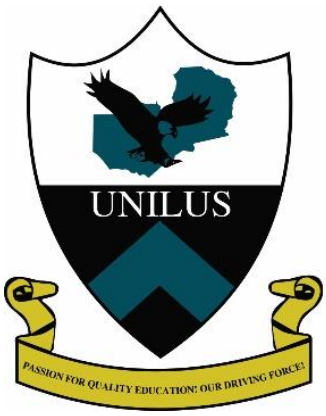

UNIVERSITY OF LUSAKA

School of Postgraduate Studies

Knowledge Management in Project Based Organisations. A Case Study in Lusaka, Zambia.

A DISSERTATION SUBMITTED TO THE SCHOOL OF POSTGRADUATE STUDIES, UNIVERSITY OF LUSAKA IN PARTIAL FULFILLMENT OF THE AWARD OF MASTERS OF SCIENCE IN PROJECT MANAGEMENT (MScPM)

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DECLARATION

I Kafunti Kalezhi, declare that this research report entitled ‘Knowledge Management in Project Based Organisations. A case study of ZADMIFO and Zambezi Drone Solutions’ is my original work and has not been submitted previously, in whole or in part to any other institution for a degree or diploma. All sources of information used have been acknowledged through proper referencing.

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Date : 20TH JANUARY 2025.

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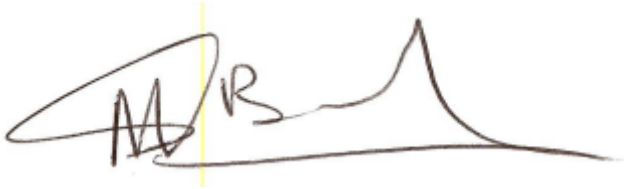
Signature: 

Date: 20 January 2025

This declaration ensures academic integrity and clarity regarding the originality of the work.

DEDICATION

This work is dedicated to my beloved family, whose unwavering support, encouragement and love have been my foundation throughout this journey. To my parents, for instilling in me the value of education and perseverance. And to all knowledge seekers, whose pursuit of understanding inspires progress in every field.

ACKNOWLEDGEMENT

First and foremost, all glory to God, for giving me the strength and the tenacity to go for and realise my ambition and fulfil my dream as I embarked on my MSCPM studies. I would like to express my deepest gratitude to my academic supervisor Prof Mohamed Bayat, whose expertise, guidance and constructive feedback have been invaluable in shaping this research.

I am sincerely thankful to the participants from ZADMIFO and Zambezi Drone Solutions for generously sharing their time and insights, which were critical to this study.

I extend my profound gratitude to my family, whose unwavering belief in my potential has fuelled my determination and resilience. This journey would not have been possible without your support.

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ABSTRACT

This study investigates the effectiveness of Knowledge Management (KM) practices in project based organisations with a focus on two Zambian organisations: ZADMIFO and Zambezi Drone Solutions. The research addresses the critical role of KM in enhancing project performance, particularly in resource constrained environments. Using a qualitative, multiple case study approach and the study explores the KM processes, tools, challenges and their impact on project outcomes. Data was collected through semi-structured interviews, document analysis and observations, involving 17 participants and analysed using thematic analysis.

The findings reveal that while formalized KM practices, such as digital tools (e.g., cloud platforms, project management software) and knowledge-sharing sessions, improve knowledge transfer, their inconsistent application limits their effectiveness. Key challenges include resistance to change, resource constraints, high staff turnover and inadequate digital infrastructure. Leadership involvement in KM initiatives was found to be irregular, hindering the development of a knowledge-sharing culture. Despite these challenges, the study highlights the positive impact of KM on project performance, particularly through improved decision-making, innovation and collaboration.

The study recommends strengthening leadership commitment to KM, investing in user friendly digital infrastructure and implementing mentorship programs and structured documentation to address staff turnover and knowledge retention. A risk management framework is proposed to ensure the sustainability of KM initiatives. These recommendations provide a roadmap for project-based organizations to enhance KM practices, improve project outcomes and foster long term organizational growth.

This research contributes to the growing body of knowledge on KM, particularly in developing contexts like Zambia, by offering practical insights and strategies for overcoming KM challenges and leveraging knowledge as a strategic asset.

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ACRONYMS

KM : Knowledge Management

PBO : Project Based Organisations

RBV : Resource Based View

SECI : Socialisation,Externalisation,Combination and Internalisation

ZADMIFO: Zambia Diaspora and Migration Foundation

CHAPTER ONE

1.1 Introduction

According to Sokhanvar et.al. (2014), Knowledge management (KM) plays a pivotal role in the success of project based organizations. These organizations, characterized by their focus on temporary endeavours to deliver unique products, services, or results, rely heavily on the effective handling of knowledge to enhance their performance and achieve their goals. The dynamic and transient nature of projects necessitates robust KM practices to ensure that valuable knowledge is captured, shared and utilized efficiently.

In project based organizations, the integration of knowledge management (KM) is critical to ensuring project success, particularly in managing project knowledge areas such as lessons learned, risk management and stakeholder engagement. Project management standards, including the Project Management Body of Knowledge (PMBOK) and PRINCE2 methodologies, explicitly recognize the importance of KM in these areas. According to the Project Management Institute (2021), one of the key knowledge areas in PMBOK is Project Knowledge Management, which emphasizes the capture, dissemination and application of project knowledge to improve decision making and project outcomes. Similarly, PRINCE2 highlights the need for effective knowledge management, especially in capturing lessons learned and ensuring that knowledge gained from one project is available for future projects (Axelos, 2020).

KM plays a pivotal role in project environments, where the temporary and dynamic nature of projects can lead to the loss of valuable knowledge if not properly managed. By formalizing the process of collecting, documenting, and applying knowledge, organizations can mitigate the risks associated with knowledge loss and ensure continuity between projects (Project Management Institute, 2021). Furthermore, according to Landolo et.al., (2024), effective KM supports risk management by allowing project teams to identify and respond to potential issues based on previous project experiences.

Therefore, KM is not only important in improving the efficiency and effectiveness of individual projects but also in developing a continuous improvement and learning culture across the organization. Serenko and Bontis (2016) comment that KM

practices have the potential to enhance project performance and weaken the negative impact of knowledge silos on the overall success of ZADMIFO.

Organisations are often described as a black box, where information is the medium inputted and outputted through that box, constantly and diversely. Knowledge is based on the exterior elements. In other words, it is primarily exogenous. In the view of both academics and managers, knowledge is seen as the vital source of competitive advantage (Grant, 1996). Knowledge is a potentially significant resource to the firm, as it may possess useful, unique, valuable, rare, inimitable and no substitutable characteristics, particularly if it has a tacit dimension.

The importance and value of knowledge in modern economy is well described by Beijerse (1999) and Leibold, et al., (2005:16), among other scholars, as follows: previously, the world economies heavily relied upon physical assets, such as land, labour and financial capital, as the main source for gaining competitive advantage and capturing the market in order to enhance their productivity. However, in this modern era the trend has been changed and the main ingredient for gaining competitive advantage, and thereby capturing the market, is termed as intellectual capital or in other words knowledge.

Effective KM allows organizations to retain and reuse knowledge across different projects, thus avoiding knowledge loss and promoting organizational learning. KM also enhances collaboration and innovation by ensuring that knowledge flows seamlessly across departments (Jafari et al., 2016).

Knowledge management is also viewed as a driver for organizational resilience. As noted by Heisig (2015), effective KM systems enable organizations to adapt quickly to changing project requirements and market demands, ensuring long term sustainability. Thus, KM is not only a tool for improving project performance but also for fostering innovation and resilience in the face of uncertainties.

1.1.1 Contemporary Challenges in Knowledge Management

According to Saeed et.al, (2023) as knowledge management (KM) has become a key source of competitive advantage for project based organizations, the rapidly evolving technological landscape and changes in organizational structures present new challenges in how knowledge is managed and shared. Faraj, Pachidi, and Sayegh (2018), highlight that the advent of digital technologies, such as artificial intelligence

(AI), cloud based platforms and advanced communication tools, has transformed the way knowledge is created, stored and accessed. While these technologies offer new opportunities for enhancing KM practices, they also introduce complexities related to data overload, security concerns and the integration of diverse systems.

Faraj (2018), states that one of the contemporary challenges is the shift towards remote and distributed work environments, which has been accelerated by the COVID-19 pandemic. Remote work affects traditional knowledge sharing practices that rely on face to face interactions and informal networks within the workplace. The lack of physical proximity can lead to knowledge silos, reduced collaboration and difficulties in capturing tacit knowledge, knowledge that is often shared through direct experience and interaction. Additionally, ensuring that remote teams have equal access to organizational knowledge and the tools needed to contribute to knowledge sharing activities is a growing concern for organizations (Natu et.al.,2022).

1.2 Background of the Study

Lawton, 2001 explains that Knowledge management came into existence because of the requirements of maintaining a record of the knowledge acquired by various project teams to reuse the already acquired knowledge to save time and money. According to Rus et al., (2002), knowledge management in the software Industry has come of age as a result of a process started by the artificial intelligence community for the purpose of data storage and application. However, the revolutionary milestone in the history of knowledge management took place in 90´s when the main source for managing and storing the knowledge was converted to technology based equipment, such as computers, internet, intranet, portals and data warehouses (IBID, 2001).

Furthermore, Lawton (2001) observes that over 80% of world's largest organizations apply knowledge management systems to help with their everyday business functions. Conversely, Eppler and Sukowski (2000), among other many scholars, postulate that it is very challenging to take effective or desired use from accumulated organizational knowledge often.

In the previous decades, many organizations across the globe have been losing $31.5 billion annually because the organization's employees cannot share knowledge (Babcock, 2004). Knowledge sharing needs proper management practice by using knowledge management (Donate & de Pablo, 2015). Knowledge management is the

practice of applying established values and processes to supply relevant knowledgeable information to the project teams (Lech, 2014). This study has explored the dynamics of knowledge management in project based organizations and how they manage, share, and use knowledge to improve project results.

