel, G., & Hofmann, K. H. (2020)
		Zaim, H., Muhammed, S., & Tarim, M. (2018).
		Sambamurthy, V., Bharadwaj, A., & Grover, V. (2003)
		Jiménez-Jiménez, D., & Sanz-Valle, R. (2011)
Marketing	1	Kaldeen, M., Nawaz, S. S., & Hassan, A. (2020)
Industrial Systems Engineering	1	Liu, G., Kianto, A., & Tsui, E. (2023)

In figure 3, we can see that the management area corresponds to 69% of the articles found in this literature review.
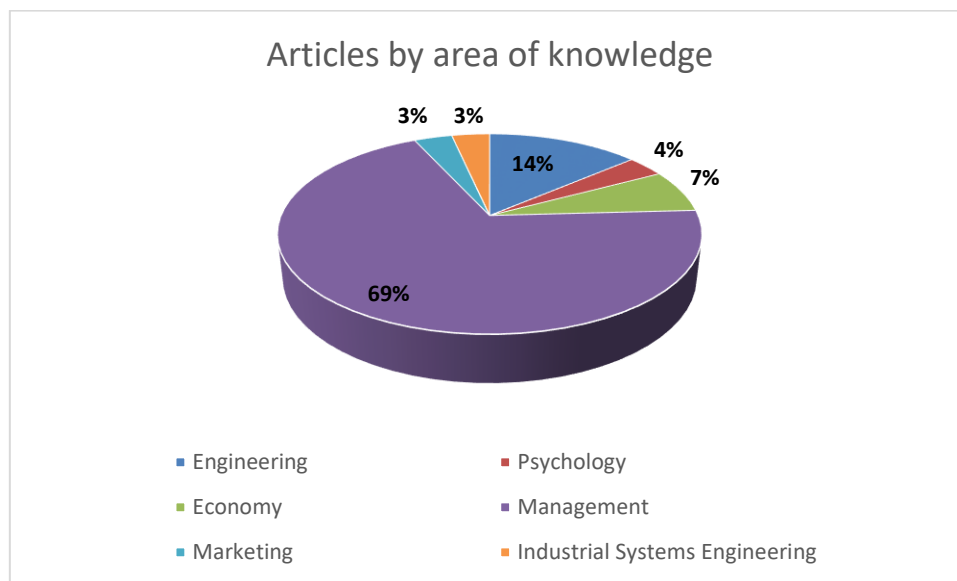
Figure 3. Articles by area of knowledge

Elaborated by the author

2.3   Literature Analysis

2.3.1   The knowledge management

Knowledge Management has evolved from an emerging concept to an increasingly prevalent function in business organizations over the past two decades (Zaim et al., 2018). The term "knowledge" has been regarded and defined from various vantage points (Abubakar et al., 2019). Knowledge is a combination of contextual information, contextualized experience, expert experience, and value, that leads to innovation and pristine experience. In addition to organizational culture, skills, reputation, intuition, and codified theory that influences human behavior and thought, knowledge is also regarded as organizational culture, abilities, and reputation (Abubakar et al., 2019). Firms utilizing knowledge management processes, implementing mechanisms for the creation, transmission, and implementation of knowledge, become innovative and entrepreneurial, and develop new capabilities (Ubeda-Garcia et al., 2021).

Knowledge is divided into "Tacit" and "Explicit" categories based on the ease with which it can be codified and transferred. The SECI model proposes the constant creation of knowledge through a spiral process of socialization, externalization, combination, and internalization (Zaim et al., 2018). Explicit knowledge is readily transferable and codifiable, whereas tacit knowledge is profoundly rooted in the

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organization's system (Abubakar et al., 2019). Knowledge is pointless in its passive form, but when activated through creative processes for application, replenishment, and sharing, it can result in outstanding performance. In this context, knowledge management is the process of activating passive knowledge for the benefit of organizations and competitive advantage (Abubakar et al., 2019).

Every business must have knowledge management capabilities in order to enhance its learning competencies (Bawono et al., 2022). Knowledge is required to discover an immediate solution to every problem encountered. Knowledge generates economic value when used to solve problems, investigate new opportunities, and make decisions, thereby enhancing a company's future capacity to comprehend its environment and gain experience (Bawono et al., 2022).

It is widely acknowledged that companies accomplish their objectives by being effective and efficient (Marchena Sekli & De La Vega, 2021). Hence, firms must investigate and comprehend the process of information sharing in order to effectively handle knowledge management (Marchena Sekli & De La Vega, 2021). Undoubtedly, among the literature on knowledge management, the importance of information sharing in relation to organizational performance is widely acknowledged (Marchena Sekli & De La Vega, 2021).

2.3.2 The organizational performance

Organizational performance refers to the capability associated with the achievement of its objectives, stakeholders' expectations, and market viability (Shabbir & Gardezi, 2020).

It is also the process of analyzing and measuring an organization's performance against its objectives and goals, which involves comparing actual results with desired results (Shabbir & Gardezi, 2020). Organizational performance is the comparison between the organization's actual output or results and its desired output or goals (Shabbir & Gardezi, 2020). Higher performance is contingent on the organization's capacity to deal with innovation, safeguard intangible knowledge assets, and use them to the organization's advantage (Shabbir & Gardezi, 2020).

In addition, organizational performance can be defined as the process of ensuring that the organization's resources are being utilized effectively, as well as all the actions or activities performed by managers at different levels of the organizational hierarchy to determine the extent to which an organization has achieved its goals (Shabbir & Gardezi, 2020).

Financial performance, non-financial performance, and overall organizational performance are the three categories in which organizational performance has typically been examined in knowledge management literature (Liu et al., 2022). Financial performance refers to a company's capacity to use its resources to increase profits or share prices, with common indicators including return on

investment, profitability, return on equity, financial flow, growth in revenues, and market share (Liu et al., 2022).

Non-financial performance measures the performance of a business based on non-financial indicators such as organizational process, product quality, and people's attitudes, with typical indicators including cost reduction, time to market, stakeholders' satisfaction, employee development, organizational reputation, and research and development (Liu et al., 2022). Overall organizational performance is comprised of financial and non-financial indicators that assess the integrated operation and growth status of businesses (Liu et al., 2022).

2.3.3 The Organizational agility

Organizational agility is the capacity of a business to recognize and respond to market fluctuations and enables businesses to appraise market data in a timely and appropriate manner when making product development decisions (Idrees et al., 2022). Additionally, Organizational agility is defined as the capacity of a company to respond creatively to turbulent environments, which include unanticipated variations in technology and demand (Idrees et al., 2022). Moreover, these turbulences create both opportunities and threats, necessitating the development of novel responses by businesses. Furthermore, it is asserted that agility is a method for coping with unpredictable turbulence (Idrees et al., 2022). It is the capacity of a business to deal with uncertain circumstances and is related to its dynamic capabilities (Idrees et al., 2022).

Organizational agility emphasizes flexibility and quickness as the primary characteristics of an organization (Gyemang & Emeagwali, 2020). The concept of agility was established in the early 1990s after the solution for managing a dynamic and shifting environment was developed. A firm that is nimble should be able to flourish in a volatile business environment by efficiently adapting to a market influenced by changing consumer preferences and novel services (Gyemang & Emeagwali, 2020). In addition, it facilitates the implementation and execution of innovative strategies developed based on acquired knowledge (Idrees et al., 2022). Apple evaluated the market potential of smart wearables, rapidly concentrated on the development of smartwatches, and issued them within two years, capturing 75.5% of the global smartwatch market. However, achieving this level of agility is difficult for most business organizations (Idrees et al., 2022).

Organizational agility is the reaction to changes in a volatile market environment. The two main kinds of agility identified are operational adjustment agility and market capitalization agility (Gyemang & Emeagwali, 2020). Moreover, agility allows businesses to discover and exploit opportunities for innovation by leveraging their own resources and capabilities (Hoonsopon & Puriwat, 2019).

Three phases are suggested for the growth and enhancement of Organizational agility: emergence, adaptation, and spread. First, emergence is concerned with the business's capacity to capitalize on opportunities and counter existing threats (Idrees et al., 2022). Second, adaptation is associated with the capacity of a business to respond rapidly to internal and external changes in the business environment (Idrees et al., 2022). Lastly, delivery deals with the effective and expedient development of business operations (Idrees et al., 2022). Therefore, businesses with the capability to be adaptive operate in uncertain environments proficiently, sustainably, and profitably (Idrees et al., 2022). It is possible to view agility as a higher-order skill (Theyel & Hofmann, 2020).

2.3.4 The role of knowledge management in Organizational agility

The capacity of a company to employ its knowledge resource capabilities to execute essential tasks is viewed as an increasingly crucial competitive advantage source (Haas & Hansen, 2004). Knowledge management and organizational learning are now indispensable for enhancing strategic adaptability and responsiveness to inevitable change (Kokkaew et al., 2022).

Knowledge is considered the most valuable asset and the most significant economic resource that organizations possess. Therefore, significant efforts are being made to determine how to acquire it, represent it, retain it, and administer it. The key is to know how to combine knowledge to ensure that the company maintains competitive advantages over time (Cepeda-Carrion et al., 2017).

Literature provides numerous definitions of Organizational agility; one of the most accepted defines Organizational agility as "the firm's ability to detect and respond to opportunities and threats in the environment with ease, speed, and dexterity" (Rafi et al., 2021). Organizational agility is also defined as a company's capacity to respond quickly and creatively to unforeseen changes and is widely acknowledged as the key capability that enables businesses to adapt production innovation to current market trends (Cai et al., 2017).

Knowledge management aims to maintain a balance between the creation and application of knowledge, generating positive organizational outcomes to the organization (i.e., organizational learning, financial performance, market performance, corporate performance, innovation, and creative performance). Existing empirical and conceptual evidence supports the conclusion that knowledge creation processes can improve the overall performance of an organization and business (Abubakar et al., 2019).

