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UTILIZATION OF KNOWLEDGE AND INFORMATION MANAGEMENT STRATEGIES IN SMES

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ABSTRACT

Elie Leikas: Utilization of Knowledge and Information Management Strategies in SMEs
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This thesis investigates the application of knowledge management frameworks in small and medium-sized enterprises (SMEs), analysing their impact on organizational efficiency and innovation. Three frameworks are examined: the Innovation Driven Knowledge Management Framework (I-KMF), the Management of Knowledge Resources framework, and the Entrepreneurial Innovation Process Model. Through a literature review the efficiency of these frameworks are inspected by looking at their functionality in real-life contexts via the lens of five SMEs. The research finds that despite their differences, all five SMEs stress strategic planning, successful implementation, and continuous improvement in knowledge management. This research offers awareness on how SMEs use specific knowledge management frameworks to drive innovation and enhance organizational performance by acquiring and sharing knowledge successfully. The three analysed frameworks help SMEs identify and address organizational weaknesses or inefficiencies. By investigating these areas of improvement, SMEs are better able to implement targeted strategies to improve their operations. These involve streamlining processes, improving communication channels, or investing in employee training and development. By aligning knowledge management efforts with their overarching business goals, the five analysed SMEs ensure that their initiatives contribute directly to organizational success. This strategic approach allows the SMEs to prioritize initiatives that have the greatest impact on organizational performance. This thesis contributes to filling a gap in existing literature by providing new perspectives that can be applied to organizations with comparable characteristics and SMEs looking to enhance their knowledge and information management practices.

Keywords: knowledge management, framework, SMEs, strategy, innovation

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TIIVISTELMÄ

Elie Leikas: Tietojohdamisen ja tiedolla johtamisen hyödyntäminen PK-yrityksissä
Kandidaatintutkielma
Tampereen yliopisto
Tietojohdaminen
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Tämä tutkielma tutkii tietojohdamisen ja tiedolla johtamisen viitekehysten soveltamista pienissä ja keskisuurissa yrityksissä (PK-yritykset), analysoiden niiden vaikutusta organisaation tehokkuuteen ja innovaatioon. Kolme tarkasteltua viitekehystä ovat innovaatiopainotettu tietämyksenhallinnan viitekehys, tietoresurssien hallinnan viitekehys ja yrittäjähenkkinen innovaatioprosessimalli. Viitekehysten tehokkuutta tarkastellaan kirjallisuuskatsauksen kautta ja niiden toiminnallisuutta viiden PK-yrityksen konteksteissa. Tutkimus osoittaa, että huolimatta eroistaan, kaikki viisi PK-yritystä painottavat strategista suunnittelua, onnistunutta toteutusta ja jatkuvaa parantamista tietämyksenhallinnassa. Tämä tutkimus tarjoaa tietoisuutta siitä, kuinka PK-yritykset käyttävät tiettyjä tietojohdamisen ja tiedolla johtamisen viitekehysiä edistääkseen innovaatioita ja parantaakseen organisaation suorituskykyä hankkimalla ja jakamalla tietoa onnistuneesti. Kolme analysoitua viitekehystä auttavat PK-yrityksiä tunnistamaan ja käsittelemään organisaation heikkouksia tai tehostumuuksia. Tutkimalla näitä parannusalueita PK-yritykset pystyvät paremmin toteuttamaan kohdennettuja strategioita toimintojensa parantamiseksi. Nämä strategiat voivat sisältää prosessien tehostamista, viestintätapojen parantamista tai investointeja työntekijöiden koulutukseen. Yhdenmukaistamalla tietojohdamisen ja tiedolla johtamisen strategiat yleisten liiketoimintavoitteidensa kanssa, viisi analysoitua PK-yritystä varmistavat, että heidän toimintansa on määrätietoista ja suunnitelmanmukaista. Tämä strateginen lähestymistapa mahdollistaa PK-yritysten priorisoida prosesseja, joilla on suurin vaikutus organisaation suorituskykyyn. Tämä tutkielma auttaa täyttämään aukon nykyisessä kirjallisuudessa tarjoamalla uusia näkökulmia, joita voidaan soveltaa samankaltaisille organisaatioille ja PK-yrityksille, jotka haluavat parantaa tietämyksen ja informaation hallintakäytäntöjään.

Avainsanat: tietojohdaminen, tiedolla johtaminen, viitekehys, PK-yritykset, strategia, innovaatio

Tämän julkaisun alkuperäisyys on tarkastettu Turnitin Originality Check -ohjelmalla.

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1. INTRODUCTION

In today's quickly changing business environment, organizations are under increasing pressure to efficiently use their knowledge and information resources to spur innovation and uphold competitiveness. Organizational success is heavily dependent on knowledge management, which as a term, describes how well-equipped companies are to use their information. This thesis will examine how businesses can efficiently gather, arrange, and disseminate knowledge within their knowledge management frameworks. The complex interrelationships between information management, knowledge management, and strategic decision-making in businesses will be examined and the conducted research seeks to clarify how businesses can use or how businesses are using their knowledge and information assets to create successful strategies and adjust to shifting circumstances.

1.1 Topic Analysis

It is crucial for firms looking to enhance their decision-making procedures, optimize their operations, and promote an innovative culture to comprehend the subtleties of knowledge and information management. Knowledge management is the explicit and systematic management of vital knowledge (López-Nicolás & Meroño-Cerdán 2011), which essentially means that knowledge is harnessed and used in better decision-making. Information management, also known as information governance, is defined as the process of creating, acquiring, storing, sharing, and applying information (O'Brien & Marakas 2017). Information management aims to make processes more efficient and rational and ensure that an organization can continuously use new knowledge in its operations (Earl 1996). The two concepts share similarities and often are interchangeable, and for this reason, both concepts will be used and utilized. While these concepts share similarities, this thesis acknowledges a notable difference between them: knowledge management's focus on tacit knowledge. Tacit knowledge, obtained through implicit channels of communication, is often untransferable due to its nature (Connell et al., 2003), contrasting with the more easily transferable explicit information handled in information management (Hau et al., 2013).

Effective knowledge management requires a large amount of precise strategic decision-making, making strategy an important concept in this research. Strategy is defined by

the Cambridge Dictionary as “a detailed plan for achieving success in situations such as war, politics, business, industry, or sport, or the skill of planning for such situations”. Strategic knowledge management refers to the processes and infrastructures firms employ to acquire, create, and share knowledge for formulating strategy and making strategic decisions (Zack 2002). Knowledge management strategies are based on theoretical and empirical studies which are then related to each other in the light of what is called a strategic intervention into an organization's way of handling knowledge (Maier et. al. 2002).