The concept of knowledge management has evolved significantly in recent years, especially in the context of rapid technological advancements and the growing need for efficient knowledge-sharing practices within organizations. Past studies, such as those by Lawton (2001) and Babcock (2004), provided a foundation for understanding KM processes and their importance for organizational success. However, considering the fast changing nature of both technological development and organizational practices, more recent data would be needed to better reflect newer trends in KM. The most recent studies have highlighted the role of advanced technologies such as artificial intelligence, machine learning and cloud computing in reconfiguring modern knowledge management systems.

For example, Donate and de Pablo (2015) explain how KM systems based on AI are used for enhancing the acquisition, storage and sharing of knowledge within organizations. These systems facilitate not only the processes of KM but also render predictive analytics that could be useful in organizations' decision making. Davenport and Prusak (1998) extend this argument to the role of big data in KM and cloud computing. For example, how cloud based platforms support collaborations between members in dispersed geographical locations, making knowledge available to members in real time, thereby minimizing the cost associated with traditional KM systems.

The availability of digital infrastructure is among the factors that have influenced the adoption of KM practices in Zambia and in the broader African context. Manda and Zulu (2017) looked at how available digital infrastructure influences KM practices within the African context, elaborating on inadequate internet connectivity, the lack of digital literacy and infrastructural gaps as some of the determinants for the effectiveness of the implementation of KM systems. Despite these challenges, there has been an increasing awareness of the important role KM can play in enhancing organizational effectiveness and competitiveness in Zambia, especially for project

based organizations that greatly depend on effective knowledge sharing for project deliverables.

1.3 Statement of the Problem

Project based organizations often encounter challenges in managing knowledge effectively due to the temporary and unique nature of their projects. Knowledge generated within one project might not be properly captured or transferred to future projects, with the consequent loss of invaluable insights and mistakes repeated (Ren et al. 2018). This problem slows down organizational learning and innovation and eventually, project performance and organizational competitiveness. Solving this problem calls for the understanding of the mechanisms and strategies underlying effective knowledge management in this context.

The focus of knowledge management for continuous learning by project managers has been weak (Michels, Grijó, Machado, & Selig, 2012). The gap is difficult to address because the knowledge transfer process is relevant in the promotion of innovation, keeping up with competitive advantage, and ensuring the sustainability of an organization (Donate & de Pablo, 2015; Filieri et al., 2014).

While the importance of knowledge management is widely acknowledged, many managers in Zambia do not consider it a key priority in their organizations. This is in tandem with other developing countries where KM practices are not generally widespread (Mbhalati, 2014). In the case of Zambia, there is the further complication of constrained access to technologies and inadequate KM training.

1.4 General Objective

The core purpose of this study was to analyse the effectiveness of knowledge management in project-based organizations in Zambia. In order to achieve this key goal, the following secondary objectives were targeted:

I. To identify and document the key KM processes and tools used in project-based organizations, providing a comprehensive overview of current practices.
II. To assess and categorize the challenges faced by these organizations in implementing effective KM, producing a detailed list of barriers and their implications.

III. To explore the perceived impact of KM practices on project performance, generating actionable insights into how KM influences decision-making, innovation and collaboration.

IV. To develop a set of actionable recommendations and a KM improvement framework tailored to the Zambian context, which organizations can use to enhance KM practices and achieve better project outcomes.

1.5 Research Questions

This study was guided by the following questions:

I. What are the key knowledge management approaches that ZADMIFO and Zambezi Drone Solutions employ?

II. Why do project-based organizations face challenges in implementing effective KM practices, particularly in resource constrained environments like Zambia?

III. How do KM practices influence project performance in ZADMIFO and Zambezi Drone Solutions?

IV. What methodologies can be adopted to improve KM practices in project-based organizations, and how can these methodologies be implemented effectively?

1.6 Significance of the Study

This study holds significant value for both academic research and practical application in the field of Knowledge Management (KM), particularly within project-based organizations in Zambia. Its importance can be understood through the following key contributions:

The study contributes to the growing body of literature on KM by focusing on project-based organizations**,** a context that has received limited attention, especially in developing countries like Zambia. By exploring the KM practices, challenges and their impact on project performance in ZADMIFO and Zambezi Drone Solutions, this research provides new insights into how KM can be effectively implemented in resource-constrained environments. It also enhances the theoretical understanding of KM by integrating frameworks such as Nonaka's SECI Model and Systems Theory, offering a nuanced perspective on knowledge creation, sharing and utilization in dynamic project settings. This theoretical contribution enriches the global discourse on KM and provides a foundation for future research in similar contexts.

The findings of this study have direct practical implications for project-based organizations in Zambia and similar contexts. By identifying the key KM processes, tools, and challenges, the research provides actionable recommendations for improving KM practices. For instance, the study highlights the importance of digital tools, leadership involvement and structured documentation in enhancing KM effectiveness. These insights can guide managers and policymakers in developing strategies to address challenges such as knowledge silos, resistance to change, and staff turnover, ultimately leading to improved project outcomes and organizational performance. The practical contribution of this study lies in its ability to provide evidence-based solutions that organizations can implement to overcome their KM challenges.

The study also has significant policy implications for Zambia, where KM practices are still underdeveloped compared to more industrialized nations. By demonstrating the impact of KM on project performance, the research underscores the need for policy interventions to support KM adoption in project-based organizations. For example, the study recommends investments in digital infrastructure, KM training programs, and public-private partnerships to create an enabling environment for effective KM practices. What makes this study important is that it has contributed to the development of policies in Zambia, where KM practices are still underdeveloped compared to more industrialized nations (Chilufya & Bupe, 2019). These recommendations can inform policymakers in designing initiatives that promote KM as a driver of organizational growth and innovation. The policy implications of this study extend beyond Zambia, offering insights that can be adapted to other resource-constrained environments.

This research addresses a critical gap in the literature by focusing on KM in the Zambian context, where limited studies have explored the role of KM in project-based organizations. By providing empirical evidence from ZADMIFO and Zambezi Drone Solutions, the study offers a context specific understanding of KM practices and their impact on project performance. This contributes to the broader KM literature by highlighting the unique challenges and opportunities in resource constrained environments, thereby enriching the global discourse on KM. The study also provides a foundation for future research in similar contexts, encouraging further exploration of KM practices in developing countries.

Finally, the study emphasizes the role of KM in enhancing organisational competitiveness and sustainability. By improving knowledge retention, fostering innovation and enabling better decision making, effective KM practices can help organizations achieve long term success in a rapidly changing business environment. This makes the study particularly relevant for project-based organizations seeking to leverage KM as a strategic asset. The findings of this study can help organizations in Zambia and beyond to enhance their competitiveness, adapt to changing market demands and achieve sustainable growth.

1.7 Scope of the Study

This case study was based on two project-based organisations: ZADMIFO and the Zambezi Drone Solutions organisation located in Lusaka. This study investigated an organisation's way of work so as to give a panoramic view of knowledge management practices. This research was qualitative in nature where case study approach has aided in depth regarding processes and challenges faced while managing knowledge within the organisation. These indeed included interviews, document analysis, and observational techniques in ensuring a perceptive understanding of the subject under investigation.

1.8 Delimitations

This study explored Knowledge Management (KM) practices within project-based organisations, with a focus on ZADMIFO and Zambezi Drone Solutions, both based in Lusaka, Zambia. While the research aimed to examine KM practices broadly including cultural, leadership and process-oriented aspects the findings revealed a strong emphasis on technology driven KM practices due to the nature of the organisations' operations and the responses provided by participants.

The study was designed to investigate KM processes, tools, challenges and their impact on project performance. However, the data collected highlighted the significant role of digital tools and platforms (e.g., cloud-based systems, project management software, and knowledge repositories) in enabling KM within these organizations. This emergent focus on technology reflects the organizations' reliance on digital solutions to address KM challenges, particularly in a resource-constrained environment like Zambia.

The research excluded non-project-based organizations and those outside the geographical area of Lusaka to maintain a focused and manageable scope. While the study did not intentionally limit itself to technology-related issues, the findings underscored the importance of digital infrastructure in KM practices, which became a key theme in the analysis. This delimitation allowed the study to provide actionable insights into how technology can enhance KM in project-based organizations, while acknowledging the broader context of KM as a multifaceted discipline.

1.9 The Outline of the study

Chapter 1: Overview of the study

This chapter provides the background, objectives, research questions, problem statement, scope of the study, significance of the study, and delimitations.

Chapter 2: Literature Review

This chapter explains the theoretical framework of this study, elaborating on the literature in knowledge management with regards to project-based organizations, leading to a project's performance and organizational success.

Chapter 3: Research Design and Methodology

The next chapter deals with the methodology and research design. The method of data collection and its analysis is discussed.

Chapter 4: Presentation and Analysis of Results

This chapter, therefore, presents the findings related to knowledge management practices, processes, and challenges in ZADMIFO and Zambezi Drone Solutions and elaborates on how those aspects impact the projects' results.

Chapter 5: Discussion of Findings

This chapter presents the findings and analysis of the study in relation to the key themes pertaining to knowledge management practices, processes, and challenges in project-based organisations.

Chapter 6: Conclusion and Recommendations

This chapter concludes the effectiveness of knowledge management practices in project-based organizations and also provides recommendations to overcome the challenges faced.

1.10 Chapter Summary

Chapter One gave an overview of the importance of KM in project-based organizations for improved organizational performance and sustained competitive advantage. It has identified the difficulties of project-based organizations in capturing, sharing, and using knowledge as a result of the temporary nature of projects. The chapter outlined the objective of the study, which sought to analyze the effectiveness of KM in Zambia's project-based organizations, specifically ZADMIFO and Zambezi Drone Solutions. It focused on the major KM practices and challenges and their impact on project performance. It aims to present some insights and suggestions for improving KM strategies, which may enhance organizational success. The section defined key terms and the scope and delimitations of the study.