2.3.5 The impact of knowledge management on organizational performance

Organizational performance is among the most studied outcome variables in the management literature (Rasool et al., 2019). Many studies show that knowledge management has an impact on organizational performance (Rezaei et al., 2021).

These studies demonstrate a relationship between knowledge management and process performance (Slavkovic & Babic, 2013). This demonstrates the relevance of knowledge in enhancing the efficacy of the organization (Rezaei et al., 2021). The impact of knowledge management on organizational performance takes knowledge management into account to be deeply rooted in seven factors: direct leadership, organizational culture, support, organizational strategies, processes, information technology, training, activities, and incentives. In addition, the performance variable is evaluated based on four factors: learning and growth, internal processes, customer perspectives, and financial perspectives. (Rezaei et al., 2021).

Business performance is difficult to gauge because it involves so many moving parts and depends on factors as diverse as output, profit, worker happiness, learning, expansion, and flexibility (Ullah et al., 2019). Organizational performance has often been seen from a monetary perspective (Ullah et al., 2019). Nevertheless, some researchers have anticipated a comprehensive concept that incorporates nonfinancial measurements such as market share, product quality, and business image (Ullah et al., 2019).

This means that organizational performance is dependent not only on tangible resources but also on intangible resources, such as the efficient administration of knowledge (Abusweilem & Abualous, 2019).

2.3.6 The impact of Organizational agility on organizational performance

Scholars have acknowledged the importance of business models to firm performance and competitive advantage generation (Clauss et al., 2019). To obtain a sustainable competitive advantage, businesses increasingly find it necessary not only to capitalize on a well-functioning business model, but also to update it continuously (Clauss et al., 2019). Innovative business models enable organizations to commercialize their concepts, assets, and goods in novel strategic, operational, and financial ways (Clauss et al., 2019). Innovations in value propositions enable companies to expand their product and service portfolios and respond to new market demands, which have been crucial to firm performance (Clauss et al., 2019).

Most extensive empirical studies on the relationship between innovation and performance provide evidence of a positive relationship (Jiménez-Jiménez & Sanz-Valle, 2011). Sound strategy, entrepreneurial management, and strong inventive skills are crucial to an organization's development and financial success when the business environment is volatile and unpredictable (Teece et al., 2016). Agility is essential for the innovation and competitiveness of firms in modern business environments (Sambamurthy et al., 2003).

2.4 Synthesis

Knowledge Management is a combination of contextual information, contextualized experience, expert expertise, and value that fosters innovation and flawless experience. Knowledge is classified as "Tacit" or "Explicit" depending on how easily it can be codified and conveyed. Knowledge management is the activation of latent knowledge for the benefit of organizations and competitive advantage. Acquisition, upkeep, repair, inquiry, and recovery are the most influential knowledge management factors.

Organizational performance is the capability associated with achieving objectives, meeting the expectations of stakeholders, and maintaining market viability. It is the process of analyzing and measuring an organization's performance in relation to its objectives and goals by comparing actual results with intended results. Non-financial performance assesses the performance of a business based on non-monetary indicators. Financial performance is the ability to use resources to increase profits or share prices. Overall organizational performance consists of financial and non-financial indicators that evaluate the integrated operation and expansion status of businesses.

Organizational agility is the capacity of a company to recognize and respond to market fluctuations, allowing them to evaluate market data in a timely and appropriate manner when making product development decisions. It is the capacity of an organization to respond creatively to turbulent environments, such as unanticipated changes in technology and demand. It emphasizes adaptability and swiftness as the most important qualities of an organization.

A firm with agility should be able to thrive in a tumultuous business environment by efficiently adapting to a market shaped by shifting consumer preferences and innovative services. Operational adjustment agility and market capitalization agility are the two most prominent types of agility. Knowledge management and organizational learning are indispensable for enhancing strategic adaptability and receptivity to inevitable change.

Knowledge management has an effect on organizational performance, which is a widely studied outcome variable. It is founded upon seven elements: direct leadership, culture, strategies, processes

and activities, information technology, training, and incentives. In addition to monetary processes, performance can also be measured in non-financial terms, such as market share, product quality, and business image.

Business models are essential for firm performance and the generation of competitive advantage. Innovations in value propositions allow businesses to diversify their product and service offerings and respond to new market demands. For growth and financial performance, sound strategy, entrepreneurial management, and strong innovative capabilities are essential.

Under these circumstances, the author of this dissertation aims to understand the knowledge management impact in organizational agility processes and in the organizational performance.

CHAPTER 3

Research Methodology

3.1 Case study

The case study is an empirical approach that focuses on examining current occurrences within their specific setting (Runeson & Höst, 2008). The case study is suitable for answering research questions such as "how" or "why", and its study focus is a contemporary phenomenon (Yin, 2018). By employing a case study as the design framework for research, you will focus only on a certain subject and examine it thoroughly (Thomas, 2021). When doing a case study, the focus is only on the subject matter itself, considering it as a whole entity (Thomas, 2021).

As mentioned in section 1.2, how knowledge management influences organizational agility processes and consequently contributes to a better organizational performance, is not a subject of much study so far. Therefore, the case study approach was chosen to carry out the research.

When it comes to research format, there are several approaches available to address the issues posed (Thomas, 2021). Regarding this matter, the case study is highly inclusive and receptive, since it embraces various methodologies (Thomas, 2021). While it may be an overstatement to label him as promiscuous, it is fair to say that he is rather liberal in his fondness for various research techniques, such as observation, diaries, questionnaires, exams, statistics, interviews, and so on (Thomas, 2021). The possibilities are endless (Thomas, 2021). The crucial aspect is that you are employing a case study to thoroughly analyze a specific scenario. When undertaking this task, we have the freedom to select any techniques and additional design frameworks that come to mind in order to address inquiries pertaining to your specific situation (Thomas, 2021).

Case study evidence may be derived from a minimum of six sources, namely documents, archival records, interviews, direct observations, participant observation, and physical artifacts (Yin, 2018). The interview is a crucial and significant source of case study evidence (Yin, 2018). Interviews may be particularly beneficial in providing explanations for crucial events, including the "hows" and "whys," as well as offering insights that reflect the relativist viewpoints of the participants (Yin, 2018).

In the social sciences, the term triangulation is metaphorically employed, drawing from its initial application in mathematics and surveying (Thomas, 2021). Triangles are not a necessary component, and there is no requirement for tasks to be completed in groups of three. The phrase "here" refers to the concept that several perspectives offer a superior understanding compared to a single viewpoint (Thomas, 2021).

Given these circumstances, this research employed the following approaches for triangulation:

1. *Burndown chart:* A burndown chart visually represents the progress of finished work and the remaining work in a sprint (Cohn & Beck, 2011). The y-axis represents the amount of work to be done during the sprint, the x-axis the sprint timeline (Cohn & Beck, 2011). The gray line represents the ideal performance to complete the work until the end of the sprint, the red line represents the remaining work (Cohn & Beck, 2011). Example:
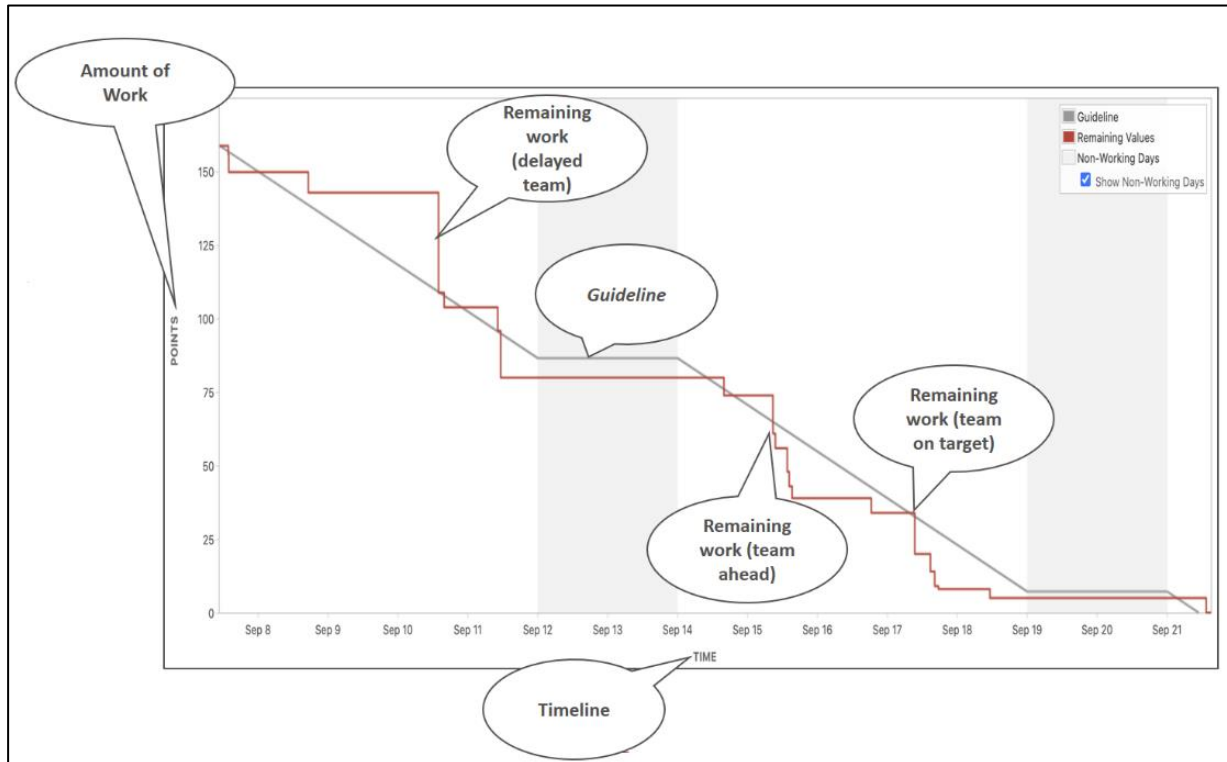
Figure 4. Representation and explanation of burndown chart

Elaborated by the author adapted from (Cohn & Beck, 2011)

Sprints are the essential component of Scrum, serving as the catalyst for transforming ideas into tangible value (Schwaber & Sutherland, 2020). These events have a predetermined duration of one month or less to maintain uniformity (Schwaber & Sutherland, 2020). A new Sprint starts immediately following the completion of the preceding Sprint (Schwaber & Sutherland, 2020). Burndown charts are utilized to forecast the probability of your team successfully finishing their tasks within the allocated timeframe (Schwaber & Sutherland, 2020). In this study, it was used as a KPI related to the team's performance during the sprints.