Knowledge management, information management, and strategic decision-making are built upon frameworks that ensure their seamless integration into organizational procedures and enable their efficient execution. Choo (1995) defines knowledge management as a series of processes facilitating organizational learning. The information management cycle model (Rowley 1998) and the knowledge management process model (Burke 2018) illustrate interconnected activities aimed at adapting to create new knowledge within an organization. These activities involve understanding information needs, acquiring and organizing information, and utilizing it to develop products and services (Choo 1995; Sensuse et al. 2014). Choo's (2002) process model of information management begins with identifying information needs and progresses through utilization to drive organizational changes. This cycle entails challenges, such as recognizing information needs and acquiring pertinent information from various sources (Choo 2002).

The framework of the knowledge management model provides invaluable support for organizations in navigating organizational and technical complexities, such as managing large datasets (Rowley 1998). It establishes a structured approach to information management, serving as a strategic asset for organizations (Burke 2018). Data governance (information management within a company), as highlighted by Sensuse et al. (2014), outlines decision-making rights and responsibilities regarding data, along with specifying policies, standards, and procedures to ensure compliance. Shongwe (2015) further emphasizes key decision areas within information management frameworks including data principles, quality, metadata, access, and lifecycle. Various frameworks exist for knowledge management models, each employing different terminology and principles (Shongwe 2015). While the scope may vary based on the number of principles they incorporate, the content of principles and decision areas remains largely consistent across different frameworks encompassing aspects like data transparency, and the appointment of data controllers (Burke, 2018).

1.2 Topic Delimitation to SMEs

Understanding how small and mid-sized enterprises (SMEs) handle knowledge and information creates an important bank of facts for larger companies looking to implement more agile methods as well as SMEs themselves expanding their comprehension of specific business needs. SMEs are businesses that have under 250 employees and record a revenue under 250 million euros (European Union 2024). SMEs are known for their smaller size which allows SMEs to be more responsive and flexible in their operations compared to larger corporations. Additionally, SMEs often face resource constraints and intense competition, making efficient knowledge and information management crucial for their success. The reason why the thesis focuses specifically on SMEs is because these businesses possess distinct characteristics, like their size and agile nature, that make them particularly suitable for the application of knowledge and information management strategies. Though SMEs receive relatively little attention, there is a lot of research on knowledge and information management in large enterprises. This gap in the literature offers a chance to conduct fresh research and provide new information and perspectives that will directly assist SMEs. This thesis strives to fill this gap and meet a specific need in the academic and business communities by offering a perspective on SMEs looking to enhance their knowledge and information management practices. At the same time, the thesis aims to provide insights that can be applied to organizations with comparable characteristics.

In the modern digital landscape, SMEs face increasing pressure to efficiently manage their data. It is essential for SMEs to adopt information governance models to ensure compliance with regulations like the General Data Protection Regulation (GDPR), despite potential resistance from executive management (Levy & Powell 2004). For SMEs, the ideal information management framework should be user-friendly, cost-effective, and aligned with their organizational structure (Levy & Powell 2004). Usability is critical because decisions about technology solutions are typically made by a small group within SMEs (Levy & Powell 2004). Complex data management models risk rejection, while low implementation and training costs are crucial for rapid innovation adoption (Fink & Ploder 2009).

Discussions on knowledge management in SMEs often revolve around its pivotal role in decision-making processes (Wong & Aspinwall 2004; Alawneh et al. 2009). Embracing knowledge management allows SMEs to prioritize innovation, creativity, and efficiency in decision-making, thereby enhancing organizational agility (Wong & Aspinwall 2004; Alawneh et al. 2009). Effective knowledge management enables decision-makers to separate relevant information from irrelevant ones, leading to improved decision quality,

which is crucial in SMEs where adaptability to changes and seizing emerging opportunities are key to success (Wong & Aspinwall 2004; Alawneh et al. 2009). Access to accurate and timely information empowers decision-makers to make informed choices, elevating overall decision-making quality and contributing to organizational success. By implementing knowledge management into organizational practices, SMEs can effectively pinpoint areas for improvement, enabling an in-depth evaluation of related benefits and costs (Wong & Aspinwall 2004; Kraaijenbrink et al. 2006; Alawneh et al. 2009). This enables the allocation of limited resources towards the most productive avenues of development. Furthermore, such systems provide real-time access to information on service productivity and effectiveness, empowering SMEs to make prompt, cost-effective adjustments.

The thesis is organized to first explain the process of research conduction by establishing the research questions that guide the investigation. The paper will then explain the qualitative methodology employed to answer the research questions after which theoretical background will aid understanding on what three specific knowledge management frameworks look like within five chosen SMEs. The literature review will elaborate on three different knowledge management frameworks that will then be examined in the analysis section by analyzing their applicability in five real-life SMEs. Lastly, a presentation of the findings and conclusions pertaining to the implications for theory and practice in knowledge and information management will be made.

2. RESEARCH METHODOLOGY

This paper's main research question is "How can organizations effectively capture, organize, and share knowledge within their information management frameworks using knowledge management strategies?". The sub-research question this paper will aim to investigate is "What are the main significant knowledge management frameworks related to this research?". The questions will be analyzed on the count of positives and negatives and investigated further upon possible discoveries.

The research methodology used in this study is a literature review, which examines, contrasts, and theorizes different studies on companies that utilize different knowledge management frameworks (KMFs). The literature review was carried out by means of systematic searches in databases, like Google Scholar and Andor, and pertinent academic journals. Relevant papers and studies were found by using keywords and phrases associated with SMEs, qualitative research methods, and knowledge management frameworks. Table 1. shows relevant results based on the search string. As the table shows, the two used databases gave differing results. The search results were delimited further in the case of Google Scholar by year of publication and web availability to narrow down the search results to more comprehensible amount.

Table 1: Literature search for research.