CHAPTER 2

LITERATURE REVIEW

2.1 Introduction

This chapter presents a critical review of literature relevant to the study of knowledge management in project-based organizations. The review covered the conceptualization of KM, its importance, challenges, and its role in project success. It explained the different practices, tools, and strategies of KM, especially with regard to their implications for organizational performance, as will be encountered in organizations like ZADMIFO and Zambezi Drone Solutions. The main elements of knowledge management highlighted in the chapter include the creation of knowledge, sharing, utilization, and challenges related to these processes within project-based organizations.

2.2 Conceptualizing Knowledge Management in Project-Based Organizations

Knowledge management, according to Nonaka (1994), is the creation, distribution, and use of knowledge within an organization for the fulfillment of its objectives. In a project-based organization, most teams change very often, and projects are usually short-term; hence, it is even more crucial to achieve effective knowledge management (Ajmal et al., 2010). The temporary nature of project teams may sometimes result in silos and loss of knowledge, which is why the need for KM is of utmost importance in such organizations.

Unlike traditional organizations, PBOs tend to have fragmented knowledge since most of the knowledge is held at the project level. This calls for effective management according to Lindner and Wald (2011). Managing both the tacit and explicit knowledge of ZADMIFO and Zambezi Drone Solutions will be critical in ensuring continuity from one project to another and capitalizing on previous experiences in subsequent projects. Explicit knowledge - such as knowledge contained in technical manuals, reports, and procedural documents - lends itself more easily to being documented and transmitted, whereas the resolutely more tacit forms of knowledge, namely the experience-based and know-how-based knowledge, require greater deliberation to capture and share (Polanyi, 1966).

2.3 Importance of Knowledge Management in Project-Based Organizations

To add, Hobday (2000) supports that successful knowledge management is crucial for the success of an organization. More importantly, this happens in PBOs because the experience and knowledge gained from one project may be highly valuable to the following projects. Therefore, Davenport and Prusak (1998) claim that from all organizational assets, knowledge is incomparable and can be strategically managed, which in turn leads to better decision making, innovation, and performance.

In both ZADMIFO and Zambezi Drone Solutions, the implementation of KM practices leads not only to smoother project execution but also significantly enhances innovation by instigating a continuous learning culture. This is according to Chua & Lam, 2005. In adopting KM, project teams avoid redundant efforts and are able to leverage lessons learned from failures and successes, hence greater efficiency and effectiveness for subsequent projects. In PBOs, proper KM practices enable better project performance, reduced operation costs, and higher satisfaction of clients (Ajmal et al. 2010).

2.4 Nature of Knowledge Management

The nature of knowledge management signifies those processes and practices that enable an organization to create, share, utilize, and manage knowledge toward performance enhancement and innovation. KM involves systematic handling of the assets of knowledge that include collection of data, transformation of information into useable knowledge, and dissemination of the same across the organization (Nonaka & Takeuchi, 1995). It combines different approaches and techniques in order to provide a sharing culture of continuous learning, considering knowledge as the source resource for competitive advantage. According to Davenport and Prusak, 1998 appropriate KM practices also enable the organizations to utilize intellectual capital, make better decisions and hold a better position in increased complexity and turbulence within the environment, (Kogut and Zander, 1992)

2.5 Knowledge Management Processes

These processes in KM involve creation, sharing, storage, and usage of knowledge, which are of a great deal of importance to the successful management of project-based organizations. Probably the most known of all KM processes understanding frameworks is the SECI model by Nonaka and Takeuchi (1995).

2.5.1Knowledge Creation

Knowledge creation in the process of dynamic interaction between tacit and explicit knowledge according to Nonaka and Takeuchi (1995). In the project based organization such as ZADMIFO and Zambezi Drone Solutions, its basis for knowledge creation is normally socialization that involves sharing experience among the members of the team, while externalization deals with converting the tacit knowledge into explicit forms like project reports.

2.5.2 Knowledge Sharing

In project-based organizations, there has to be knowledge sharing between teams to avoid knowledge silos. Wang and Noe (2010) also add that knowledge can be shared formally, for example, through training sessions and documentation but also through less formal arrangements like team meetings. A fundamental problem of PBOs is how knowledge can be transferred between projects when teams dissolve upon completion of projects, (Lindner and Wald, 2011).

2.5.3 Knowledge Utilization

Knowledge utilization can be defined as the use of shared knowledge for decision making, problem solving, and innovation within organizations (Choi & Lee, 2003). In project based organizations, the reuse of knowledge from past projects is believed to be of utmost importance for the continuous improvement in the performance of future projects (Ajmal et al., 2010).

2.6 Impact of Knowledge Management

It has a deep impact, which is very broad and touches every aspect of the organizational performance of its innovativeness and competitiveness. The practice of effective KM increases the decision making ability of managers, who get the required knowledge on tap to arrive at quicker and better decisions (Davenport & Prusak, 1998). Besides, innovation can be fostered by KM in teams where the sharing of ideas and expertise can lead to new product development or services (Nonaka & Takeuchi, 1995). Organizations that emphasize KM are quick to change their environment, using their accrued knowledge to quickly respond to the different challenges and opportunities availed to them (Kogut & Zander, 1992). In addition, KM contributes to the increase of employee engagement and satisfaction since it fosters a culture of

collaboration and continuous learning that culminates in improved overall organizational performance and sustainability (Choi, 2002).

2.7 Factors Affecting Knowledge Management

2.7.1 Organizational Culture

Organizational culture greatly influences the effectiveness of the KM practices. Indeed, a culture that allows for the free flow of information, collaboration, and learning would allow the employees to share their knowledge; however, the hierarchical, competitive, or fearful of negative outcomes cultures really dampen the sharing. For example, De Long and Fahey 2000 opine that the organization that breeds the culture of trust and psychological safety is likely to perform in terms of knowledge sharing and innovativeness, while Nonaka and Takeuchi 1995 define enabling culture that allows creating and using knowledge in organizations.

Lee and Choi (2022), in their empirical identification, had identified supportive culture conducing to the greater employee KM engagement. Indeed, Wang et al. (2020) underlined the fact that organizations able to create a culture of collaboration and knowledge sharing realize much better ways to exploit expertise in their groups.

2.7.2 Leadership and Management Support

There is an important role that leadership plays in the setting of the KM environment. Leaders who promote the initiatives of KM and provide all sorts of resources required to model knowledge-sharing behaviours are more likely to build up an effective KM culture. Visible management support was found to have a significant impact on employees' intentions to participate in knowledge sharing by Bock et al. (2005). For this reason, leaders must establish incentives for sharing knowledge, acknowledging and rewarding those who contribute to the KM efforts. More importantly, transformational leadership has been specifically linked with better practices of KM, López-Nicolás et al., 2008.

2.7.3 Technology Infrastructure

Information and communication technologies are the basic enabling technologies that allow capturing, storing, retrieving, and dissemination of knowledge. Alavi and Leidner (2001), say that firms with better KM systems have higher levels of sharing and collaboration. Having the technology does not help; it must be user friendly and compatible with organizational goals. Alignment of information technology and

business goals ensures these resources are maximally utilized because the teams would work towards a mutual goal, says McDonald (2022). For instance, an organization utilizing collaboration tools such as an intranet or knowledge repository can facilitate easier information access and hence enable better KM practice.

Kahn and Qureshi, 2021, also found that the organizations which were advanced concerning digital tools such as AI knowledge management systems fared better in terms of efficiency relating to knowledge sharing. The technology must be user-friendly and also align with organizational needs. Zhang et al. (2023) therefore add weight to the fact that the adoption of technology is likely to influence employees to participate more in KM practices.

2.7.4 Employee Engagement

In general, the success of KM initiatives depends upon the engagement of employees. The motivated and empowered employees contribute more effectively toward the success of KM efforts. The feelings of trust in the team, recognition for contribution, and ownership for knowledge are likely to raise the level of engagement. Hansen et al. (1999) have accentuated the building up of an enabling environment that elicits cooperation and persuades employees to contribute their expertise. Studies have shown that organizations that involve employees in the design and implementation of KM systems are more likely to achieve higher levels of engagement (O'Dell & Grayson, 1998).

Alshare et al. (2021) further affirm that an enabling work environment and the involvement of employees in KM decision-making processes tend to increase levels of engagement. Recognition programs and opportunities for professional development go a long way in engaging employees, thus increasing their willingness to participate in knowledge sharing (Khalil et al., 2023).

2.7.5 Training and Development

Training and development should be incessant to help the employees develop the required capabilities and know-how for proper KM participation. Organizations that are willing to invest in training programs facilitate the potential of both explicit and tacit knowledge development in employees. Garavelli et al. (2002), identify that training programs focusing on knowledge sharing techniques and tools increase the confidence of employees to participate in KM initiatives. As may be evinced from

Argote and Ingram, 2000, mentoring and coaching are extremely instrumental in knowledge transmission, especially in the case of the tacit form.

2.7.6 External Environment

It is also influenced by the external environment, such as market dynamics, technological advancement, and competitive pressures. In order to leverage their knowledge effectively, organizations have to be adaptive and responsive to external changes. Kogut and Zander (1992), have expressed the view that the ability of a firm to integrate external knowledge as well as to adapt to changing market conditions is more likely to sustain competitive advantage. For example, organizations that have alliances or are partnering with other companies will enhance their knowledge management capabilities by tapping into new knowledge and resources. To the ability, the integration of external knowledge may be a great source of competitive advantage, Burt (2021).

2.7.7 Knowledge Complexity

The nature and richness of knowledge itself may affect the effectiveness of KM. In particular, tacit knowledge is personal and context dependent and as such is intrinsically more difficult to codify and diffuse compared to explicit knowledge that can be documented and more easily disseminated. Nonaka (1994) reinforces that organizations must develop mechanisms for transferring tacit knowledge such as socialization and mentorship programs in order to improve KM. Diversity in knowledge types within an organization calls for appropriate KM strategies with needs and challenges related to different domains of knowledge.

2.7.8 Incentives and Rewards

Incentives and rewards are considered key determinants of willingness among the workforce to share knowledge. The establishment of reward systems recognizing effort toward knowledge sharing has always had more proactive KM cultures within organizations. According to Lee et al. (2021), intrinsic and extrinsic rewards have a positive effect on the attitude of employees toward knowledge sharing. Linking rewards with KM objectives is among the possible ways an organization can encourage them to actively participate in KM initiatives.