2. *Interviews:* The team members were given the opportunity to provide feedback through interviews, with the aim of gathering their qualitative and quantitative insight, through coding of interview transcripts. Codes were created by the author of this dissertation utilizing a concept-driven approach according to the literature review carried out in this study, the codes

represent factors that contribute positively and negatively to organizational agility and organizational performance. List of codes used:

    a. *Negative impact on Organizational Agility*
        i. Negative impact to innovate
        ii. Negative impact of accepting changes
    b. *Positive Impact on Organization Agility*
        i. Positive impact to innovate
        ii. Positive impact of accepting changes
    c. *Negative Impact on Organizational performance*
        i. Negative impact on the speed of carrying out the activities
        ii. Negative impact on efficacy (Achieving goals)
    d. *Positive impact on organization performance*
        i. Positive impact on the speed of carrying out activities
        ii. Positive impact on efficacy (Achieving goals)

3. *Observation and methodological triangulation:* Involve the integration of many data collecting approaches. While monitoring this team, the intention is to see how the work was previously completed, doing an analysis similar to a "before and after the implementation of Knowledge management practices" comparison.

3.2   Case study design

The purpose of this research is to answer the research question mentioned in section 1.3. This case study research was carried out in a multinational technology company with around 3000 employees that provides solutions on multiple platforms. The company was not identified for data protection reasons; this company was chosen for convenience, as the author of this research had access to collect information. This company was undergoing a major organizational transformation in relation to work processes, methods, frameworks and technologies, with the aim of having better organizational performance and being more agile in delivering value to customers.

The teams were being organized in a way to be multidisciplinary and cross-functional, working remotely, with Scrum framework. The Scrum framework is a lightweight approach that facilitates the generation of value for individuals, teams, and organizations by employing adaptable solutions to address intricate challenges (Schwaber & Sutherland, 2020). Scrum is made up of empiricism, lean thinking, values, roles, artifacts, and events (Schwaber & Sutherland, 2020).

The company chose the Confluence tool for knowledge management, Confluence offers comprehensive solutions for creating, collaborating, and organizing all your work in a one location. Confluence is a platform that facilitates the sharing of knowledge and collaboration among team members. The platform includes interactive pages that provide teams with a space to generate, record,

and cooperate on various projects or concepts (Atlassian, 2019). Spaces facilitate the structuring, organizing, and sharing of work inside teams, ensuring that each team member has access to institutional knowledge and the necessary information to perform at their highest level (Atlassian, 2019).

To organize the life cycle of the projects that the team under study worked on, the company chose the Jira tool. Jira is a software application that facilitates the monitoring of tasks and tracking of projects, so assuring the centralized control of all team activities (Atlassian, 2019).

To implement knowledge management practices in the team, the reference model SECI proposed by Nonaka and Takeuchi was used. The reason for selecting this model is its proposition that knowledge is consistently generated through a constant process of socialization, externalization, combination, and internalization (Zaim et al., 2018). This makes that model very adherent to the empirical process of the Scrum framework.
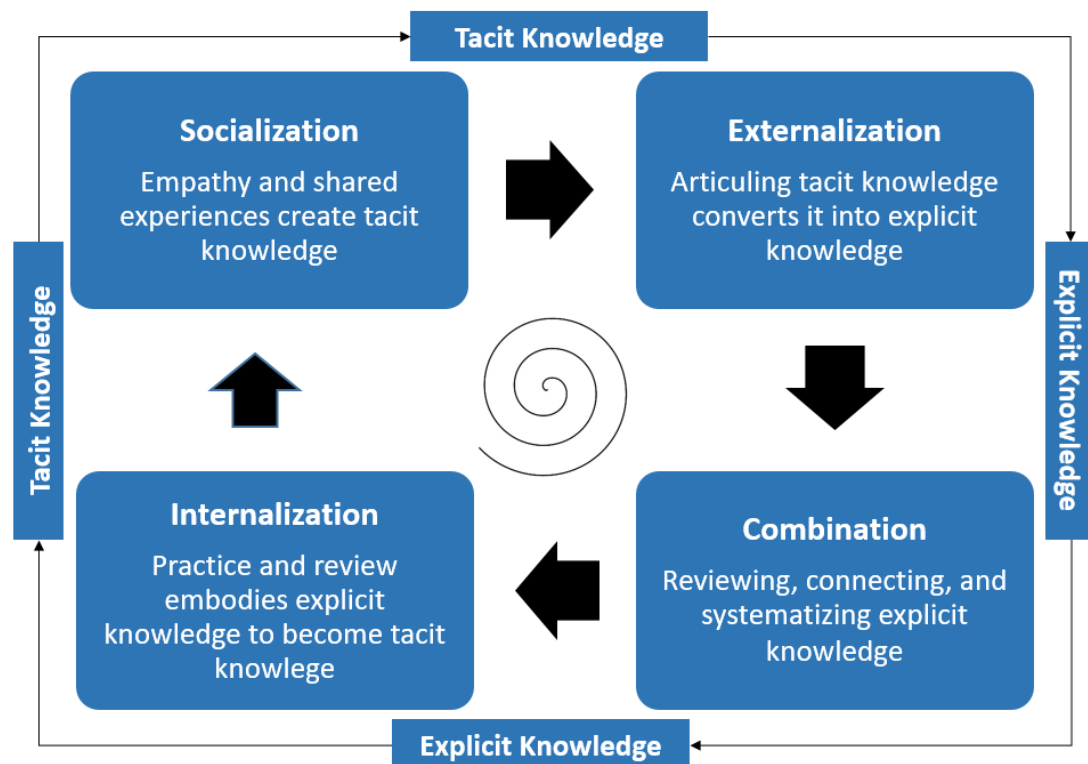

Figure 5. The reference Model SECI

Elaborated by the author, adapted from (Nonaka & Toyama, 2003)

This model is composed of 04 modes of knowledge creation, being: Socialization is the initial stage of knowledge generation, when new tacit information is transformed via shared experiences in

everyday social interactions (Nonaka & Toyama, 2003). After the Socialization process, the process of Externalization facilitates the transformation of tacit information into explicit knowledge (Nonaka & Toyama, 2003). Tacit information is transformed into explicit form to facilitate its dissemination and serve as the foundation for the creation of novel knowledge, including thoughts, pictures, and written documents (Nonaka & Toyama, 2003).

During the externalization stage, individuals employ their cognitive awareness to justify and express the external world. Dialogue serves as a highly effective means of expressing one's implicit knowledge and disseminating this articulated information to others (Nonaka & Toyama, 2003). In the sequence, takes place the process of Combination, which involves the collection of explicit knowledge from both internal and external sources inside an organization (Nonaka & Toyama, 2003). This knowledge is subsequently combined, edited, or processed to provide a more intricate and structured form of explicit knowledge (Nonaka & Toyama, 2003).

Finally, the process of Internalization involves the conversion of explicit information, which is generated and disseminated inside an organization, into tacit knowledge by people. This stage may be conceptualized as praxis, when information is effectively implemented and utilized in practical contexts, serving as the foundation for the development of novel routines (Nonaka & Toyama, 2003).

To design the case study, the following knowledge management practices were added to the Scrum framework structure (see Figure 6): Discussion groups between the product owner, the entire team and other stakeholders who need to be involved to refine the backlog (see Figure 7), checklists to assess whether the backlog was appropriately prepared for teams to implement the requirements and templates for writing the backlog (see Figure 7).
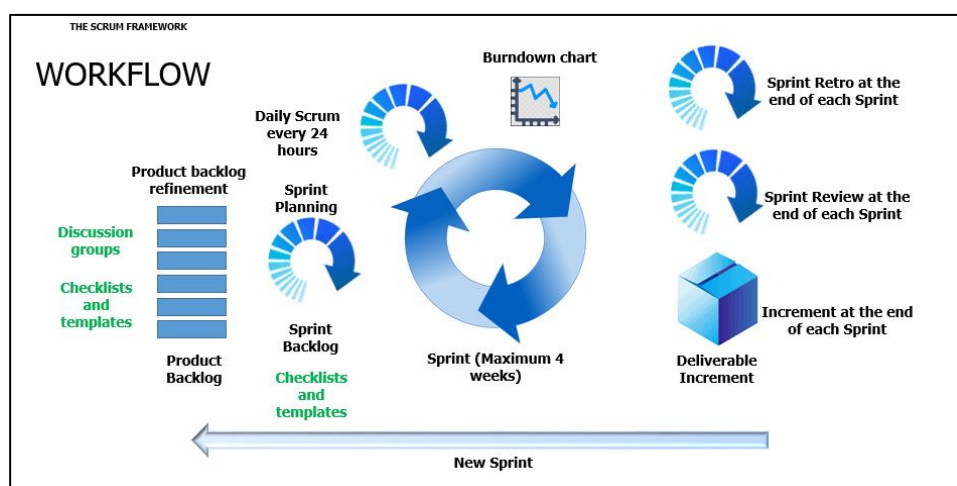

Figure 6. Scrum framework, with the knowledge management practices implemented

Elaborated by the author

Knowledge management practice	Month and week															
	Jul 2023				Aug 2024				Set 2023				Oct 2023			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
Training and mentoring sessions				▓	▓	▓	▓									
Implantation of backlog refinement sessions					▓											
Creation of Definition of ready checklis					▓	▓										
Crreeation of Templates for Wrinting Stories bugs and spikes						▓	▓									
Coaching sessions for continuous improvement									▓	▓	▓	▓	▓	▓	▓	▓

Figure 7. Timeline implementation with a monthly granularity

Elaborated by the author

All process assets and artifacts arising from this process were stored and shared in the Confluence and Jira tools.