Search String	Google Scholar	Andor
"Knowledge Management Framework" AND "Strategy" AND "SME" AND "Journal of Knowledge Management"	366 matches	0 matches
"Knowledge Management" AND "Framework" AND "Strategy" AND "SME"	54 600 matches	123 matches

Three KMFs and five SMEs were chosen to be examined in this thesis. Five different studies of SMEs that utilize the three specific knowledge management frameworks make up the data collected for this study. The specific SMEs were chosen thus data gathered

on them because they represented a variety of industries and geographical areas and were appropriate to the study subject. The SMEs and knowledge management frameworks were qualitatively analyzed using thematic analysis to find recurrent themes and patterns. Furthermore, data was compared both inside and between cases using continuous comparison, which improved the validity and dependability of the analysis. The fact that each SME employs the chosen frameworks differently provides a comprehensive understanding of the use of knowledge management frameworks.

Qualitative research emphasizes using individuals as instruments for knowledge acquisition and employs methods such as thematic interviews, group interviews, and participant observation to allow subjects' ideas and perspectives to emerge (Zannier & Maurer 2005). Qualitative research is increasingly used to assess the impact of a technology, for example on a company's information systems. Qualitative research seeks to understand issues by examining people's perspectives in the context in which they operate. This is why qualitative research is conducted in a contextual setting and data is collected in verbal form rather than numerical (Bettis & Gambardella 2015). Qualitative research is particularly relevant when previous understandings of the phenomenon under study have been modest. This may be because the research problem has been constrained by structured designs, which may leave interpretations modest. Qualitative research is flexible, which makes it well suited for examining unstructured problems (Bettis & Gambardella 2015).

Qualitative research methodology is suitable for this study because it seeks to better understand the phenomenon under investigation from the perspective of SMEs. By triangulating findings from multiple case studies, this research plan aims to find evidence regarding the role and effectiveness of knowledge management frameworks in enhancing the efficiency and performance of SMEs.

3. THEORETICAL FRAMEWORK

The following section will explain and analyse common frameworks related to knowledge and information management. As stated earlier, many of the frameworks and terminology share similarities, but it's essential to distinguish the most obvious differences to further understand the topic. Additionally, this section of the study will evaluate and question, how knowledge and information frameworks are implemented in the landscape of SMEs.

3.1 Knowledge and Information management frameworks

The framework of information management cycle model provides invaluable support for organizations in navigating organizational and technical complexities, such as managing large datasets (Rowley 1998). It establishes a structured approach to information management, serving as a strategic asset for organizations (Burke 2018). Data governance (information management within a company), as highlighted by Sensuse et al. (2014), outlines decision-making rights and responsibilities regarding data, along with specifying policies, standards, and procedures to ensure compliance. Shongwe (2015) further emphasizes key decision areas within information management frameworks including data principles, quality, metadata, access, and lifecycle. Various frameworks exist for knowledge management models, each employing different terminology and principles (Shongwe 2015). While the scope may vary based on the number of principles they encompass, the content of principles and decision areas remains largely consistent across different frameworks encompassing aspects like data transparency and the appointment of data controllers (Burke 2018).

Choo (1995) defines knowledge management as a series of processes facilitating organizational learning. The information management cycle model (Rowley 1998) and the knowledge management process model (Burke 2018) illustrate interconnected activities aimed at adapting to create new knowledge within an organization. These activities involve understanding information needs, acquiring and organizing information, and utilizing it to develop products and services (Choo 1995; Sensuse et al. 2014). Choo's (2002) process model of information management begins with identifying information needs and progresses through utilization to drive organizational changes. This cycle entails challenges, such as recognizing information needs and acquiring pertinent information from various sources (Choo 2002).

The information management process involves several key phases, beginning with identifying information needs. This phase, as described by Choo (2002), entails recognizing the gap between existing knowledge and the knowledge essential for task execution or decision-making. Once information needs are identified, the next step is acquiring information. According to both Rowley (1998) and Sensuse et al. (2014), this involves monitoring a broad array of information sources, prioritizing critical sources, and evaluating the relevance of information obtained. Subsequently, storing and organizing information becomes crucial, encompassing activities such as describing the content within information systems, structuring information, and ensuring its accessibility for future use.

With information acquired and organized, the focus shifts to developing information products and services tailored to diverse user needs, leveraging the available knowledge assets effectively (Rowley 1998). Once developed, disseminating knowledge becomes imperative, involving the distribution of information through various channels while considering practical suitability in distribution strategies (Sensuse et al. 2014). Exploiting knowledge follows, wherein information is interpreted and applied in social contexts to generate new insights and understanding for practical implementation (Sensuse et al. 2014). Lastly, adapting activities to identify new knowledge needs completes the cycle, requiring adjustments based on decisions informed by existing knowledge and generating new information in response to changes in the operational environment (Rowley 1998). Through these interconnected phases, organizations can effectively manage their information resources to drive operational efficiency and achieve their strategic objectives.

3.2 Information management in SMEs

Information serves as a cornerstone in organizational processes, facilitating problem-solving, decision-making, and knowledge creation, as emphasized by Wong and Aspinwall (2004). Their research underscores the pivotal role of timely and usable information in enabling decision-makers to adapt to environmental changes and adjust behavior accordingly. However, despite its significance, effective information management often eludes many organizations. Wong and Aspinwall (2004) highlight the prevalent issue of haphazard and disorganized approaches to information management, which lack systematic organization and clear responsibility delineation. Decentralized approach poses challenges for consistent information utilization within organizations. Consequently, there is a pressing need for deliberate and systematic information management strategies to enhance organizational effectiveness and responsiveness to dynamic environments (Wong & Aspinwall 2004). A well-structured information management framework

supports strategic planning, intergovernmental communication, and day-to-day operational management within SMEs (Olutoyin & Flowerday 2016).

SMEs confront mounting pressure nowadays to manage their data effectively. Adoption of information governance models becomes imperative to ensure compliance with regulations such as GDPR, notwithstanding potential resistance from some companies (Levy & Powell 2004). For SMEs, the ideal information management framework should be straightforward, cost-effective, and aligned with their organizational structure (Levy & Powell 2004). Usability emerges as a critical factor, given that decisions regarding technological solutions are typically made by a small group. Complex data management models risk rejection, while low implementation and training costs are pivotal for swift adoption of innovation (Fink & Ploder 2009). By adopting knowledge management systems and practices, SMEs can effectively identify areas requiring improvement, enabling a thorough evaluation of associated benefits and costs (Wong & Aspinwall 2004; Kraaijenbrink et al. 2006; Alawneh et al. 2009). This facilitates the allocation of limited resources towards the most productive avenues of development. Moreover, such systems enable real-time access to information on service productivity and effectiveness, empowering SMEs to make prompt, cost-effective adjustments.