2.8Consequences of Knowledge Management

2.8.1Positive Consequences of Knowledge Management

2.8.1.1 Enhanced Decision-Making

Effective KM provides access to the right information at the right time and enables better decision-making at all levels of the organization. For instance, Awa et al., in a study conducted in 2020, found that organizations with effective knowledge management systems enhanced their decision making significantly

2.8.1.2 Increased Innovation

KM encourages innovation culture through shared ideas and experiences. Kamarulzaman et al. (2023) proved that organizations with managed knowledge resources are most likely to develop innovative products and services for competitive advantage and enhanced decision-making processes, yielding more timely and informed choices.

2.8.1.3 Improved Organisational Performance

Effective KM practices help bring overall improvement in organizational performance. As Bhandari and Bansal (2021) mentioned in their meta-analysis, organizations applying effective KM have been found to relate to better productivity, customer satisfaction, and financial performance.

2.8.1.4 Improved Employee Morale and Satisfaction

In fact, some of the KM initiatives aimed at achieving knowledge-sharing behavior have their resultant effect as increased employee involvement and job satisfaction. As discovered by Chaudhry et al. (2021), encouragement of knowledge sharing practices makes an individual feel valued and involved hence boosting the morale and retention rate.

2.8.1.5 Facilitation of Learning and Development

KM enables an organization to become a continuously learning organization. Systematic capture and dissemination of knowledge enable an organization to develop learning and development in its employees. A study by Afsar et al. (2021) finds that effective KM practices lead to organizational learning and employee development.

2.8.2 Negative Consiquences of Knowledge Management

2.8.2.1 Knoweledge Hoarding

On the other hand, sometimes KM initiatives inadvertently create an outcome of knowledge hoarding, where employees do not want to share their knowledge out of fear of losing their unique value or job security. According to a study by Lee et al. (2022), knowledge hoarding undermines KM efforts and hampers collaboration.

2.8.2.2 Information Overload

While KM aims to provide access to the relevant knowledge, too much information results in information overload, which makes it hard for the employees to tell what is important. Information overload hampers employee productivity and decision making capabilities according to Wang and Wang (2021).

2.8.2.3 Resistance to Change

Most KM systems implementations involve changes in organizational processes and culture. Employees are very resistant to such changes, hence the low rates of adoption, thus making the KM practices ineffective. A study by Asad and Ali (2021), discusses the challenges of change management in KM implementation.

2.9 Knowledge Management Tools and Strategies in Project Based Organisations

KM could be enabled in project-based organizations through a variety of tools and strategies. These include the technical stuff like databases and knowledge bases or non-technical strategies such as developing a knowledge sharing culture (Hansen et al.,1999).

The application of the knowledge repository allows organizations like ZADMIFO and Zambezi Drone Solutions to store the know-how (tacit) as well as the explicit knowledge on completed projects for future projects. Leidner and Alavi (2001) say knowledge repository forms a key position in lessons learning and best practices. It gives assurance that new project teams have access to the previously acquired knowledge for progress and further change.

Disterer (2002) observes that organizations can implement various strategies where mentorship programs ensure the transmission of tacit knowledge from older employees to the newly hired; debriefing is also done for every project. This is meant

to focus on what lessons can be learned from projects. These approaches are very significant in creating an enabling environment, which is appropriate for knowledge sharing and thus effective implementation of knowledge management initiatives within an organization.

2.10 Challenges of Knowledge Management in Project-Based Organizations

On the contrary, in project based organizations, there exist many difficulties regarding the realization of the KM method, including knowledge discontinuity and fragmentation in view of the temporary nature of a project team (Lindner & Wald, 2011). A lot of workers quit a firm after project termination, so one is aware that their organizational memory and individual competencies might not be easily taken from the employees for a particular business use. Loss of this experience is quite high in the sectors that heavily rely on projects.

Another challenge is the reluctance to share knowledge, often due to fears of losing personal competitive advantage or concerns about job security (Wang and Noe, 2010). In project-based organizations, where the focus is often on short term project goals rather than long term organizational learning, creating a culture that encourages knowledge sharing can be difficult (Ajmal et al., 2010).

Outdated KM systems, inappropriate infrastructure regarding KM's functionality and unsupported ICT infrastructure can negatively lead to lesser diffusion, application of knowledge, impeding the successful sharing and deployment (Alavi and Leidner, 2001).

2.11 Knowledge Management and Project Performance

The available literature increasingly supports the link between effective knowledge management practices and enhanced project performance. Grant (1996), asserts that organizations good at knowledge integration always outperform their competitors. In project-based organizations, KM may reduce project delivery times, lower costs and enhance the quality of deliverables by applying valuable lessons from previous projects to new ones (Ajmal et al., 2010).

In ZADMIFO and Zambezi Drone Solutions, effective KM practices can lead to better project outcomes by facilitating continuous learning, reducing the duplication of efforts, and fostering innovation. The ability to capture and leverage knowledge gained during

the execution of one project can greatly benefit future projects, particularly in industries that are rapidly evolving and require constant adaptation (Disterer, 2002).

2.12 Theoretical Literature Review

The theoretical framework for this study was pegged on a number of key theories that underpin knowledge management in organizations. These theories formed a basis of understanding the processes and dynamics involved in managing knowledge in project based environments.

Theories such as Systems Theory, Human Relations Theory and Knowledge Creation Theory have been quite useful in developing a framework to understand knowledge management in organizations. Systems Theory emphasizes that different parts of an organization depend on each other for better flow of knowledge across subsystems. Human Relations Theory underlines the role of relationship and communication between persons in creating an environment where sharing of knowledge is effectively promulgated. Although SECI, particularly through Knowledge Creation Theory, does explain how knowledge is created and converted between the states of being tacit and explicit, the put together theories are very appropriate for the analysis of knowledge management across dynamic project based organizations.

Systems Theory, as developed by Ludwig von Bertalanffy in the mid20th century, is one of these theories and treats organizations as interwoven systems composed of a tremendous number of interacting subsystems acting in harmony toward a general objective. Any part of that organization, comprising people, procedures and technology, fits into this well balance for its efficiency and effectiveness to prevail in overall organizational success (von Bertalanffy 1968). Systems Theory has also gained increasing applications over the years in knowledge management since it emphasizes the importance of feedback loops, communication channels and interdependencies among different organizational units (Jackson, 2019). The studies conducted by Mayo, one of which was the Hawthorne Studies, demonstrated that the productivity of workers does not depend on only working conditions but also on relations with fellow workers and supervisors (Mayo, 1933). Modern applications of Human Relations Theory emphasize the role of emotional intelligence, teamwork, and interpersonal communication in fostering a positive organizational culture where knowledge is freely shared (Bakker et al., 2020). With a project based organization,

this would theoretically assist in understanding the quality of the relationships that can affect knowledge sharing and project outcome performances directly.

2.12.1 Knowledge Creation Theory

SECI Model Knowledge management framework based on dynamic concept developed by Nonaka and Takeuchi (1995), through interaction between two levels of knowing -tacit and explicit-SECI model has four knowledge creation modes that enable knowledge to become knowledge: socialization, externalization, combination and internalization. This is achieved by the socialization of tacit knowledge through direct experience and observation; externalization refers to making the tacit knowledge explicit by documentation and discussion. The combination process integrates the pieces of explicit knowledge into new insights; internalization refers to the description of persons taking up explicit knowledge into their everyday practices. (IBID, 1995).

2.12.2 Systems Theory

Systems Theory has also continued to evolve as scholars apply the theory to different organizational contexts for knowledge management. As put by Jackson (2019), the Systems Theory is still germane in the light of deciphering how different parts of the organization interact in creating, sharing and managing knowledge. These interdependent parts or sub-systems in project based organizations constitute teams, tools, and processes. Jackson reiterated that this level of interconnectivity helps tear down those silos, standing in the way of knowledge flow. This Systems Theory thus allows the understanding of knowledge in an open system where information flows out and gets processed continuously and permits the organizations to optimize the process of managing their knowledge correspondingly. According to Mingers & White, (2020), knowledge sharing in systems theory also employs electronic gadgets and platforms to circulate information in its more contemporary applications. Jones and Karsten (2021), have identified technology as a subsystem supporting the improvement of communication and collaboration in organizations. Technology in a project based environment promotes knowledge transfer across teams and locations. It ensures the sharing of explicit and implicit knowledge in real time. This holistic view of knowledge management functioning from a different kind of subsystem to subsystem standpoint supports system thinking as essential for any organization looking to derive enhanced project performance from better flows of knowledge. This, according to Jackson (2020), corresponds to the Systems theory, which applies rather

closely to the contexts of knowledge management within project based organizations as an approach more concerned with the association and interdependencies of various constituents that make up an organization. According to von Bertalanffy(1968), Systems Theory is the principle that an organization is made up of an elaborate system of interactive parts where overall success depends on effective communication and collaboration across its subsystem elements. These are departments, teams, processes, technology, or individuals within ZADMIFO and Zambezi Drone Solutions with respect to project based organizations operating as subsystems for creation, sharing, and application of knowledge.

Checkland (1981),develops further that Systems Theory let researchers study formal and informal processes of organizations in respect to knowledge flow between teams and across hierarchical boundaries. This is particularly relevant for project based organizations, where success often depends on the seamless exchange of knowledge and expertise among different project teams (Luhmann, 1995). Systems help organizations see the big picture of all possible bottlenecks to knowledge sharing such as departmental silos or breakdowns in communications and thus address them appropriately. Such a view has been given by Senge (1990).

The theory also fits well with this research since it takes into consideration the fact that most project teams are temporary and dynamic in nature and where coordination and the exchange of information are crucial to meet the objectives. Systems Theory, as mentioned by Laszlo and Krippner (1998), provides an insight into how different components, which may be the project managers, the team members and the technological tools, operate in interaction towards an effective knowledge management environment. Therefore, it is ideal with regard to understanding knowledge management practices in project based organizations where both the tacit and explicit knowledge has to flow efficiently across all levels of the system for the success of the project.