The team chosen to carry out the case study had 11 members: 1 Scrum Master, 1 Product owner, 7 developers and 2 quality assurance. A decision by the company's CTO in 2023 established that the teams would be cross functional, which meant that quality assurance members were incorporated into the same team as the developers and worked together to deliver increments at the end of the sprints. The backlog of the team that is the subject of this study is made up of Stories, bugs and Spikes.

Extreme Programming refers to a spike as a short experiment conducted to get knowledge about a certain aspect of the program. During the spike, the developers get sufficient knowledge to make an estimation of the work (Cohn & Beck, 2011). A timebox, also known as a defined maximum length of time, is always assigned to the spike, enabling us to make an estimation (Cohn & Beck, 2011). Thus, the narrative undergoes a transformation, splitting into two distinct components: an initial rapid surge to acquire data, followed by a subsequent narrative that carries out the actual work (Cohn & Beck, 2011).

A user story delineates the capabilities that will provide value to either a user or purchaser of a system or program (Cohn & Beck, 2011).

A bug is a flaw or inadequacy in a product that causes it to deviate from its required standards or specifications, or hinders its intended purpose (ISTQB Glossary, n.d.).

A Definition of Ready (DoR) is not an inherent component of the Scrum framework. However, many Scrum teams, particularly those who are new to Scrum, may opt to employ a DoR as a temporary measure to facilitate the organization of their sprints, particularly when they are not yet proficient in developing high-quality product backlog items. The Definition of Ready (DoR) is commonly presented as a concise checklist that outlines the necessary elements for a piece of work to be considered ready (Pros and Cons of a Definition of Ready | Why You May Use a DoR in Agile, 2024).

The data included in this study was gathered from three distinct sources.

1. Using information from the team's sprints between 2023 and 2024 (burndown chart), where activities are planned to deliver Stories, Spikes and bugs. This information was extracted from the Jira tool where the team's sprints are organized.
2. Interviews with 10 team members who had practical experience during the process of implementing the knowledge management practices mentioned in section 3.2.
3. Observation on Field: The author of this dissertation was responsible for implementing knowledge management practices along with the Scrum framework.

3.3   Conduct the Case study

All the requisite data for analysing the Key Performance Indicator (KPI) described in section 3.1 was gathered, organized, and analysed. The interviews questions were disclosed at once to all interviewees and the purpose of conducting interviews with the 10 team members was to obtain their individual perspectives on the subject of this study. By transcribing the interviews, was expected to develop qualitative and quantitative analyses of their replies using MAXQDA version 24, which is a software for mixed methods and qualitative data analysis (MAXQDA | QDA Software Package for Windows & Mac, n.d.).

The testimonies will be compared and contrasted with the analytical examination of the KPI's progression throughout the months, as well as the qualitative and quantitative data acquired by MAXQDA. The dissertation author gathered Key Performance Indicator (KPI) data using the Jira application at the conclusion of each sprint. The interviews were conducted and recorded in 2024 using Microsoft Teams. The following table relates the questions asked to each interviewee, the interview guide, was created by the author of this dissertation utilizing a concept-driven approach according to the literature review carried out in this study.

Table 7. Interview questions

Question Number	Question
Q1	What is your opinion on stay stuck during the sprints with doubts about requirements before the implementation of backlog refinement sessions, definition of ready checklist and Templates for writing Stories, bugs and Spikes?
Q2	What is your opinion about the time dedicated to development during the sprints before the implementation of backlog refinement sessions, definition of ready checklist and Templates for writing Stories, bugs and Spikes?
Q3	What is your opinion on accepting changes during the sprints before the implementation of backlog refinement sessions, definition of ready checklist and Templates for writing Stories, bugs and Spikes?
Q4	What is your opinion on the total time needed to implement requirements during the sprints before the implementation of backlog refinement sessions, definition of ready checklist and Templates for writing Stories, bugs and Spikes?
Q5	What is your opinion on the time dedicated to innovation during the sprints before the implementation of backlog refinement sessions, definition of ready checklist and Templates for writing Stories, bugs and Spikes?
Q6	What is your opinion on the time dedicated to continuous improvement during the sprints before the implementation of backlog refinement sessions, definition of ready checklist and Templates for writing Stories, bugs and Spikes?
Q7	After the implementation of backlog refinement sessions, definition of ready checklist and Templates for writing Stories, bugs and Spikes, what is your opinion on stay stuck during the sprint?
Q8	After the implementation of backlog refinement sessions, definition of ready checklist and Templates for writing Stories, bugs and Spikes, what is your opinion about the time dedicated to development during the sprints?
Q9	After the implementation of backlog refinement sessions, definition of ready checklist and Templates for writing Stories, bugs and Spikes, what is your opinion on accepting changes during the sprint?
Q10	After the implementation of backlog refinement sessions, definition of ready checklist and Templates for writing Stories, bugs and Spikes, what is your opinion on the total time needed to implement requirements during the sprint?
Q11	After the implementation of backlog refinement sessions, definition of ready checklist and Templates for writing Stories, bugs and Spikes, what is your opinion on the time dedicated to innovation during the sprints?
Q12	After the implementation of backlog refinement sessions, definition of ready checklist and Templates for writing Stories, bugs and Spikes, what is your opinion on the time dedicated to continuous improvement during the sprints?

In the following table, you can see the characteristics of the employees interviewed.

Table 8. Demographics of Employees Interviewed

Interviewee	Role	Academic degree	Years of experience in the role	Interview duration (In minutes)
1	Team Leader	Post graduated	4	21:49
2	Full Developer	Master's degree	4	10:06
3	Senior Developer	Bachelor's Degree	3	11:03
4	Junior Developer	Technical degree	2	06:51
5	Lead QA	Post graduated	1	17:33
6	Junior Developer	Bachelor's Degree	1	11:27
7	Full QA	Bachelor's Degree	1	14:29
8	Junior Developer	Bachelor's Degree	1	9:20
9	Product Owner	Master's degree	7	13:05
10	Full Developer	Technical degree	4	11:23
Total:			28	127:06:00

Findings and Discussion

4.1 Case study data collection and Analysis

During this phase, our objective is to thoroughly examine the data that was gathered in the previous phase. The data was gathered from the team sprints under investigation and through interviews conducted with team members. The data analysis will be separated into two distinct phases of the implementation schedule:

1. *Baseline status:* Data from sprints, coding of interview transcriptions and interviewee responses related before implementing all the knowledge management practices described in session 3.2.

2. *Status after implementation of knowledge management practices:* Data from sprints, coding of interview transitions and interviewee responses related after implementation of all knowledge management practices described in session 3.2.

The following two subchapters will show the data at the two previously indicated distinct time points.

4.2 Baseline Status

During this phase we can verify through the burndown chart that the team subject to this case study was unable to deliver the planned work, the activities did not flow during the sprints, that is, the red line that represents the remaining work did not follow the gray line that represents the ideal performance to complete the work until the end of the sprint.
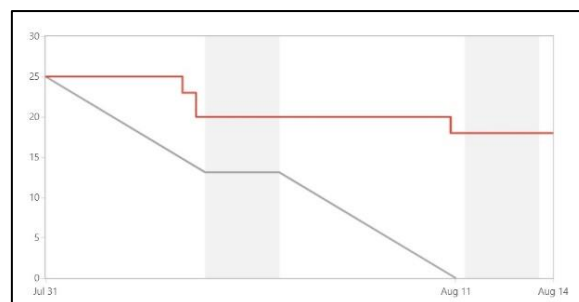

Figure 8. Baseline Sprint

Elaborated by the author

This negatively influenced organizational agility and organizational performance, as we can see in the table below, with examples of responses obtained from interview transcripts where codes corresponding to negative impact on organizational agility and organizational performance were used.

Table 9. Transcript of Interviews Baseline status

CODE USED	TRANSCRIPT OF THE RESPONSE
Negative Impact to Innovate	"Previously we did not add any time for innovation. We got many requirements we had to analyze, check everything and implement. We didn't have time to invent anything because the information or the requirements or the features weren't organized, so we didn't have time to innovate, or we couldn't spend time on development of our team or what we wanted with the team"
Negative Impact of Accepting Changes	"Most of the times we were not even aware we were changing requirements, or we were including changes because as the titles were so vague, everything was about someone missing this or missing that, we could not argue saying it was not requested because the title includes everything. So, I think the most important point here was the frustration, because sometimes we didn't deliver the story, or we delayed the other stories because we were working on something that was much bigger than what we thought in the in the beginning"
Negative impact on the speed of carrying out the activities	"So previously, we were planning the development, knowing that it would be blocked in the future. Indeed. Yeah. Therefore, we ended up being blocked and later on when the block was solved, we did not remember anything. Therefore, we spent more time that was supposed to be spent because we already planned to know that we will be blocked. So, I think we lost a lot of time just remembering what we have done and why we were blocked, and I think it was a lot of time lost"
Negative impact on efficacy (Achieving goals)	"Therefore, we only had the title of the stories where we had a vague description, we could not understand the global achievement and the result did a lot on the team having doubts after the Sprint starting"