In the context of SMEs, discussions on knowledge management often center around its pivotal role in decision-making processes (Wong & Aspinwall 2004; Alawneh et al. 2009). Embracing knowledge management enables SMEs to prioritize innovation and creativity alongside efficiency in decision-making, thereby enhancing organizational agility (Wong & Aspinwall 2004; Alawneh et al. 2009). By effectively managing knowledge, decision-makers can distinguish relevant information from irrelevant ones, leading to improved decision quality (Wong & Aspinwall 2004; Alawneh et al. 2009). This becomes particularly crucial in SMEs, where the ability to observe changes in the operational landscape and capitalize on emerging opportunities is paramount for success (Wong & Aspinwall 2004; Alawneh et al. 2009). Access to accurate and timely information empowers decision-makers to make informed choices, thereby elevating the overall quality of decision-making processes (Wong & Aspinwall 2004; Alawneh et al. 2009). Moreover, knowledge management fosters professional development, community cohesion, and facilitates networking and collaboration among employees, contributing to organizational success as leveraging information holds the potential to significantly enhance the performance of organizations creating an environment conducive to knowledge sharing and collaboration allows organizations to harness individuals' expertise for collective benefit, leading to productivity and quality gains (Flowerday & Olutoyin 2016).

Despite their considerable potential, SMEs often underutilize these advanced solutions, as highlighted by Fink and Ploder (2009). Thus, effectively managing technology investments poses a challenge for small businesses, often due to a lack of long-term strategic planning, as illustrated by Fink and Ploder (2009). This tendency leads to a focus on immediate needs rather than considering future requirements, resulting in resource shortages and the overlapping use of multiple systems (Flowerday & Olutoyin 2016). Skill gaps in information technology implementation may exacerbate these issues, prompting small businesses to seek consultancy services for assistance. Additionally, Flowerday and Olutoyin (2016) underscore that some SMEs fail to recognize the value of information, resulting in deficiencies such as the overflow of data and lost information. Particularly in SMEs, deficiencies in information management are more pronounced, underscoring the importance of strategic planning and effective information management practices to optimize operations and enhance efficiency (Flowerday & Olutoyin 2016).

To effectively implement knowledge management in SMEs, alignment with organizational objectives is crucial (Wong & Aspinwall 2004). This necessitates a comprehensive understanding of the value of knowledge across various processes and the awareness of its potential benefits among staff. Information management practices vary widely across SMEs, influenced primarily by the significance each company attributes to information for its operations. While some studies explore the impact of company size on information management, the nature and volume of data utilized play a more decisive role in planning, implementing, and controlling information management practices (Levy & Powell 2004). With evolving trends in information technology and management, diverse outsourcing possibilities, including cloud services, have become accessible even to small businesses, how do KMFs enable efficiency?

4. LITERATURE REVIEW

The three knowledge management frameworks that this thesis will utilize are: Innovation Driven Knowledge Management, Framework Management of Knowledge Resources, and the Entrepreneurial Innovation Process Model. The entrepreneurial innovation process model gives priority to adaptability and resolving flaws in invention, the management of knowledge resources framework stresses internal knowledge processes, and the of innovation driven knowledge management framework (I-KMF) concentrates more on structured planning and implementation. All of them emphasize the value of strategic planning, successful execution, and ongoing improvement.

4.1 Innovation Driven Knowledge Management Framework

The study of Ghanem and Nader (2008) titled “An Innovation Driven Knowledge Management Framework for SME” looks at two SMEs, and how the firms implement a knowledge management framework (KMF) into their organizational practices. The study takes a scope of innovation driven knowledge management framework (I-KMF), which is a three-phase framework that considers strategy, planning, and implementations as key stages of creating organizational knowledge (Ghanem & Nader 2008).

According to Ghanem and Nader (2008), strategy is an essential first step of the framework, as it forms the foundation, of which the whole framework rests upon. The KMF strategy process involves forming measurable business objectives, securing suitable and continuous support from executive management, addressing cultural resistance to knowledge sharing, and establishing the KM forum or group (Ghanem & Nader 2008).

The next phase consists of planning, which is to ensure the success of reaching the strategic goals. In accordance with the overall strategy, the planning process should involve identifying the target end-users and subject matter experts, conducting a thorough business needs assessment, and determining the crucial initial phase of the implementation, creating appropriate and sufficient knowledge content, and designing simple and efficient knowledge workflow processes. (Ghanem & Nader 2008)

The final stage of the framework, implementation, is the most critical one. As per Ghanem and Nader (2008), successful implementation of I-KMF is almost solely reliant on project management. The key and the challenge of successful implementation is to effectively stay in the agreed upon scope, whilst integrating user feedback, prioritizing and implementing changes, and deliver results on schedule (Ghanem & Nader 2008).

Success of implementation can be easily measured by rather simple metric. In any successful KM implementation, new knowledge will begin to be created and existing knowledge will undergo modifications within the initial week of rollout (Ghanem & Nader 2008).

4.2 Management of Knowledge Resources

In the study of Coyte et al. (2012), an Australian SME is examined through a lens of knowledge resources, and management of those resources. The study (Coyte et al. 2012) implements a framework loosely based on the framework presented by Hutchison and Quintas (2008) but implements characteristics of other knowledge management frameworks as well. The stages utilized in the paper and framework include creation or capture of knowledge, sharing or dissemination of knowledge, synthesis or reconstruction of knowledge, and use or "harvested" knowledge (Coyte et al. 2012).

The paper of Coyte et al. (2012) describes "creation or capture" as the first phase of the used knowledge management framework. Creation and capture are conceptualized as an individual process where the "knower" internalizes knowledge, as described by Brown and Duguid (2000) and Polanyi (1966) who characterize it as a personal belief.

The second phase of the KMF, sharing or dissemination, occurs when the knower either codifies the knowledge or engages in interactions with others, making their personal beliefs accessible to others (Coyte et al. 2012). Codification involves embedding and/or embodying knowledge in documents, databases, guidelines, procedures, rules, and routines (Kakabadse et al. 2001; Konno & Nonaka 1998).