2.12.3 Human Relations Theory

The human relations theory stated that workers are motivated, not just by a monetary reward, but by recognition, interpersonal relationships, and the feeling of belonging to a group. Such a social dynamic becomes highly applicable within project based organizations, for instance, where collaboration is based very much on informal

knowledge sharing if the project is to be successful. Roethlisberger and Dickson (1939) further indicated that such informal groups in organizations may affect knowledge flow significantly by creating an environment of mutual trust and openness. In a project-based organization like ZADMIFO or Zambezi Drone Solutions, team members often rely on these informal networks in exchanging tacit knowledge that is, knowledge difficult to codify but essential to solve complex project challenges (Argyris, 1957). These informal networks, in coordination with formal lines of communication, ease the process and enhance the efficiency of the flow of knowledge within project teams, hence enhancing innovation and problem solving.

Barnard asserts that in the year 1938, in support of human relationship theory, an organization-based on cooperation and likewise, depends chiefly upon effective communication. Collaboration is indeed the cornerstone in project based organizations; an environment in which people can believe they belong or at least participate in has made them much willing to contribute (Likert ,1961). Accordingly, it satisfies your purpose miopian description aimed at how dynamic project based surroundings govern sharing knowledge or what occurs that hinders a similar exercise or study area.

Recent research has re-institutionalized Human Relations Theory within the modern context and especially those involving knowledge management. Human Relations Theory itself, one focusing on interpersonal relationships, employee satisfaction and communication, created a particular milieu in which sharing of knowledge would be likelier to occur. Bakker et al. (2020) argued that an organization that values human relations creates a psychologically safe culture where people feel valued and share knowledge more willingly. This becomes very important within project based organizations where team members are expected to work in tandem with one another over intensive time periods. For Bakker et al., the building of open lines of communication coupled with the support for informal interactions breakdowns the various barriers that affect knowledge sharing.

According to De Jong et al. (2021), Human Relations Theory plays a major role in developing emotional intelligence among team members, and it cannot be neglected within effective knowledge exchange. The project based settings of emotional intelligence support the understanding of needs of and response to colleagues, which

provides an enabling condition for sharing knowledge in both explicit and tacit forms. With the theory's emphasis on interpersonal relationships, there is an increasing focus on soft skills as one of the most important knowledge management enablers in contemporary organizations (Lloyd, 2022). Through effective human relations, therefore, project based organizations are better placed to enhance their approach toward knowledge management for improved project performance.

Human Relations Theory focuses on the social and emotional aspects of organizational life. For this reason, it can also provide a conceptual framework to study how knowledge management processes are affected by employee satisfaction, teamwork and interpersonal relationships in project based organizations.

2.13 Empirical Literature Review

An empirical review, as explained by Croswell (2018), in the context of related literature, is an analysis and synthesis of research studies that are empirical in nature that is, studies based on observations, experiments, or experiences rather than purely theoretical or conceptual work. In the context of a literature review, an empirical review involves summarizing the findings from research that has used data, evidence and measurements to investigate a specific issue or phenomenon.

In recent years, knowledge has been widely recognized as the most crucial competitive asset (Palacios and Garrigos, 2006). Knowledge refers to a theoretical or practical understanding of a subject. Knowledge management has become a very common term in the twenty first century as it has been applied to a wide spectrum of activities and areas with the purpose of managing, creating and enhancing intellectual assets (Shannak, 2009) and it has been enriched with the big wealth of contributions from a lot of scholars and an enormous accumulation of experiences.

From a more profound point of view, the working method or philosophy should be KM. KM is partially a branch from the study category of management but it has been closely interlinked with the information and communications technologies in many ways (Mihalca et al. 2008). In fact, KM can be viewed from a number of perspectives as there are a number of fields contributing to it. Prominent among them are the fields of philosophy, cognitive science, social science, management science, information science, knowledge engineering, artificial intelligence and economics (Kakabadse et

al., 2003). Why the need to manage knowledge? Nowadays we are in the era of knowledge.

KM is used to capture, document, retrieve and reuse knowledge, as well as to create, transfer and exchange it, (Dayan and Evans,2006). No limit exists to where KM can be applied, ranging from individual learning, and small enterprises to large multinational corporations: KM has become increasingly more important for individuals to understand what information is essential, how to administer this essential information, and how to transform essential information into permanent knowledge Tseng et al. (2012), KM plays a very important role regarding the success of an organization's activities and strategies (Castrogiovanni et al.2016). Thus, effective knowledge management and usage is of vital importance for the individuals and organizations to gain from the knowledge value fully. Over the past decade, numerous literature on KM reviews from different perspectives have been published. The various types of research on KM were classified by Ragab and Arisha (2013).

Serenko (2013) ,investigated the stock of KM publications and citation classics in the field of KM. Makhsousi et al. (2013), reviewed recent advances on the implementation of KM in various areas and discussed why some of KM implementations fail and how they could turn into a successful one. Arisha and Ragab (2013), provided a literature review, categorizing analysis of the rapidly growing number of KM publications and offering a comprehensive reference for newcomers embarking on research in the field. Matayong and Mahmood (2013), reviewed the current literature of KM systems studies in organizations. Chiliban et al. (2014), reviewed different KM models based on their strengths and weaknesses. Tzortzaki and Mihiotis (2014), studied how the theory revolving around KM has developed over the years. Omotayo (2015), reviewed the literature in the area of KM to bring out the importance of KM in an organization. Asrar-ul-Haq and Anwar (2016), present a review regarding attempts to provide the evidence base concerning knowledge sharing and KM in organizational settings.

2.13.1 Global Perspective

Most studies on knowledge management in project based organizations in North America, particularly within the United States and Canada have focused on the information technology industry and construction and health sectors. Researchers

have documented that KM enhances team collaboration, innovation and ultimately organizational learning in the improvement of project outcomes.

Researchers such as Alavi and Leidner (2001) have also shed light on how IT systems facilitate the different KM processes: sharing and retrieval of knowledge. It also points toward the challenges of maintaining the relevance of the knowledge repositories and integration of the tacit knowledge. For instance, in Europe, Germany, the United Kingdom and Sweden, large scale engineering, automotive and pharmaceutical sectors have been the focus of empirical research. The findings suggest that KM practices are crucial to competitive advantage in project based environments.

For example, in the UK construction industry, there is evidence that codification and personalization of knowledge enable project teams to adapt and reuse past experiences effectively. In addition, non-hierarchical and team based approaches to KM have been found to encourage trust and openness in knowledge sharing, which increases the efficiency of projects. As Wang & Noe (2010) note, cultural and organizational structures are a significant determinant of the way knowledge management is practiced in project based organizations. Empirical studies conducted in the Asian continent in countries such as Japan, China and India support this view. In Japan, for example, KM may be deeply embedded in continuous improvement and there is heavy reliance on mentors to share knowledge and integrate members into teams. Chinese organizations, especially those into IT, invest greatly in the KM system to undertake big projects. Empirical studies, however, illustrate challenges of protection of intellectual property and cross group collaboration. The empirical evidence from India outsourcing and IT industries shows that, in practice, KM is able to facilitate project timelines and reduce operations costs, especially if knowledge databases and knowledge sharing platforms are utilized IBID (2010). In Australia and New Zealand, Carrillo (2013), reports that studies on KM in the construction, mining, and IT sectors confirm that effective knowledge management leads to the better management of remote, large scale projects. Empirical studies have established that project based organizations in such environments derive several benefits from the KM system by facilitating knowledge sharing across boundaries to improve decision making and problem solving.

However, Love (2005) mentions that there are challenges in integrating tacit knowledge within virtual teams. Knowledge transfer between stages of a project is another crucial area, as suggested by various research studies on project handovers. Sanchez et.al., (2022), on the other hand, present empirical evidence from South America, Brazil and Chile, that in project based organizations, specifically the oil and gas and construction industries, KM is related to productivity improvement and innovation. The literature reviewed indicated that adopting communities of practice and lessons learned databases are considered successful KM practices adopted by organizations to help overcome knowledge silos.

Challenges still persist in how cultural barriers can be overcome and how KM initiatives align with the organizational strategy. From empirical research across these continents, effective knowledge management in project based organizations demonstrates better decision making, innovation and increased rates of project success. However, a number of challenges come forward like integration of the tacit knowledge, creating a culture for sharing knowledge and overcoming technical and cultural barriers.

Global empirical studies suggest that while the technological infrastructure for KM is essential, the human aspect fostering collaboration, trust and open communication is equally critical for successful knowledge management in projects (Dalkir,2011).

2.13.2 African Perspective

However, in the African perspective, countries like South Africa underlined critical importance in construction and financial sectors. On this point, research by Sibanda et al. (2020) evidenced how KM practices within construction projects have improved project delivery and decision making. In fact, with the use of KM tools like knowledge repositories and collaborative platforms, there has been effective knowledge transfer gained in different phases of the projects. However, challenges such as knowledge hoarding and poor KM culture still exist (Oke et al., 2017).

Empirical evidence has shown that, in Nigeria, KM is increasingly being adopted by project based organizations, especially in the oil and gas sector. Okere et al. (2019) found that KM enhances operational efficiency and innovation. Knowledge sharing platforms and KM systems have been able to capture valuable tacit knowledge that has helped organizations improve their project outcomes. However, the study

highlighted that infrastructure and organizational commitment were some of the challenges that may impede effective dissemination of knowledge.

2.13.3 Zambian Perspective

The application of knowledge management in various sectors is gaining momentum and is a focal issue in Zambia, among which the key projects are construction and health-related. Empirical studies have shown that KM practices improve the performance and sustainability of projects. For instance, Chanda and Chizema (2021), noticed that the project based organizations that were practicing KM through the usage of tools like a lessons learned database and knowledge sharing platforms had better decision making, resource management and project efficiencies in their study related to KM within the construction sector of Zambia. This study also identified some challenges such as limited KM infrastructure and organizational culture resistant to knowledge sharing, which impede the full realization of the benefits of KM.