This can also be seen through coding of interview transcripts, we can verify that the codes related to the negative impact of organizational agility (negative impact to innovate, negative impact of accepting changes) and negative impact of organizational performance (Negative impact on the speed of carrying out activities, Negative impact on efficacy (Achieving goals) were more used regarding the number of encodings:
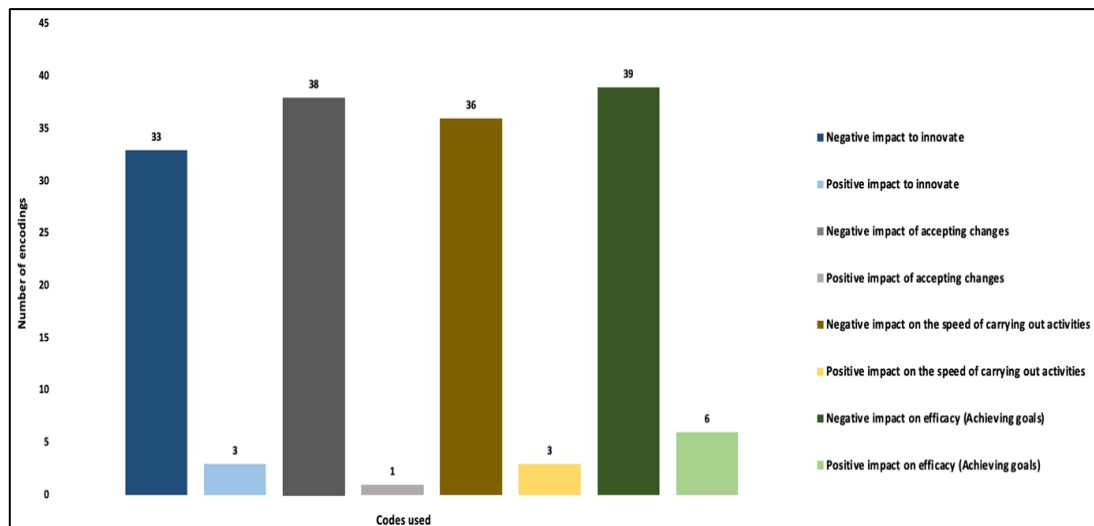
Figure 9. Number of codifications "before" implementing knowledge management practices

Elaborated by the author

Regarding code coverage (number of characters). From the coded text areas, it is also possible to verify that the negative impact of organizational agility (negative impact to innovate, negative impact of accepting changes) and negative impact of organizational performance (Negative impact on the speed of carrying out activities, Negative impact on efficacy (Achieving goals) has greater code coverage, reflecting that employees spoke more about these negative impact aspects.
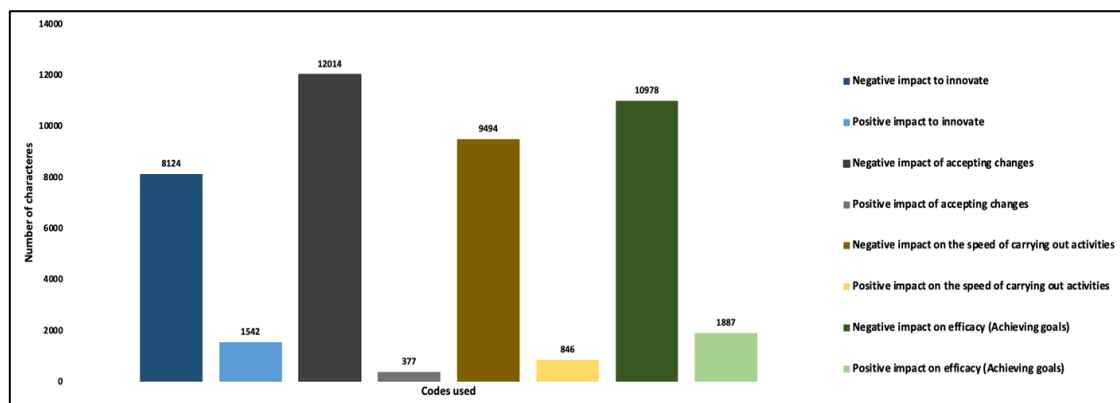

Figure 10. Code coverage, number of characters in coded segments "before" implementing knowledge management practices

Elaborated by the author

On the other hand, we can verify that the codes related to the positive impact of organizational agility (positive impact to innovate, positive impact of accepting changes) and positive impact of organizational performance (positive impact on the speed of carrying out activities, positive impact on effectiveness (achieving goals) were less used in relation to the number of encodings and also in represented less code coverage (number of characters).

In the following sprints, as knowledge management practices were gradually implemented, the performance of the team under study improved incrementally, however, despite the improvement, the team was still unable to deliver complete sprints, as can be seen in the burndown charts, that is, the red line that represents the remaining work did not follow completely the gray line that represents the ideal performance to complete the work until the end of the sprint.
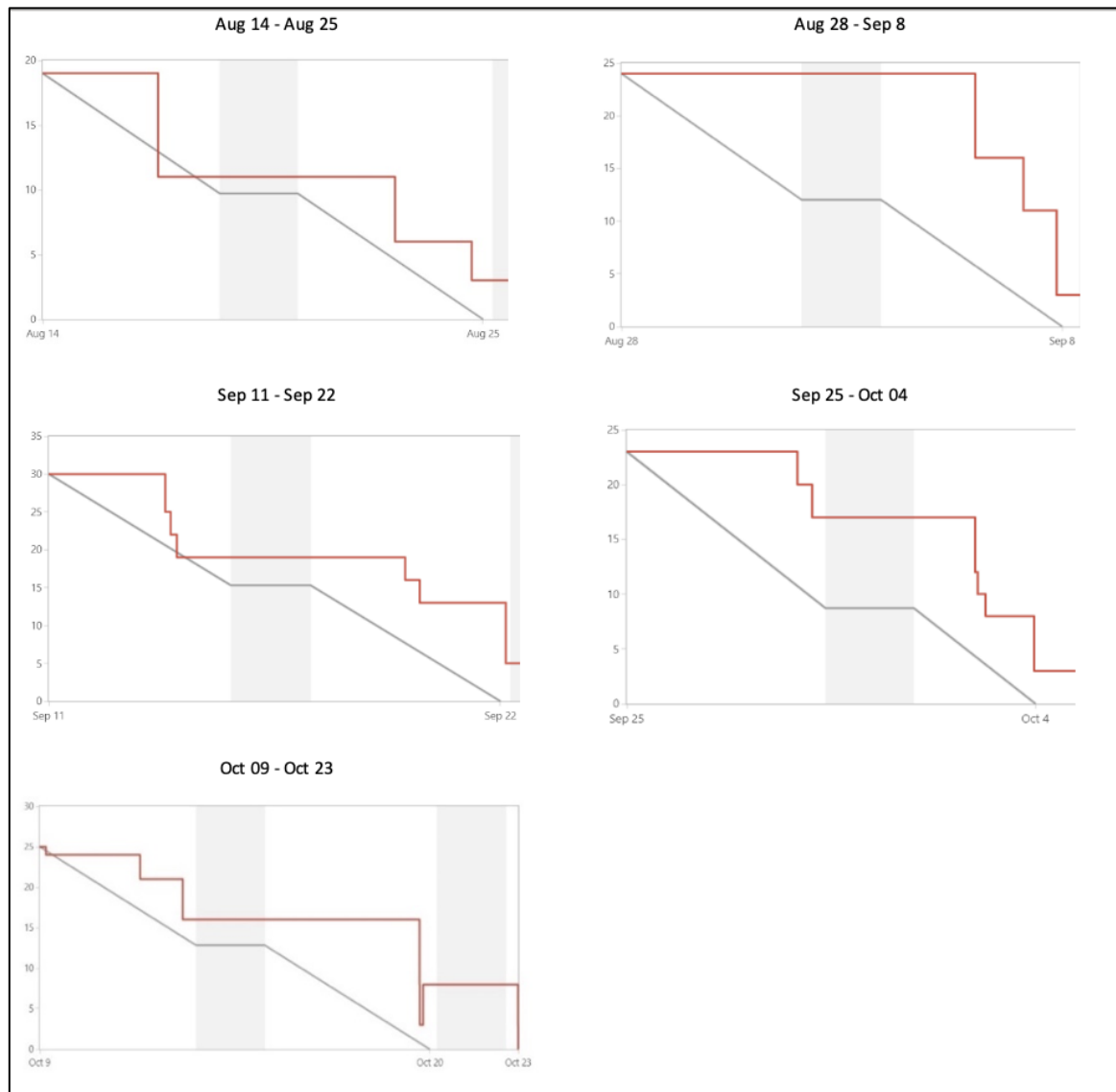