Codified knowledge, when shared, can be synthesized with other knowledge and interpreted differently by other individuals, forming the third phase of the KMF. Influence on the knower and their thoughts and actions can potentially lead to different forms of codification developing a cyclical model that produces new knowledge within the organization. (Coyte et al. 2012)

Finally, use or harvesting, as defined by Serenko et al. (2010), happens when organizations derive benefits such as sales growth from improved products or services, increased efficiency or effectiveness, or enhanced relationships and reputation. Successful utilization of KMF will see improvement in the forementioned areas within the first week of rollout, according to research of Ghanem and Nader (2008).

4.3 Entrepreneurial Innovation Process Model

In the research paper “Do entrepreneurial knowledge and innovative attitude overcome “imperfections” in the innovation process?” of Dezi et al. (2012) two SMEs are investigated through extensive research that looks at entrepreneurial innovative attitude, external collaborative knowledge, entrepreneurial risk management (ERM), asymmetric information, situation where information isn’t distributed evenly, and hold-up problems, e. g. contractual disputes, and their effect on the organization’s innovation process model. Innovation process model is a framework which goal is to overcome “imperfections” in an entrepreneurial setting through creating an environment where innovation can happen and present itself (Dezi et al. 2018). Imperfections are defined as issues in risk management, asymmetric information within the knowledge management process, and hold-up problems (Ellram and Zsidisin 2003; Hoyt and Liebenberg 2003; Moore 1983; Smith 2003).

Utilization of the framework (Dezi et al. 2018), starts by analyzing areas where imperfections may appear. These areas include five measures: entrepreneurial knowledge and innovative attitude, external collaborative knowledge, ERM, asymmetric information and hold up problem. It is important to understand that in the scope of Dezi et al. (2018) research, innovation can happen only where imperfections appear as if it were a result of risk, and risk is necessary to innovate. Thus, innovation and imperfections go hand-in-hand. After analyzing imperfections, organizational resources are allocated to match, and overcome the imperfections. In the innovation model, skills, attributes, attitude, and aptitude are considered key factors to control imperfections and push innovation within the organization. (Dezi et al. 2018)

5. ANALYSIS OF CHOSEN STUDIES

Applying three different knowledge management frameworks to their respective case companies provides a structured approach to how knowledge is used efficiently in different business environments. Pacific Lifestyle Publishing (PLP), Computas, Tech Ltd., Kestros Ltd., and Innovation Group Ltd. implement the three knowledge frameworks differently, offering unique perspectives on strategies tailored to address their specific needs and challenges, thereby aiding in knowledge creation, sharing, and utilization.

Pacific Lifestyle Publishing (PLP) is a SME based in Australia, that produces and publishes narrow-market niche magazines mainly for young adults. PLP has over 60 employees and has four offices in different locations. The headquarters is divided into six departments with each department with their own director in the helm. (Ghanem & Nader 2008).

PLP's approach to innovation driven knowledge management framework (I-KMF) happened with a two-day strategic planning seminar. In the seminar manager and directors planned phases one and two (strategy and planning) with outside guidance from Business Improvement Australia. PLP's outcome of the seminar was a five-year plan focusing on the core knowledge of the company and its improvement. Core knowledge was seen as ensuring customers' needs were met through technical proficiency in all aspects of magazine publishing tasks, aiming to surpass customer expectations, and up-holding integrity and the highest personal standards of ethical behaviour in all practices carried out by PLP. Through interviews and other organizational records, two other core pieces of organizational knowledge were found: friendly and respectful communication, and fun cultural atmosphere within the organization. (Ghanem & Nader 2008) Strategic planning also concluded gathering new information from competitors' practices. Though investigating a competitor, PLP used force field analysis, which is a framework to analyse significant success factors (Creed & Swanson 2014), to find a practical and cost-efficient option mimic their competitor's strategy. Also, additional knowledge was acquired with the hiring of a new staff member. (Ghanem & Nader 2008).

Actions taken in the I-KMF proved successful, after the launch of the next edition of the magazine with sales increasing considerably. The organization employed strategic planning to enhance the management of its core resources, including employees' tacit

knowledge, leading to a well-developed plan to capture this knowledge within the organization. (Ghanem & Nader 2008) This exemplified the usefulness and utilization of the innovation driven knowledge management framework.

Computas is an SME in the field of consulting located in Norway. Computas specializes in developing knowledge-based systems for diverse clients, and provides services related to the industrial application of knowledge-based systems, as well as software within the field of artificial intelligence. (Ghanem & Nader 2008) At Computas knowledge management is incentivized by given monthly title of “knowledge sharer of the month”. Computas’ strategy of KM is to build extensive knowledge repository called “Well of Experience” (WoX) inside the company. Sharing of the information happens through company tools, such as Intranet, as well as orally on-site at the office. (Ghanem & Nader 2008)

Use of WoX is mainly intended as a tool for the developers and employees of Computas, but other useful applications of the knowledge repository has been found as by-product. Main duties of the system include addressing specific technical issues, obtaining a comprehensive understanding of problem areas, minimizing redundancy by avoiding repetitive explanations of solutions, optimizing individual work situations through adjustments to technical tools, and identifying employees with specific competencies within the company. Internal use and benefit of WoX is obvious, but its capabilities have been utilized externally as well. Some of Computas’ customers have been granted access to the system, which has added value to the customer as well. (Ghanem & Nader 2008)

Case company of the research paper of Coyte et al. (2012), that is referenced as **Tech Ltd.** due to anonymity, is an Australian SME that employs 48 employees and has offices in Sydney, Melbourne, Brisbane and New Zealand. The headquarter is located in Sydney, while the Melbourne office also holds a substantial number of key organizational roles, forming a structural setup that holds importance for managing knowledge resources, given the fairly balanced distribution of responsibilities between these primary offices (Coyte et al. 2012). Tech Ltd. sells, supports and services specialized electronic security equipment, largely under licence from a major international firm. Quality and reliability of the equipment in an important selling point and integral to Tech Ltd.’s marketplace reputation and relationships due to the organizations devotion to security as seen in the motto, "the protection of the employee in the workplace". This is delivered via a mix of hardware and software associated with communication and information technology. (Coyte et al. 2012)

The aforementioned framework's utilization started by analysing knowledge resources of the organization. Knowledge resources could be divided into three separate categories: relational capital, structural capital, and human competences. Relational capital that is ought to be Tech Ltd.'s largest knowledge resource is significant external and internal relational assets, upholding reputation for offering the highest quality product and support within the marketplace. Tech Ltd.'s strategy involves enhancing its relational capital by consistently engaging with customers and focusing on "up-selling" to expand market share across its various vertical markets. Closeness gained from maintaining an ongoing relationship with the customer base is a valuable knowledge asset for the sales process. (Coyte et al. 2012)

Structural capital of Tech Ltd. is largely tied to continuous improvement of operational processes documented according to quality standard ISO 9001 (Coyte et al. 2012). According to Coyte et al. (2012) documentation is stored into customer relationship management system, where information can be accessed when necessary. Through analysis, the study (Coyte et al. 2012) found gaps in management of knowledge. Although the systems were operational, they lacked properties to successfully utilize knowledge resources (Coyte et al. 2012).