In the health sector, KM practices are particularly critical in knowledge dissemination and capacity building for health projects. For example, a study by Mwape et al. (2017), indicated that health organizations in Zambia that implemented KM strategies were more effective in project monitoring and evaluation leading to improved health outcomes. However, there are still some challenges such as a lack of funding for KM initiatives and a lack of technical capacity to fully use the KM systems.

2.14 Comparative Analysis

2.14.1 Developed vs Developing Countries

Hu and Kuhn (2018), explore the knowledge management practices of organizations within different economic contexts and established that resource availability and infrastructure together with the culture provides a basis upon which an organization executes KM strategies. They enumerated that the majority of the organizations in developing countries are facing varying challenges in implementing effective knowledge management systems because of a lack of resources and varied organizational culture.

2.14.2 Sectoral Differences

Pablos (2004), also presents a literature review on knowledge management practices across industries but he also highlights the particular issues influencing public sector organizations in contrast to the private firms. For example, he states that public

organizations could encounter bureaucratic resistance and inertia for change that may impact sharing and usage of knowledge.

2.15 Recent Studies

2.15.1 Artificial Intelligence and KM

Discussion Xu and Goh (2023), give a review in regard to the application of the technologies of artificial intelligence on how practice is be performed on knowledge management. They cite that AI enables the sharing of knowledge, therefore facilitating improved decision making activities because organizations may now analyse massive data with improved efficiency. Integration of AI tools can be one sure way through which to complement conventional ways of practice for KM.

2.15.2 Digital Transformation

Vial (2021), discusses the effect of the digital transformation upon organisations, with their sudden development, finally digital technologies have brought into view a whole new demand to update knowledge management strategies. He develops the concept further that the very organisation and its approach should change towards Knowledge management so that the use of the Digital Tool serves flexibility and rapid response against the Market conditions that time demands.

2.16 Practical Implications

Davenport and Prusak (1998), have argued that through effective management of knowledge assets, organizations can achieve a quantum leap in the performance of projects. They indicate that structured methods of knowledge sharing like best practices development and collaborative culture, would lead to more innovative and efficient performance.

2.17 Future Research Directions

According to Sahu and Pathak (2022), some of the future research directions in knowledge management were, there is a need to unravel the influence of emerging technologies such as block chain and machine learning on KM practices. It is tough for organizations to take up knowledge as a strategic asset without the proper understanding of such dynamics.

2.18 Knowledge Concept

Knowledge has been defined as the ability to act effectively and it is available in explicit and tacit forms. While the explicit knowledge is formal, systematic and highly transferable, on the contrary, the latter form is quite personal and can barely be articulated. (Nonaka, 1994). Knowledge creation, validation, presentation, distribution and application are involved in managing knowledge; in any KM system, there is a standardization of accessibility (Bhatt, 2001). Successful KM systems develop better organizational performance by fostering the creation and flow of knowledge within organizations (De Long & Fahey, 2000).

2.19 Barriers to Knowledge Sharing

These are barriers: diverse expert backgrounds, technology dependence, language differences, trust issues and motivation that always appear in knowledge sharing in project teams and need to be properly taken care of to allow proper flow and use of knowledge, according to Riege (2005), Husted & Michaiova (2002), Bakker et al. (2006), Szulanski (2000). While the project based organization is common in developing countries like Zambia, there are a limited number of studies that have focused on knowledge transfer importance in enhancing KM for achieving organizational efficiency and effectiveness. Apart from all the factors discussed above, one important factor defined under various literature reviews is the motivation of individuals which can really affect the knowledge sharing between project team members (Szulanski, 2000).

A lack of motivation to share knowledge either from the recipient or receiver side can limit the precious knowledge to a certain person which in turn can be problematic for the whole organization. There could be several reasons for a lack of motivation from either side such as the power which a knowledge holder feels due to the knowledge that he owns that could prohibit him from sharing knowledge. Lack of motivation from the recipient's side may be brought about by an element of mistrust towards the knowledge holder. Due to the complexity of these projects, the technology and systems required can act as a barrier to sharing knowledge. Often it is necessary to communicate using technology to share knowledge and with this dependency, there can be limitations. In order to share knowledge with one another, there are regulations and practices that must be conducted (Riege, 2005). This can limit the project

member's desire to share knowledge, thus acting as a barrier. This makes face to face interaction often be seen as the better alternative because of its immediate understandings and opportunities for proper clarification. The interaction goes up great when team members are side by side and together.

Language is also a factor. The language can become a problem if native languages of the company differ from that of members working on this project, (Husted & Michaiova 2002). Consequently, this impacts the knowledge shared due to ambiguity and general difficulty of communication that can result.

Development of trust within project team members can become another obstacle in the way of project group members. For the employees, however, building trust takes time, which is often scarce when performing a project.

Yet another issue relevant to the level of trust among the project members refers to the fact that it affects whether the knowledge is shared at all. Bakker et al. (2006) suggest that a project member is willing to share knowledge with a person they perceive as honest.

2.20 Critique of Literature

The literature on knowledge management has laid a strong foundation for understanding its benefits in enhancing organizational efficiency and innovation.

A critical review of the literature on knowledge management in project based organizations reveals a number of emerging issues and gaps that are significant especially in developing contexts like Zambia. While KM is widely recognized as a tool to enhance innovation and productivity, little attention has been paid to the contextual challenges that organizations in sub-Saharan Africa face, especially those characterized by resource constrained contexts (Nonaka & Takeuchi, 1995; Du Plessis, 2007). On the other hand, recent works by Agyemang & Aikins (2022), suggest that KM practices have to be contextualized since uncritical transfers of KM frameworks from developed to developing nations often do not work out because of differences in culture, technology and infrastructure.

While some, such as Iqbal et al. (2019), have pursued technological ways of enhancing KM, these are not applicable or even feasible for organizations within under resourced technological ecosystems. This gap is very critical in Zambia, since access

to ICT remains unequally distributed, particularly in rural areas. Relatedly, the literature shows insufficient discussion on how knowledge retention could best be managed within the usually high temporary employee turnover that faces project based entities and where possibilities for long term storage and retrieval might therefore not exist (Shujahat et al., 2019). This is extremely problematical in projects revolving around health or construction where contract workers are mainly sourced on a short term basis. The most recent critique by Akoto & Boateng, 2021, view that in most African countries, the knowledge sharing culture has to confront organizational hierarchies and related issues of trust. The cultural barriers to knowledge sharing must be understood and mitigated systematically. This contradicts previous models that have put rather one sided emphasis on the technical aspects of KM at the expense of sufficient attention to the social dynamics driving knowledge flows across organizations, as noted by Nonaka & von Krogh (2009). In the absence of these metrics, assessment of the success of KM initiatives becomes very difficult for an organization.

This therefore, is a call that future research be directed at empirical studies in such contexts while keeping a keen eye on the social, cultural and technological factors shaping the KM practices within project based organizations.

2.21 knowledge Gap

Mwape (2017), claims that even with all the studies conducted on KM in project based organizations worldwide, there is still a significant deficit in the understanding of how KM strategies could be fitted and applied in the context of Zambian project based organizations. Indeed, reviews of related literature by Okere et al. (2019), have been inclined towards general benefits and challenges such as improved project delivery and decision making as well as barriers like knowledge hoarding and inadequate infrastructure. However, empirical evidence concerning the exact mechanisms and strategies which enable effective knowledge transfer and continuous learning for project-based settings in Zambia remains scanty, as noted by Chanda and Chizema, (2021).

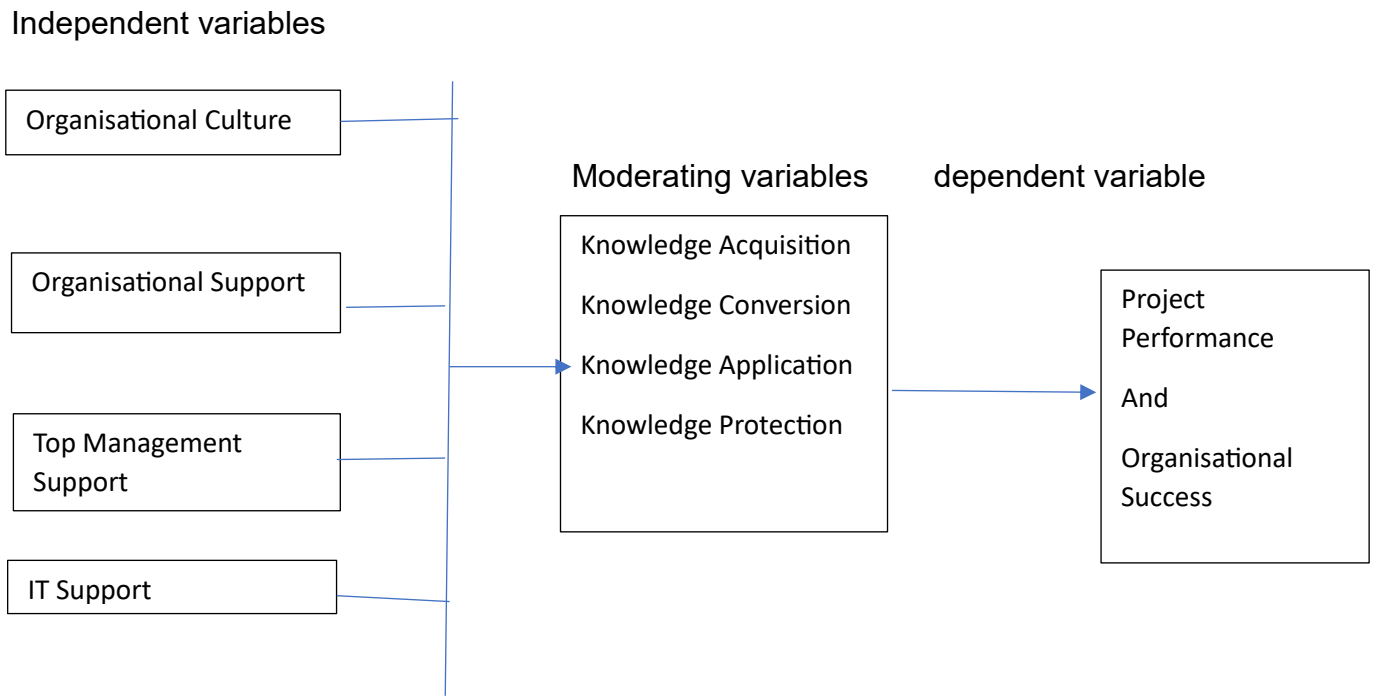
These as noted by Sibanda (2020), are artificial intelligence and digital collaboration software, their relationships with the KM practices are yet to be developed. Another area that is also understudied is related to the role that organizational culture and

leadership can play in promoting environments that are supportive of the path toward KM adoption and continuous knowledge sharing activities in Zambian contexts. It is the addressing of these gaps that may lead to the development of appropriate KM frameworks thereby enhancing organizational learning, innovation and competitiveness in the socio economic landscape in Zambia.