Figure 11. Sprint progress during knowledge management practices implementation

Elaborated by the author

4.3   Status after implementation of all knowledge management practices

During this phase we can verify through the burndown charts that the team subject to this case study was able to deliver the planned work, the activities flow better during the sprints, that is, the red line

that represents the remaining work follow completely the gray line that represents the ideal performance to complete the work until the end of the sprint.
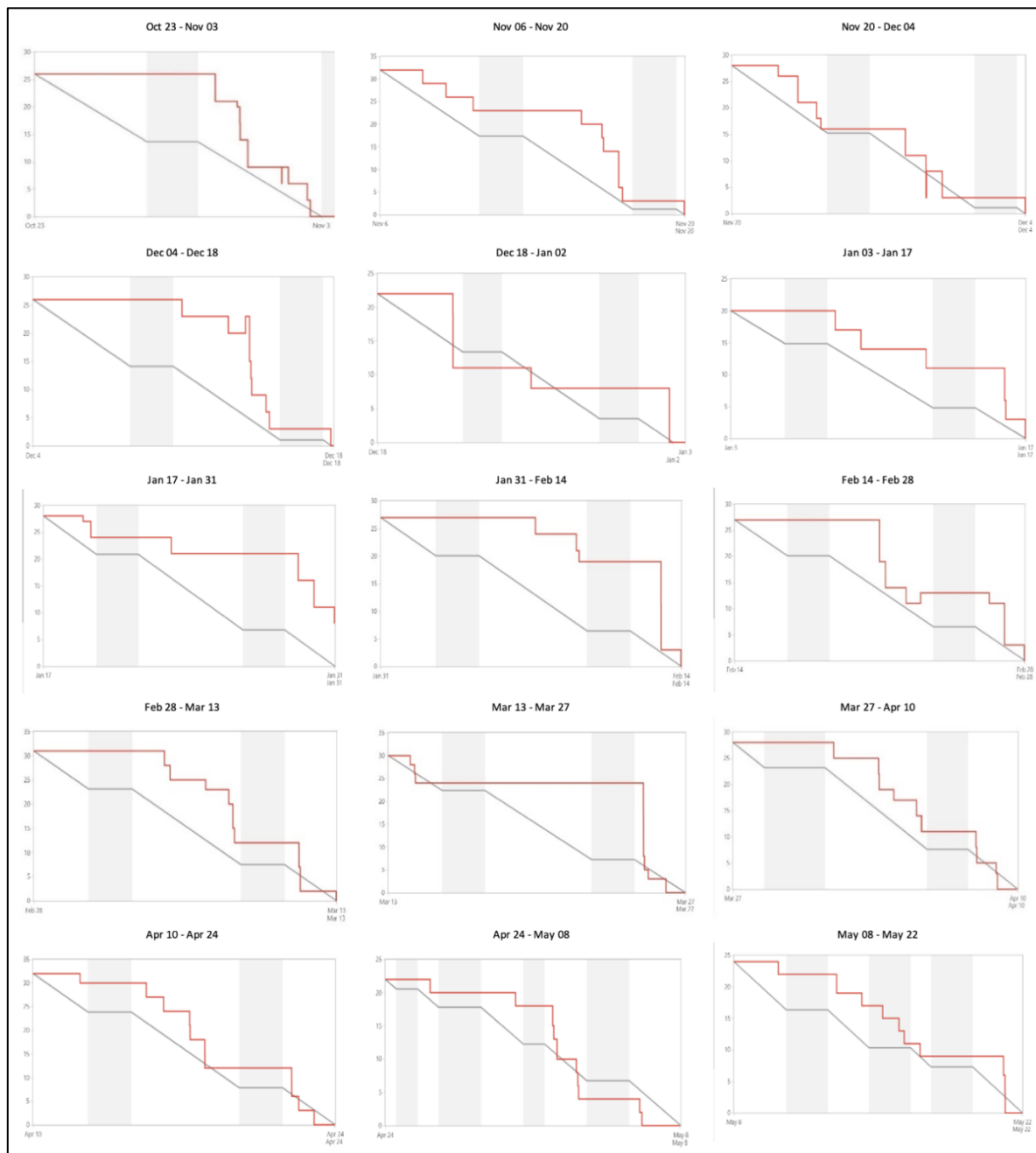

Figure 12. Sprint progress after implementation of all knowledge management practices (May 2022 to November 2023)

Elaborated by the author

This positively influenced organizational agility and organizational performance, as is it possible to see in the table below, with examples of responses obtained from interview transcripts where codes corresponding to positive impact on organizational agility and organizational performance were used.

Table 10. Transcript of Interviews: Impact after knowledge management practices

CODE USED	TRANSCRIPT OF THE RESPONSE
Positive Impact to Innovate	"Since everything is organized, we have more free time. We can dedicate more time on innovation and continuous improvement of the team. That's great!"
Positive Impact of Accepting Changes	"I think we have fewer changes. It is just like some requirements that changed during this Sprint, but I think we are open to these changes because they are smaller and that happens just a few times during many sprints. Therefore, we accept it"
Positive impact on the speed of carrying out the activities	"I think in this method that we are using the checklists and stuff like that, we have less the frequency of stuck time, so we improved a lot"
Positive impact on efficacy (Achieving goals)	"I would say in 90% of the stories that they work, they only do tasks related to development and only in a very few cases we still need to gather information. However, usually we are talking about details. So, for example, in our context, we have a lot of mapping in the fields between protocols and sometimes we still miss one or other field, but usually are concrete questions. We just need to know, ok. I need to map this field. Where should I get it from so specific, specific things that are losing? Therefore, I would say most of the time the team is dedicated to development and that is seen in the results. They are always delivering according to the planning, which means that for us to be this much accurate means that we are working to oppose, to dictated to development, which is perfect"

It was possible to verify that the codes related to the negative impact of organizational agility (negative impact on innovating, negative impact on accepting changes) and negative impact on organizational performance (negative impact on the speed of carrying out activities, negative impact on effectiveness (achieving goals) were less used in relation to the number of encodings.
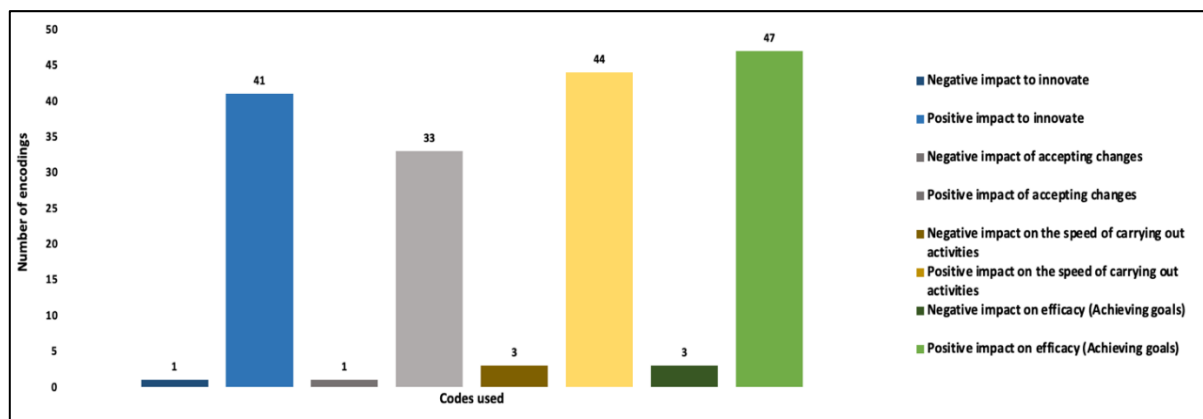
Figure 13. Number of codifications "after" implementing knowledge management practices

Elaborated by the author

On the other hand, it was possible verify that the codes related to the positive impact of organizational agility (positive impact to innovate, positive impact of accepting changes) and positive impact of organizational performance (positive impact on the speed of carrying out activities, positive impact on effectiveness (achieving goals) were more used in relation to the number of encodings, as well as in relation to code coverage (number of characters), indicating that employees mentioned more the positive aspects during the interview.
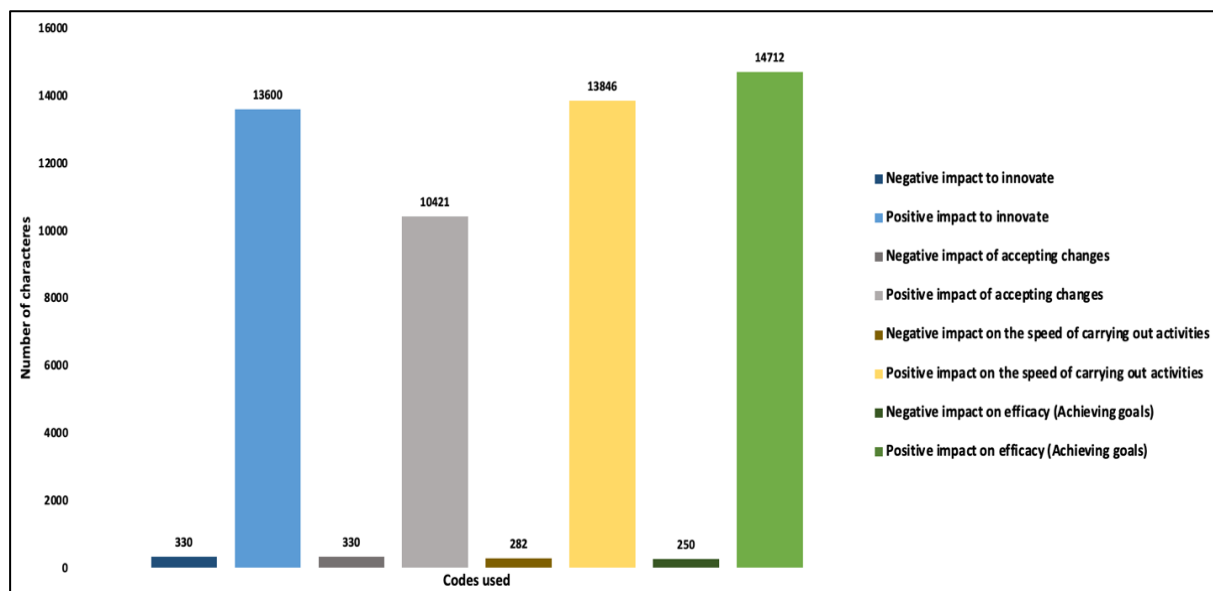

Figure 14. Code coverage, number of characters in coded segments after implementing knowledge management practices