Lastly, human competences were found to be significant knowledge resource. Like relational capital, human competences build up over time, and presents itself in the form of tacit knowledge. Due to this, Tech Ltd. is reliant on core set of employees that, for example, oversee key sales, and operational and management processes. One of the problems found by the research was sale cycles that were characterized by complexity and knowledge intensity. (Coyte et al. 2012). After completing the first phase of the framework in analysing knowledge creation and capture, Coyte et al. (2012) study found bottlenecks and gatekeeping in knowledge sharing, especially in executive management. The company CEO largely was found to be solely in charge of strategy and product implementation (Coyte et al. 2012). To tackle this, alignment was made to decision-making criteria to better conform with CEO's ideas for the adoption of new services and products (Coyte et al. 2012). According to the study (Coyte et al. 2012), the new approach includes meticulous evaluation of growth opportunities followed by disciplined execution, and once selected, the new venture is safe guarded against resource diversion, ensuring focused commitment to its development.

Change in organizational practices led to processes being more repeatable, giving a clear example of reconstruction of knowledge within the organization. Tech Ltd.'s new practice of selectively investing in products that align with its quality positioning and target niche, reflecting the firm's strategy, possess sufficient revenue potential to cover

sales and operational support costs, and offer a profitable return on investment. (Coyte et al. 2012) Tech Ltd.'s previous informal approach to KM and management of knowledge resources was intentional due to the agility that it provided. In SMEs, especially, rigid framework can be unwarranted and possibly counter-productive. Although operational and relatively successful, change needed to happen for long-term viability. Implementing a framework that enabled informal knowledge creation, sharing, reconstruction, and harvesting inside the organization proved successful through analysis and management of knowledge resources. (Coyte et al. 2012)

Tech Ltd.'s knowledge resources were categorized into relational capital, structural capital, and human competences, with relational capital being the most abundant. Structural capital was linked to the continuous improvement of operational processes, documented according to ISO 9001 standards. Despite having operational systems, there were gaps in knowledge management, indicating a lack of properties to successfully utilize knowledge resources. The study found bottlenecks in knowledge sharing, leading to an alignment of decision-making criteria with the CEO's strategy for new services and products. Changes in organizational practices made processes more repeatable, exemplifying the reconstruction of knowledge within the organization. Tech Ltd.'s previous informal approach to knowledge management was intentional for agility, but a framework enabling informal knowledge creation and sharing was implemented for long-term viability. These findings provide valuable insights into the knowledge management strategies of SMEs. (Coyte et al. 2012)

Kestros Ltd., established in 2009 in Scotland, UK, is an Information Technology Consultancy company with 5 employees in 2016. The company specializes in providing consultancy services and software sales, primarily catering to the British National Health System (NHS). In establishing the company, the main driving force was to empower patients by developing a digital app that enables them to access and manage their health information, appointments, and care aspects conveniently in one digital platform. Kestros Ltd. reported revenue of £200k in the fiscal year 2015/16. Mission of the company is to empower patients by developing a digital app that would allow them to manage their health information. However, during production, the company faced several bureaucratic barriers, necessitating the need for external collaborative knowledge. Knowledge management was identified as a crucial aspect for ERM and managing asymmetric information. The company enhanced ERM by incorporating knowledge management practices into their innovation process model.

From the beginning of product development, Kestros Ltd. used entrepreneurial knowledge and innovative attitude, such as mapping and GPS technology to breach a

gap in the healthcare software market. The founder states that without the adoption of an open innovations process approach the product couldn't be created. In the production phase, the product faced lots of bureaucratic barriers which required external collaborative knowledge. Barriers included Public procurement processes, agreements for data processing, internal governance tools, contract terms, policies for system integration with external partners, information governance, and data ownership clarity. Through the innovation process, forming relationships was found to be great way of speeding up the process of getting the product delivered to markets.

ERM and asymmetric information were subject areas where knowledge management was required due to unique problems that were faced. Assessed risks included digital data breaches and losses, cost management to adhere to budget constraints for all involved, reputational risk for stakeholders due to failure to deliver on promises, negative publicity for stakeholders in case of product failure, and managing end user expectations. The potential consequences of these risks for the company could include reputation damage, contract loss, heightened costs due to unexpected delays, and missed future business opportunities. (Dezi et al. 2018) The innovative process model in this case incorporates knowledge management practices to enhance ERM. Due to successful innovation process, any hold up problems did not occur. The founder of the SME stated in an interview that “– total time spent on the project I spent 10 per cent developing the actual product and 90 per cent managing the innovation process in order to overcome barriers to market”. (Dezi et al. 2018)

Innovation Group Ltd. was founded in 1998 in Isernia, Italy. The company, with approximately 12 employees in 2016, specializes in consultancy services and software sales, targeting small to medium-sized hospital enterprises. The main motivation behind founding the company was to address document dematerialization challenges in the healthcare industry, particularly at the Mediterranean Neurological Institute. Innovation Group Ltd. operates as a private limited company within the Information Technology Consultancy Activities industry, reporting revenues of €400k in the fiscal year 2016/17. (Dezi et al. 2018)

Innovation Group's approach to the entrepreneurial innovation process model was to push diversification strategy to expand the company's core business. Expansion was a development of a knowledge management system of the healthcare industry, arranging, examining, and governing all medical activities (Dezi et al. 2018). From the beginning, the company implemented an innovation driven approach to product development which wasn't anything new as the company had produced several innovations prior, such as a microscopic video recording system and an aesthetic drug labelling system (Dezi et al.