2.22 CONCEPTUAL FRAMEWORK

The conceptual framework for this study integrated the key elements of knowledge management and their relationships within project based organizations. This framework served as a visual guide for understanding how various knowledge management processes interact and impact project performance and organizational learning.

Figure 1 Knowledge Process Capability



To summarize the key contributions and gaps in the existing literature on KM, the following table provides an overview of the work of other scholars. This synthesis highlights the theoretical and empirical foundations of this study, as well as the gaps that this research seeks to address.

Table/0:1Summary of the work of other scholars

Table 01 : Summary of the Work of Other Scholars

Scholar's Name	Title of the Article	Data Collection Tools	Findings	Gaps in the Article	Lessons Learned
Nonaka & Takeuchi (1995)	The Knowledge-Creating Company	Case studies, interviews	Knowledge creation occurs through socialization, externalization, combination, and internalization.	Focused on large corporations; lacks insights into SMEs.	KM processes are dynamic and context-dependent.
Alavi & Leidner (2001)	Knowledge Management and Knowledge Systems	Surveys, case studies	Effective KM systems improve decision-making and innovation.	Limited focus on resource-constrained environments.	Technology plays a critical role in KM but must align with organizational culture.
Davenport & Prusak (1998)	Working Knowledge	Interviews, document analysis	KM success depends on culture, leadership, and technology.	Lacks practical frameworks for implementation.	Leadership and culture are key drivers of KM success.
Grant (1996)	Toward a Knowledge-Based Theory of the Firm	Theoretical analysis	Knowledge integration is critical for organizational success.	No empirical data to support theoretical claims.	KM must focus on integrating diverse knowledge sources.
Donate & de Pablo (2015)	The Role of Knowledge-Oriented Leadership in KM	Surveys, interviews	Leadership significantly influences KM practices and outcomes.	Limited focus on project-based organizations.	Leadership commitment is essential for effective KM implementation.
Wang & Noe (2010)	Knowledge Sharing: A Review and Directions for Future Research	Literature review, meta-analysis	Knowledge sharing is influenced by organizational culture, technology, and incentives.	Lacks context-specific insights for developing countries.	A supportive culture and effective tools are critical for knowledge sharing.
Ajmal et al. (2010)	Knowledge Management in Project-Based Organizations	Case studies, interviews	KM practices enhance project performance by improving collaboration and innovation.	Limited focus on challenges in resource-constrained environments.	Structured KM processes are essential for project success.
Lindner & Wald (2011)	Success Factors of Knowledge Management in Temporary Organizations	Surveys, case studies	Temporary organizations face unique KM challenges due to their dynamic nature.	Does not provide solutions for overcoming these challenges.	KM in temporary organizations requires tailored strategies.
Serenko & Bontis (2016)	Understanding Counterproductive Knowledge Behaviour	Surveys, statistical analysis	Counterproductive knowledge behaviour (e.g., knowledge hoarding) undermines KM efforts.	Limited focus on mitigating such behaviour.	Addressing counterproductive behaviour is critical for effective KM.
Eppler & Sukowski (2000)	"Managing Team Knowledge"	Case studies, interviews	Team-based KM practices improve collaboration and knowledge retention.	Lacks focus on cross-team knowledge sharing.	Team-based KM requires clear processes and leadership support.

As shown in the table, existing studies have provided valuable insights into KM processes, tools, and challenges. However, there is a notable gap in the literature regarding KM practices in project-based organizations in resource-constrained environments, such as Zambia. This study addresses this gap by investigating the KM practices of ZADMIFO and Zambezi Drone Solutions, providing context-specific insights and recommendations.

2.22.2 Chapter Summary

This chapter reviewed theoretical and empirical literature related to the effectiveness of knowledge management in project based organizations. This theoretical review which was based on theories such as the Knowledge Creation Theory SECI Model, Systems Theory and Human Relations Theory gives insights into processes of

knowledge creation, storage and sharing and how it influences organizational performance. The review was empirical in nature, covering various global perspectives from North America, Europe, Asia, Australia and South America in relation to how KM practices enhance innovation, decision making and project success. The African perspective covers countries such as South Africa and Nigeria on how important KM can be to improving project results in the construction and oil industries.

CHAPTER 3

METHODOLOGY

3.1 Introduction

The literature review in the previous chapter provided the theoretical framework that explained the importance of knowledge management in project based organizations. This chapter presented the plan of action followed for this study in terms of research design and implementation to ensure that the findings are reliable and valid. This methodology section, being the backbone of the qualitative research study, therefore explained with clear statements that demonstrated every step and measure in answering the research questions to attain the stated objectives.

3.2 Qualitative Research Methodologies

Qualitative methodologies, such as case study, grounded theory and phenomenology, were adopted for this research to investigate knowledge management practices in project based organizations. Fox and Bayat (2007) ,indicate that when a qualitative design is chosen, several options are available. Most of the known methodologies are presented here and put into perspective within the different disciplines within which they are usually used. In that respect, this case study approach gave context specific insights into both ZADMIFO and Zambezi Drone Solutions, whereas the approach of grounded theory facilitated the construction of new theoretical insights based on empirical data. Phenomenology enabled the actual capture of lives of employees by enriching an understanding of knowledge management influence in project outcomes.

3.2.1 CaseStudy

Case studies were quite helpful for this study because they let us gain substantial amounts of details of particular instances knowledge management practices implemented in a project based organization. In agreement to the fact that case study according to Welman and Kruger (2001), entails intense studies of various units of analysis that might include people groups' institutions among others. Both cases, ZADMIFO and Zambezi Drone Solutions were unique in this study in that the researcher was able to gather a richness in qualitative data with depth regarding the complexities in knowledge management processes. The case study approach also helped to provide push for fieldwork by a researcher, an important process to capture

real time data of cases that represent these organizational contexts. Salient features are that the boundaries of the cases are clearly defined and that triangulation has taken place to establish construct validity by convergence of different data sources and methods to confirm findings.

3.2.2 GroundedTheory

Grounded theory was the approach used as an analytical strategy whereby inductive development of theory from data collected during the research study took place. This is a bottom up approach therefore, it has to focus on the theoretical insight directly linked to the empirical data. A grounded theory approach enables a researcher to systematically collect knowledge management practices' data and analyse them, which may lead to the discovery of patterns and themes that are not evident before Charmaz (2014). The approach of grounded theory helped the study to develop new theories concerning knowledge management in project based organizations. These added to the literature and practice.

3.2.3 Phenomenology

According to Creswell (2013), Phenomenology provided a framework for understanding the subjective experiences of individuals involved in knowledge management within the selected organizations. This methodology was grounded in the idea that reality is interpreted through individual perceptions, allowing researchers to gain insights into how participants make sense of their experiences. By conducting semi structured interviews and collecting personal narratives from employees of ZADMIFO and Zambezi Drone Solutions, the research uncovered the meanings and implications of their knowledge management practices. The phenomenological approach emphasizes the researcher’s role in understanding these experiences, promoting a direct engagement with the participants' perspectives (Moustakas, 1994).

3.3 Research Approach

As indicated by Creswell (2013), Phenomenology provided a framework for understanding the subjective experiences of individuals involved in knowledge management within the selected organizations. It relies on the very notion that reality is interpreted through subjective perceptions, enabling the researcher to explore how participants make sense of their experiences. Semi structured interviews and personal narratives by employees at ZADMIFO and Zambezi Drone Solutions therefore

disclosed the meanings and implications of knowledge management practices. In such experiences, the phenomenological approach amplifies the role of the researcher, according to Moustakas (1994), by calling for a direct engagement with the participants' perspective.

3.3.1 Rationale for Selecting Qualitative Research

The qualitative approach was adopted for this research because it added to the existing complex social phenomena that have been investigated through an in depth look at experiences, processes and contexts. Qualitative research is best suited for studies of how and why certain practices are enacted and as such, this type of research was fitting for the examination of knowledge management in project based organizations like ZADMIFO and Zambezi Drone Solutions. Unlike quantitative methods which focus on numerical data and generalization, qualitative research allows for rich, detailed data collection, often capturing the subtleties of human behaviour and organizational processes that may otherwise be overlooked (Creswell, 2014).

According to Denzin & Lincoln, (2018), the qualitative approach gives the researcher a direct contact with respondents for an in depth view of their perceptions, motivations and experiences. This can be very instrumental in realizing the practice, challenges and impacts that KM stipulates across boards of various organizations. Qualitative research, such as semi structured interviews and document analysis, best allows the flexibility and adaptability in data gathering that is needed for nuanced, dynamic knowledge management practices.

A qualitative approach in this study would be more befitting for the aim of devising deep insights and creating theory by means of such methods as grounded theory and phenomenology focused on exploration of lived experiences and emerging patterns within the data. Thus, the qualitative research choice was appropriate to the purposes of deep understanding of investigated phenomena.