Elaborated by the author

4.4 Comparison between Status before and after the implementation of knowledge management practices.

Directly comparing data from interview transcripts, generated through coding, it is possible to see a large increase in the number of codes related to the positive impact on organizational agility and performance, as well as a sharp decrease in codes related to the negative impact on organizational agility and performance after the implementation of knowledge management practices.
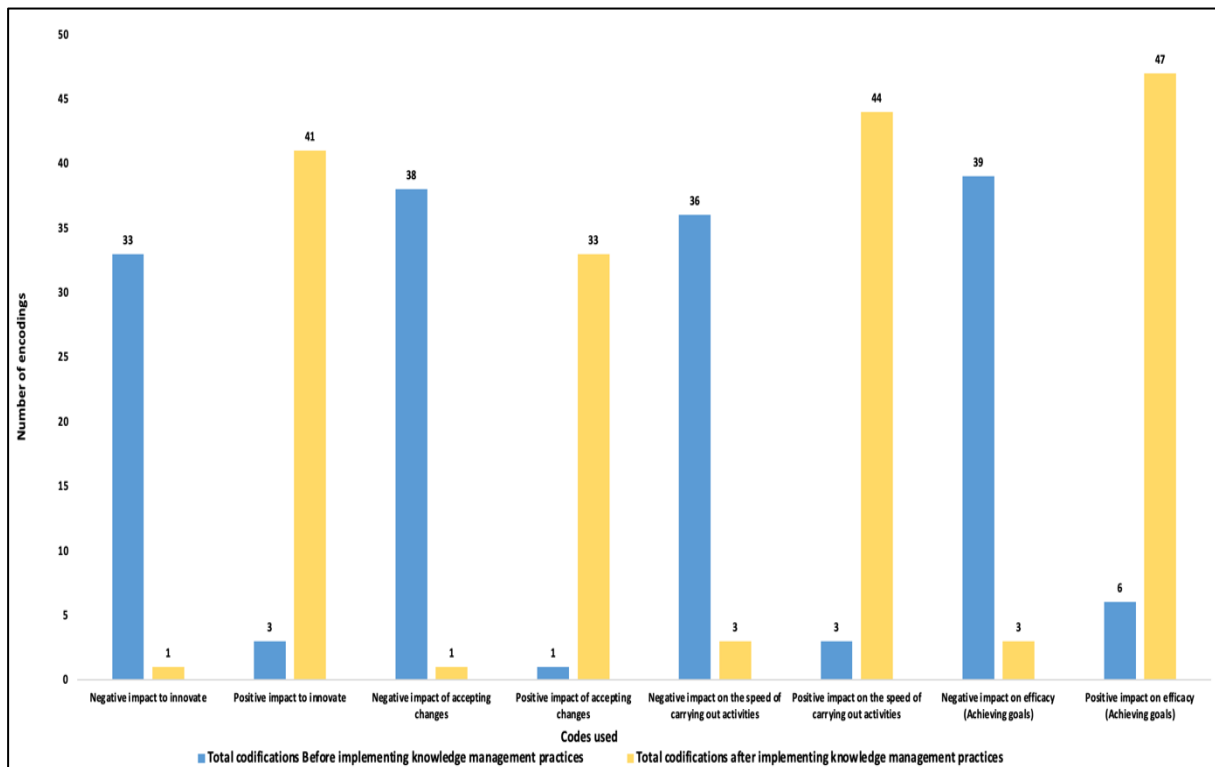

Figure 15. Comparison of the number of codifications before and after the implementation of knowledge management practices

Elaborated by the author

Directly comparing data from interview transcripts, generated through coding, it is possible to see a large increase in the code coverage related to the positive impact on organizational agility and performance, as well as a sharp decrease in coverage related to the negative impact on organizational agility and performance.
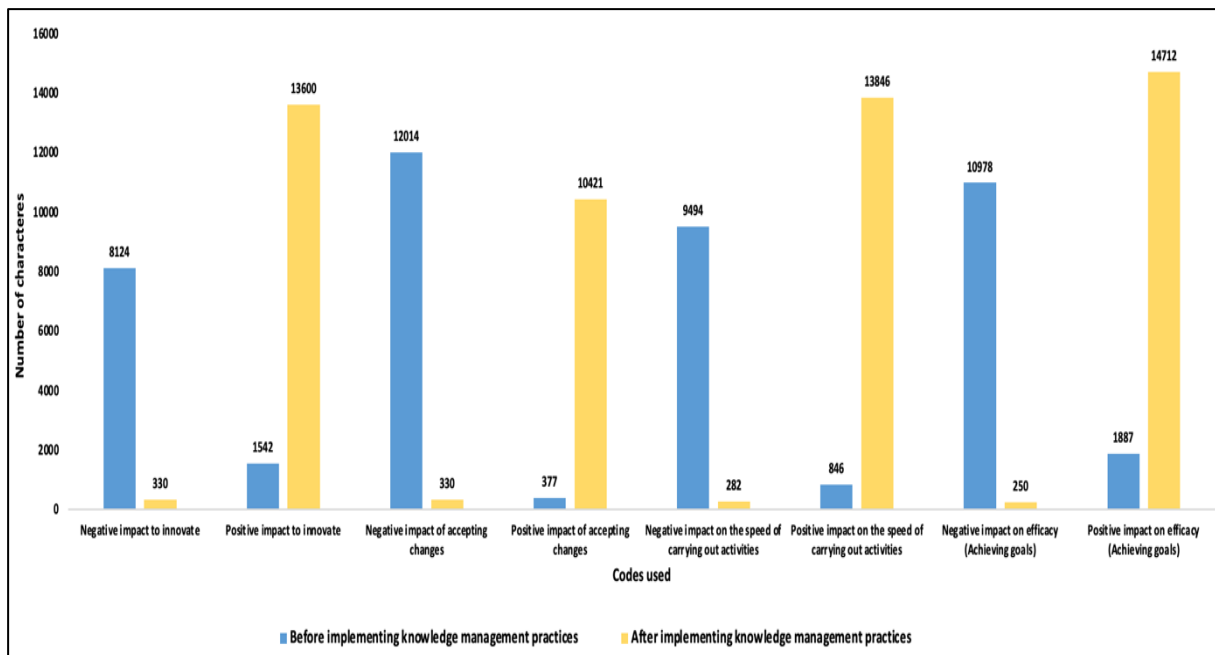
Figure 16. Comparison of code coverage, number of characters in coded segments before and after implementing knowledge management practices

Elaborated by the author

It was possible also observe a great improvement in the team's performance during sprints when we compare the baseline burndown chart in July 2023, with the burndown chart in May 2024 after the implementation of all knowledge management practices, objectively confirming the perceptions of the employees.
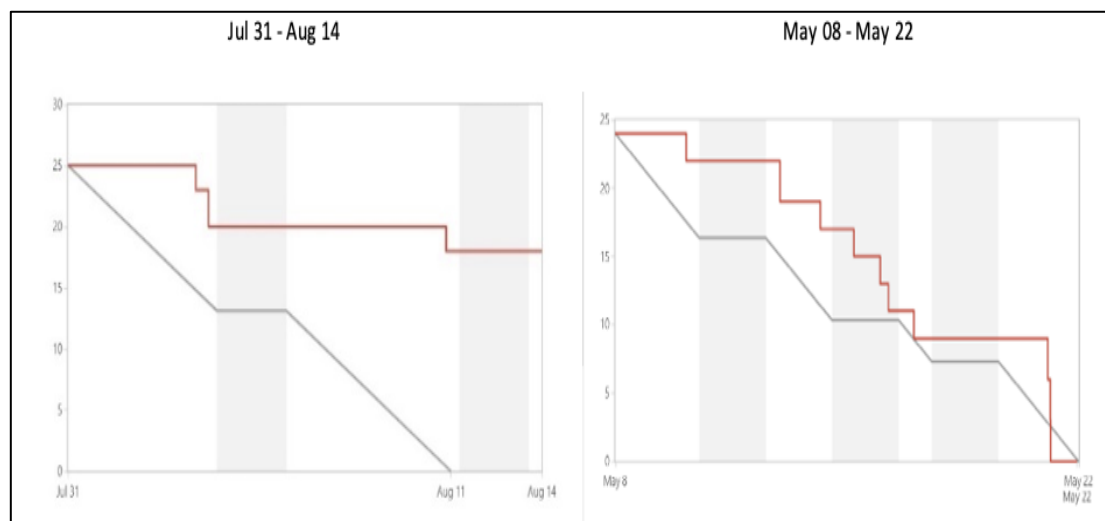

Figure 17. Sprint Comparison between July 2023 (before) and May 2024 (after) the implementation of knowledge management practices

Elaborated by the author

CHAPTER 5

Conclusions

This study aimed to examine the impact of knowledge management on organizational agility and its subsequent effect on organizational performance.

Due to the lack of information or previous research on the topic, the case study approach was used, as it is suitable for exploratory research using a Case Study. To conduct this research, a triangulation approach was employed, using multiple sources of information. These sources included team work progress through the use of a burndown chart, as well as observation and interviews with 10 team members of a multinational technology company, covering the entire team, with the aim of answering the following research question:

RQ1: How does knowledge management influence organizational agility processes, helping to improve organizational performance?

Through interviews with team members involved in this study and sprint performance data, the positive impact of implementing knowledge management practices on organizational agility and organizational performance was confirmed.

These practices allowed them to plan and execute their work efficiently, reducing time wasted on uncertainty and roadblocks about requirements. As a result, they have more time to dedicate to continuous improvement and innovation. They were also able to focus on the critical activities of their work and consequently found it easier to adapt and respond to changes.

In relation to the research objectives, it was verified that the role of knowledge management in organizational agility processes is to provide faster and more accurate responses to changes, as well as reducing information silos. Regarding the impact of knowledge management on organizational performance it was found that knowledge management stimulates and creates opportunities for innovation and improves process efficiency, reducing waste. Finally, it was verified about the impact of organizational agility on organizational performance that performance improves through faster deliveries, reduced waste and greater collaboration between employees.

This study provides additional empirical evidence to existing information on knowledge management and its significant beneficial impact on organizational agility and overall organizational performance. This was corroborated through team performance statistics on sprint delivery, team member contributions, and quantitative and qualitative analysis of interview transcripts with these members.

Regarding limitations, this research was conducted in a single organization, and it is not possible to extrapolate the results to other organizations, especially since there may be influence from other

factors such as culture or organizational diversity. Another limitation is the lack of literature and empirical studies that relate the influence of knowledge management on organizational agility and performance, as well as the fact that companies place a high value on financial results, and it is difficult to account for this type of impact.