2018). As this was the case, entrepreneurial knowledge and innovative attitude were not a source of imperfections. Through prior innovations and systems, the company had formed existing relationships with different stakeholders, which meant that the company possessed lots of external collaborative knowledge (Dezi et al. 2018). Due to sound foundation that the company possessed within the market, imperfections appeared as ERM and hold up problems. Information asymmetry was handled by building trust between partners. With issues like protection of intellectual property, solution was to build on trust rather than drowning in bureaucratic paperwork, which sped up the development process tremendously. The risk and imperfection were seen as the trust between partners. (Dezi et al. 2018). Overall, the company was motivated by the challenges in document dematerialization in healthcare and implemented an innovation driven approach to product development. To manage information asymmetry, the company built trust between partners, thus avoiding bureaucratic paperwork. This approach highlights the prominence of trust and collaboration in managing knowledge resources effectively. (Dezi et al. 2018)

Overall, these five SMEs utilized the three knowledge management frameworks differently, reflecting their specific business environments. Table 2 effectively summarizes the way that the KMFs were used within each company, allowing for an illustration of the differences and similarities that they bear. The next chapter of this thesis will draw out the findings from the analysis and investigate how the KMFs when used prove their innovative capabilities and allow each company to boost organizational efficiency.

Table 2: Summary of knowledge management framework application in chosen SMEs

Frame- work & Company	I-KMF	Management of Knowledge Re- sources	Entrepreneurial In- novation Process Model
Pacific Lifestyle Publishing	<p>Concentrated on strategic planning and competitive strategy to enhance core competencies and customer-focusness.</p> <p>Centered on ongoing development and internal knowledge processes.</p>		
Computas	<p>Emphasized the establishment and use of a large internal knowledge repository (WoX) to foster the growth and exchange internal knowledge.</p>		
Tech Ltd.		<p>Divided information resources into three categories: human, structural, and relational competencies.</p> <p>Concentrated on producing, distributing, and restoring knowledge.</p>	
Kestros Ltd.			<p>Developing an entrepreneurial mindset, motivating employees, and diminishing bureaucratic difficulties.</p>
Innovation Group Ltd.			<p>Prioritized diversification, recognizing flaws in innovation, and building trust between partners.</p>

6. FINDINGS

It is evident from analyzing different scenarios and knowledge management frameworks that organizational processes can become more efficient and repeatable when a knowledge management framework is applied. Organizations can improve the efficiency of their knowledge management procedures and make better use of their resources by using knowledge management frameworks. The comparison of examples using the same framework provides a clearer view of the effectiveness of knowledge management frameworks.

Pacific Lifestyle Publishing (PLP) created a well-thought-out plan to gather and use core corporate information by using an innovation-driven knowledge management framework (I-KMF) (Ghanem & Nader, 2008). The company utilized the Innovation Driven Knowledge Management Framework (I-KMF) to create a strategic plan for gathering and utilizing core corporate information. A five-year plan was produced because of a strategic planning conference hosted by PLP where the development of fundamental knowledge, meeting client demands, and maintenance of moral standards were the three main focuses of this strategy. The implementation of the I-KMF and the five-year plan resulted in significant sales increases and improved management of tacit knowledge (Ghanem & Nader, 2008). Ghanem and Nader (2008) claim that when knowledge management techniques were put into place, there was a prominent rise in sales because PLP's strategic planning seminar helped identify and prioritize important knowledge domains in the I-KMF framework.

Comparably, Computas heightened information sharing and improved individual work environments with the creation of the "Well of Experience" (WoX) knowledge repository (Ghanem & Nader, 2008). This knowledge sharing platform enhanced the access of information and resources within the company information, demonstrating the benefits of internal knowledge sharing accessible to external clients as well (Ghanem & Nader, 2008). It accomplishes several goals, including exchanging expertise, fixing technical issues, and providing clients with value-added services. Sharing insights and efficient practices through a dedicated platform improved cooperation and problem-solving among employees. By documenting and distributing valuable material, SMEs ensure employees have access to relevant information, which can spark new ideas and solutions. Thus, by using a knowledge-sharing platform which fosters collaboration and information flow, a company can enhance their innovative practices and products.

Additionally, at Computas knowledge management is incentivized by given monthly title of “knowledge sharer of the month” which motivates team building and pushes employees to perform to their best potential. While the frameworks' specific methods—like PLP's seminar on strategic planning and Computas' promotion of information sharing—differ, they prove the core principles of knowledge management processes, as outlined in Choo's (1995) basic knowledge management process model. The success of PLP and Computas has been greatly attributed to this strategic approach to knowledge management (Ghanem & Nader 2008).

Tech Ltd. and Kestros Ltd. share a common perspective on the importance of their knowledge resources, as shown by their organization of these resources into relational capital, structural capital, and human skills. Tech Ltd. emphasizes relational capital and building a valuable customer base, and prioritizes knowledge-sharing bottlenecks, especially in executive management, which aligns decision-making standards with the CEO's vision. By ensuring that new offerings align with the CEO's vision, this strategy seeks to increase organizational commitment. In order to increase its market share, Tech Ltd. concentrates on building its relational capital through client interaction and "up-selling" tactics. Kestros Ltd. uses an entrepreneurial innovation process model that emphasizes teamwork and collaboration to navigate market complexities such as bureaucratic obstacles during product development. To speed up the product development process, Kestros Ltd. places a strong emphasis on developing external relationships and highlights the value of cooperation.

Both companies prioritize human capital, with Tech Ltd. relying on seasoned workers and Kestros Ltd. leveraging entrepreneurial skills. While Kestros Ltd.'s agile strategy allows for quick adaptability, Tech Ltd.'s organized approach results in more repeatable procedures. Tech Ltd.'s structured approach, recorded in accordance with ISO 9001 standards, contrasts with Kestros Ltd.'s flexible, innovation-centric strategy. These comparison points highlight how crucial it is to match knowledge management tactics—whether through formalized procedures or flexible innovation—with the objectives and environment of the company, making strategy a way that SMEs can utilize knowledge management frameworks within their business goals. Knowledge initiatives are guaranteed to directly contribute to the success of the organization when knowledge management practices are coordinated with strategic business goals.

Innovation Group Ltd. acknowledges the value of knowledge resources classified as relational capital, structural capital, and human capabilities, just like Tech Ltd. and Kestros

Ltd.. Innovation Group Ltd. focuses on diversification to grow. The organization places a strong emphasis on managing knowledge resources in the healthcare sector, especially in planning, evaluating, and overseeing medical activities. Due to its track record of creating inventive solutions, Innovation Group Ltd. has been able to establish connections with stakeholders and collect cooperative expertise. Innovation Group Ltd. addresses information asymmetry by building trust between partners, avoiding administrative paperwork, and accelerating the development process.