In any case, since the research is exploratory, it can serve as a starting point for more in-depth research conducted in other similar organizations and even in organizations from other sectors whose performance is different.

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Appendix

Appendix A: User story Template

Description

Narrative / Context

A story is a brief description of a feature that you want to implement:

As a < Who > *Who (user) will use the functionality to be implemented.*

I Want to < What > *What the user wants it done.*

So that < Why > Why it needs to be done.

If the story was originated from, a SPIKE made before or a consequence of another story developed before, a link to the original story of the SPIKE must figure in this area.

Service

Mention the service that will be involved in the development

Scope

Describe all the scope that must be considered inside the development of the story, all the important information, the flows, the dependencies, and preconditions that must be described to minimize the blocking of the story or developing a story with errors that only be found in the future.

Out of scope

Describe any information that will not be considered while the development of the story.

Technical Notes

Here we should list any consideration useful for the developer that will take this story

Acceptance Criteria

Using the Gherkin language, we should add all the acceptance criteria that must be met to consider the story finished in the development and deliver it to be tested and verified.

AC01: Title of the first acceptance criteria

- **GIVEN** the user
- **WHEN** the condition
    - o **AND** more conditions that need to be met
    - o **AND** one more condition
    - o **AND** one more condition
    - o **AND** final condition that needs to be met
- **THEN** the expected result

o   The description of the test result

AC02: Title of the second acceptance criteria

- **GIVEN** the user
- **WHEN** the condition
    - o **AND** more conditions that need to be met
- **THEN** the expected result
    - o The description of the test result

Template created by the team that is the subject of the case study of this dissertation adapted from: Cohn, M., & Beck, K. (2011).

AppendiX B: Bug Template

Title

Identify with a simple and clear text the title of the bug that was found. A clear title helps to identify easier and faster the possible problem.

Description / Summary

In addition to a clear title, add an easy-to-understand description of the bug.

Service(s) & Version(s) under test

Identify the service and the specific version that was under test.

Environment & Configurations used under test

Include any environment details (such as browser, operating system, URL, software version, configurations, etc.), so anyone reviewing the bug can easily glean the environmental factors, and so development can replicate the bug and fix it.

Workflow / Steps to reproduce

Include the exact steps that lead to reproduce the bug occurrence. Describe the workflow that was used and add all the detail possible, like the data used, to identify the flow in the code and detect easier the possible problem.

Expected Results

Describe the expected results in the execution of the tests.

Actual Result & Error messages

Describe the actual result and the error message obtained during the test session.

Attachments

Add a screenshot of the bug, if applicable. That way, whatever the software malfunction, the issue will be clear to anyone reviewing the report.

When POSSIBLE, attach a log file to help anyone that will investigate the problem identify, all the needed information.

Template created by the team that is the subject of the case study of this dissertation.

Appendix C: Spike Template

We believe that…
It is important that we state our most critical assumptions, rather than letting them hide beneath the surface.
There are many assumptions you can test, and we want to focus on those that are crucial to the model.

To verify that, we will…
Now things get real.
How will you prove that this assumption is true?
We want to design a demonstration, proving our intuition to our team (and ourselves).

And measure…
Most people want to run the test but only go by gut feel, "vibing it out".
Measurement is essential; it helps us separate a good response from a great response.
We also want to ensure that we measure the most crucial indicators.

We are right if…
Our natural temptation is to "shoot the arrow and paint the target around it".
This is unhelpful, as it may justify a answer that is not the best possible, or let us retroactively claim that our earlier targets were unrealistically high.
For these reasons, it is worth setting the pass/fail criteria in advance, then sticking to your guns.

Test Card

Testing critical hypotheses: Testing hypotheses is important to carry out investigations and assertive proof of concepts that generate knowledge and provide value. Test Card takes your guesses and turns them into verifiable assumptions.

Step 1 hypotheses: Describe the hypotheses that you want to test.

Step 2 Test: Outline the experiment you are going to design to verify if the hypothesis is correct or needs to be rejected and revised.

Step 3 Metric: Define what data you are going to measure.

Step 4 Criteria: Define a target threshold to validate or invalidate the tested hypothesis.

We believe that…
It is important that we state our most critical assumptions, rather than letting them hide beneath the surface.
There are many assumptions you can test, and we want to focus on those that are crucial to the model.

To verify that, we will…
Now things get real.
How will you prove that this assumption is true?
We want to design a demonstration, proving our intuition to our team (and ourselves).

And measure…
Most people want to run the test but only go by gut feel, "vibing it out".
Measurement is essential; it helps us separate a good response from a great response.
We also want to ensure that we measure the most crucial indicators.

We are right if…
Our natural temptation is to "shoot the arrow and paint the target around it".
This is unhelpful, as it may justify an answer that is not the best possible, or let us retroactively claim that our earlier targets were unrealistically high.
For these reasons, it is worth setting the pass/fail criteria in advance, then sticking to your guns.

This template was obtained from: https://www.strategyzer.com/library/validate-your-ideas-with-the-test-card

Appendix D: DOR - Definition of Read Template

✓ The ticket needs to be able to be implemented in a sprint.
✓ External connections should be online and ready to be tested.
✓ All needed specs provided.
✓ Dependencies from other teams should be solved before we pick up our ticket.
✓ The acceptance criteria should be present.
✓ There should be no more than one request per ticket.
✓ The key functionalities to be supported are defined.
✓ Have the workday's project defined in the ticket.
✓ The ticket description must be clear and as explicit as possible.
✓ When it is a bug, test evidence of the bug should be provided along with what is expected.
✓ Defined fixed delivery date (If applicable)

This checklist was created by the team that is the subject of the case study of this dissertation based on the "INVEST criteria".

I (Independent). The PBI should be self-contained and it should be possible to bring it into progress without a dependency upon another PBI or an external resource.

N (Negotiable). A good PBI should leave room for discussion regarding its optimal implementation.

V (Valuable). The value a PBI delivers to stakeholders should be clear.

E (Estimable). A PBI must have a size relative to other PBIs.

S (Small). PBIs should be small enough to estimate with reasonable accuracy and to plan into a time-box such as a Sprint.

T (Testable). Each PBI should have clear acceptance criteria, which allow its satisfaction to be tested.

Appendix E: Interview Guide

Name: Bruno Alves de Sousa
Course/University: Master (MSc) in Computer Science and Business Management/ ISCTE School of Technologies and Architecture

Dissertation title: **"Understanding the Knowledge Management Impact in Organizational agility Processes and In the Organizational Performance"**

Notice
This interview is aimed at participants who work in a technology company with a multicultural and interdisciplinary environment. All interviewees are members of software development teams. Your participation is voluntary. Your answer is based on personal beliefs and will be used for this research only. The information obtained will be treated anonymously, and in accordance with General Data Protection rules. The interview is carried out via video call (recorded), via Zoom, depending on the interviewee's ability.
«
The interview will take approximately 30 to 45 minutes.

Introduction

The aim of this dissertation is to understand whether knowledge management influences Organizational agility processes and consequently contributes to a better organizational performance.
Knowledge is a combination of contextual information, contextualized experience, expert experience, and value that leads to innovation and pristine experience. Knowledge Management has evolved from an emerging concept to an increasingly prevalent function in business organizations over the past two decades. Firms utilizing knowledge management processes implement mechanisms for the creation, transmission, and implementation of knowledge, become agile, innovative and entrepreneurial, and withal develop new capabilities improving organizational performance. Organizational performance refers to the capability associated with the achievement of its objectives, stakeholders' expectations, and market viability. Organizational agility is the capacity of a business to recognize and respond to market fluctuations and enables businesses to appraise market data in a timely and appropriate manner when making product development decisions.

Your practical experience with knowledge management, organizational performance and organizational agility, shared during this interview, is extremely important to make this possible.

1. **Question:** What is your opinion on stay stuck during the sprints with doubts about requirements before the implementation of backlog refinement sessions, definition of ready checklist and Templates for writing Stories, bugs and Spikes?

2. **Question**: What is your opinion about the time dedicated to development during the sprints before the implementation of backlog refinement sessions, definition of ready checklist and Templates for writing Stories, bugs and Spikes?

3. **Question**: What is your opinion on accepting changes during the sprints before the implementation of backlog refinement sessions, definition of ready checklist and Templates for writing Stories, bugs and Spikes?

4. **Question:** What is your opinion on the total time needed to implement requirements during the sprints before the implementation of backlog refinement sessions, definition of ready checklist and Templates for writing Stories, bugs and Spikes?

5. **Question:** What is your opinion on the time dedicated to innovation during the sprints before the implementation of backlog refinement sessions, definition of ready checklist and Templates for writing Stories, bugs and Spikes?

6. **Question:** What is your opinion on the time dedicated to continuous improvement during the sprints before the implementation of backlog refinement sessions, definition of ready checklist and Templates for writing Stories, bugs and Spikes?

7. **Question:** After the implementation of backlog refinement sessions, definition of ready checklist and Templates for writing Stories, bugs and Spikes, what is your opinion on stay stuck during the sprint?

8. **Question**: After the implementation of backlog refinement sessions, definition of ready checklist and Templates for writing Stories, bugs and Spikes, what is your opinion about the time dedicated to development during the sprints?

9. **Question**: After the implementation of backlog refinement sessions, definition of ready checklist and Templates for writing Stories, bugs and Spikes, what is your opinion on accepting changes during the sprint?

10. **Question:** After the implementation of backlog refinement sessions, definition of ready checklist and Templates for writing Stories, bugs and Spikes, what is your opinion on the total time needed to implement requirements during the sprint?

11. **Question:** After the implementation of backlog refinement sessions, definition of ready checklist and Templates for writing Stories, bugs and Spikes, what is your opinion on the time dedicated to innovation during the sprints?

12. **Question:** After the implementation of backlog refinement sessions, definition of ready checklist and Templates for writing Stories, bugs and Spikes, what is your opinion on the time dedicated to continuous improvement during the sprints?