Figure 1. A simplification of knowledge management framework utilization

Overall, as seen in Figure 1. an organization's efficiency can be enhanced when knowledge management frameworks emphasize continuous adaptation, structured documentation, knowledge-sharing platforms, strategic planning, and employee development, which become the primary ways that organizations use knowledge management strategies to efficiently capture, organize, and share knowledge within their information management frameworks. These findings underscore the varied approaches to knowledge management within SMEs, emphasizing the need for flexibility and adaptation based on organizational context.

7. CONCLUSIONS

The final chapter of this study reviews the main findings of the study. The usefulness and utility of the study is then assessed, both in terms of research and theory, as well as in terms of practical work life. Finally, possible areas for further research and limitations of the study are discussed.

The purpose of this research was to examine the impact of knowledge management frameworks on organizational efficiency and innovation in small and medium-sized enterprises (SMEs). Firstly, this was achieved by first understanding what types of knowledge management strategies there are, and why this is important to apply to the context of SMEs. The models and processes outlined by Choo (1995, 2002), Rowley (1998), and others underscored the importance of systematically managing information needs, acquisition, organization, and utilization to foster organizational learning and adaptability. By analysing their work, this thesis found that SMEs face unique challenges in this domain, including resource constraints, skill gaps, and the necessity of compliance with regulations such as GDPR. However, by adopting straightforward, cost-effective, and usable information management frameworks, this thesis argues that SMEs can significantly enhance their decision-making processes, strategic planning, and operational efficiency. As highlighted by Wong and Aspinwall (2004) and Alawneh et al. (2009), the strategic use of information resources not only improves decision quality but also contributes to professional development and organizational cohesion, which showed that by embracing knowledge management practices, SMEs can harness the collective expertise of their employees, foster innovation, and respond swiftly to environmental change.

Next, an examination of literature surrounding specific knowledge management frameworks was conducted. A literature review of the study by Ghanem and Nader (2008) found that the Innovation Driven Knowledge Management Framework (I-KMF) which focuses on strategic planning, implementation, and continuous improvement can adhere to emphasizing measurable business objectives and overcoming cultural resistance to knowledge sharing. The Management of Knowledge Resources framework, examined in the study by Coyte et al. (2012), shows that prioritizing internal knowledge processes, promoting systematic knowledge creation, sharing, and utilization within the organization can enhance efficiency. The last framework that analysed was The Entrepreneurial Innovation Process Model, drawn from research by Dezi et al. (2012), which addresses adaptability and resolving innovation flaws, highlighting the importance of managing risks and building trust to foster innovation.

Finally, the aim was to justify the efficiency of these three knowledge management frameworks by applying the associated benefits to specific cases.

This thesis aimed to answer these questions, with Q1 being the main research question and Q2 being the sub-research question:

Q1: How can organizations effectively capture, organize, and share knowledge within their information management frameworks using knowledge management strategies?"

Q2: "What are the main significant knowledge management frameworks related to this research?"

To answer the first research question structured documentation, knowledge sharing platforms, strategic planning, ongoing adaptation, cooperation, and employee development are the primary ways that organizations use knowledge management strategies to efficiently capture, organize, and share knowledge within their information management frameworks. To answer the sub-research question, the Innovation Driven Knowledge Management Framework, Management of Knowledge Resources and Entrepreneurial Innovation Process Model are three main frameworks most significant to the overall research.

7.1 Managerial implications

This study addresses the research gaps identified in previous research and examines them from a fresh perspective. The necessity for a deeper comprehension of knowledge management's attributes was brought to light by Coyte et al. (2012). The need of researching knowledge management in various organizational contexts to investigate its application in various situations was also emphasized by Ghanem and Nader (2008). Knowledge management frameworks are crucial for bridging gaps in entrepreneurial processes, as noted by Dezi et al. (2012). By outlining the ways in which organizations can effectively capture, organize, and distribute knowledge inside their information management frameworks—using structured documentation, knowledge-sharing platforms, strategic planning, continuous adaptation, collaboration, and employee development—this study addressed these research needs from a unique perspective of small and medium sized enterprises with agile business environments.

This study provides new insights into the relationships between knowledge management frameworks and organizational efficiency by looking at commonly recognized knowledge management frameworks across a range of businesses. It lays the groundwork for more

research by offering a comprehensive overview of how businesses are utilizing these frameworks to improve their innovativeness. Furthermore, this study encourages more investigation into the crucial interaction that exists between organizational operations and information management techniques, such as information processes and practices. Ultimately, as the study's data collection was comprehensive and included information from multiple comparable organizations, the generalizations made from it can be applied, particularly to other research carried out in a similar setting. From a practical work and business standpoint, this study offers insightful information on what organizations should think about and how they may use knowledge management frameworks to increase productivity. This study provides a general overview of how knowledge management frameworks have been and can be further leveraged to enhance efficiency and creativity within small and medium-sized enterprises (SMEs). It also emphasizes potential specific actions that these companies might include in their practices to achieve goals.

Organizations can also utilize this research to look at the resources essential to information management in SMEs. The study provides evidence for the advantages that firms derive from utilizing knowledge management frameworks. SMEs can utilize this research as a starting point for the adoption of knowledge management frameworks in their work, especially in a world that is changing quickly and where knowledge management in businesses is considered crucial.

7.2 Limitations

This research also has its limitations. These imitations are mostly connected to the information gathered for the study. The study's first weakness is the relatively small number of organizations and frameworks that were included in the analysis. Three frameworks were applied to five firms. Because of the small sample size, the study's findings cannot be fully applied to every circumstance or utilized to make broad generalizations about the function of knowledge management frameworks in SMEs' business environments. Future research on the subject should therefore be done with a larger sample size because the application of a larger organizational analysis in those studies may facilitate for boarder argumentation with more evidence.

Another limitation was that the study was conducted qualitatively, the study lacks credibility in terms of numerical values used to prove statistical significance, which could strengthen the argument of this research. This leads to a future research suggestion, where one could quantitatively analyse the use of a specific knowledge management framework in a specific business context and examine whether there is a correlation

between efficiency and the application of the framework. Other topics for further research could be carried out by analysing organizations operating in the same areas and with similar cultures to specify results into a similar geographical area for instance specifically in Nordic countries, accounting for more educated arguments.

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