3.4 Research Design

A case study multiple design was applied for this study. This would provide an in depth analysis of the knowledge management practices between the two organisations, ZADMIFO and Zambezi Drone Solutions, necessary for a meaningful understanding in differing contexts. A research design refers to a roadmap or guide that provides

details on how a field study is to be conducted, Cooper& Schindler (2014). Case studies can capture rich qualitative data and also enable an in depth investigation of the processes, interactions and experiences relating to knowledge management within such organizations.

3.5 Study Population

A study population refers to a set of cases, objects, or events of interest to the researcher from which he or she wants to draw a sample and to which the research findings would be generalizable (McMillan and Schumacher, 2001).

The target population of this study came from key informants in selected organisations namely: Directors, IT managers, Operations managers, communication officers, Human Resource managers, General workers, Knowledge management officers and Project officers. The organisation was adopted as the focus unit to achieve a wide span of knowledge management practices and experiences.

3.6 Sample Size

The sample for this study included 2 project based organizations selected, involving between 15 to 25 participants. Mugenda, (2005) states that the sample size affects the precision of estimating population values and a reasonably large sample is necessary to achieve accurate estimates. The study ensured representation from all levels of management to enable the study to get a perspective from all viewpoints. The sample size was derived from the formula $n=n1+n2$.

3.7 Sampling Technique

According to Foley, (2018) a purposive sample is a non-probability sample in which the researcher uses his or her judgment in the selection of the population members to be studied. This study adopted a purposive sampling method in selecting participants with knowledge and experience in knowledge management from the studied organizations. The scope of the study was employees involved in decision making about knowledge management strategies. This method ensured we elicited critical insights from stakeholders and were thus able to gather adequate, rich information to feed our research questions.

3.8 Data Collection/Instruments

Data collection involved a number of instruments that help provide a rich understanding.

Key informants through semi structured interviews was explored about knowledge management practices, challenges and impacts through the use of an interview guide comprising open ended questions in order to obtain rich information. In addition, organizational documents were reviewed including knowledge management policies, project reports and knowledge repositories to understand the formal knowledge management practices and tools. Observations of knowledge management activities and interactions within the organizations were conducted to capture real time practices and dynamics. For example, Sapsford (2007) believes that, though a semi structured interview has no standardised format there is, typically an agenda used as an aide memoire, to remind the interviewer to ensure basic points are touched.

3.9 Data Analysis

To ensure structured organisation and analysis was obtained; Qualitative data analysis tools such as NVivo was employed. The data was categorized into key themes, patterns, and categories about knowledge management practices and challenges.

Thematic development followed the salience of the data on how the knowledge management practices influence project performance and organizational learning. A cross case analysis was conducted in comparing and contrasting findings across different case studies. This established what the commonalities and differences that exist in the knowledge management practices are.

3.10 Ethical Considerations

The ethics of qualitative social research are based on the foremost principles of protection from harm and interests of participants (Badley, 2014). The present research followed tight ethical guidelines for protecting the rights, safety and wellbeing of the participants, while the standards of good ethical research practice were observed

3.10.1 Informed Consent

The participants had been verbally informed about the research aims, what their participation would entail, possible risks or benefits, and that at any time they could withdraw for whatever reason without any consequences. Written consent had been obtained prior to the study's enrolment. In this type of knowledge management study within project based organizations, it is important to ensure that participants understand the purpose and how their contribution help to further improve knowledge practices.

3.10.2 Confidentiality

Anonymity within the research is maintained. Reporting or publication regarding personal contributions and information on participants are anonymized in a way that no amount of data allows tracing the identities of participants. All data related to interviews and documents were stored in a secure way and were only accessible for the research team. It is an indispensable approach toward gaining confidence as sensitive knowledge about organizations may come up for discussion.

3.10.3 Respect for Participants

Respect toward participants guided the entire research process. It ranged from not disturbing them at inconvenient times to grant an interview or meeting to not pressuring them about participating in the research. Since the research has targeted organizations like ZADMIFO and Zambezi Drone Solutions, it is of essence that professional and cultural values of participants are respected while collecting knowledge on how they manage and share information.

3.10.4 Non-Maleficence

This research applied the principle of "do no harm". It was made sure that participants are protected from harm whether physical, emotional, or social due to taking part in this research. Particularly, this study was dealing with internal knowledge management practices, which were sensitive for them. Efforts have been made to make sure minimum distress and stress associated with discussions.

3.10.5 Beneficence

The purpose of the research was to add value to both the respondents and the greater community of project based organizations in Zambia by bringing to the fore the existing

knowledge management practices in organizations such as ZADMIFO and Zambezi Drone Solutions, identifying areas of improvement and making practical recommendations that would increase the benefits emanating from the projects. This study sought to contribute to such a cause in developing better knowledge management systems for the growth and success of the organizations.

CHAPTER 4

PRESENTATION AND ANALYSIS OF RESULTS

4.1 Introduction

This chapter presents the findings derived from the qualitative data collected from the 17 respondents across ZADMIFO and Zambezi Drone Solutions. Data analysis was done in relation to the objectives of the study, focusing on KM processes, tools, challenges, impacts on project performance, and strategies for improvement. Through the analysis, identification of key themes and emerging patterns has been done, and these have been augmented with verbatim quotations from respondents in order to enrich the narrative.

4.1.2Profiles of ZADMIFO and Zambezi Drone Solutions

To provide a comprehensive understanding of the context in which Knowledge Management (KM) practices are implemented, this section profiles the two organizations studied: ZADMIFO and Zambezi Drone Solutions. These profiles highlight their organizational backgrounds, key KM practices, challenges faced, and the impact of KM on their project performance. By examining these organizations in detail, this study offers valuable insights into the implementation of KM in project-based organizations operating in resource-constrained environments like Zambia.

ZADMIFO has adopted several KM practices to enhance knowledge sharing and project performance. The organization utilizes cloud-based platforms such as Google Workspace and Microsoft Teams to facilitate real-time collaboration among its geographically dispersed teams. Monthly knowledge-sharing sessions are conducted, where project teams present their findings and lessons learned, fostering a culture of continuous learning. Additionally, ZADMIFO emphasizes the documentation of lessons learned and best practices, which are stored in centralized knowledge repositories for future reference. These practices align with Nonaka's SECI Model, particularly the processes of externalization (converting tacit knowledge into explicit forms) and combination (integrating explicit knowledge into organizational systems).

Despite its efforts, ZADMIFO faces several challenges in implementing effective KM practices. Resistance to change among employees has led to inconsistent adoption of KM tools and processes. Additionally, the organization struggles with limited digital infrastructure, particularly in rural areas where poor internet connectivity delays real-time knowledge sharing. Another significant challenge is the presence of knowledge silos, where teams operate in isolation with minimal cross-departmental collaboration. These challenges highlight the need for stronger leadership involvement and a more structured approach to KM implementation.

The KM practices adopted by ZADMIFO have had a positive impact on its project performance. Access to organized knowledge repositories has enabled faster and

more informed decision-making, reducing project delays and improving resource allocation. The use of digital tools has enhanced collaboration among teams, particularly in remote areas, ensuring that critical knowledge is shared in real time. Furthermore, the knowledge-sharing sessions have fostered a culture of innovation, with teams leveraging insights from past projects to develop new solutions. These outcomes demonstrate the potential of KM to enhance organizational effectiveness, even in resource-constrained environments.

Zambezi Drone Solutions has implemented several KM practices to support its operations. The organization relies heavily on collaborative tools such as Slack and Trello for informal knowledge sharing and project management. Structured post-project reviews are conducted to capture lessons learned and identify areas for improvement, ensuring that knowledge from completed projects is retained and utilized. Additionally, the organization has established mentorship programs to facilitate the transfer of tacit knowledge from senior to junior employees. These practices reflect the principles of socialization (sharing tacit knowledge through direct interaction) and internalization (applying explicit knowledge to individual practices), as outlined in Nonaka's SECI Model.

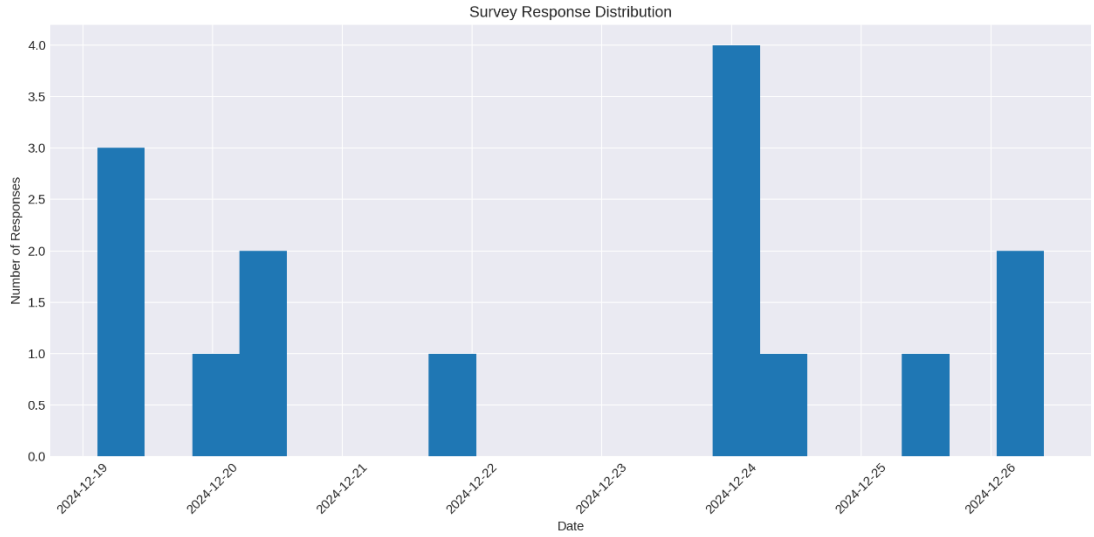
Despite its innovative approach, Zambezi Drone Solutions faces several challenges in implementing effective KM practices. High staff turnover has led to the loss of critical knowledge, particularly tacit knowledge, which is difficult to codify and transfer. The reliance on multiple digital tools has resulted in information overload, making it difficult for employees to locate relevant knowledge quickly. Furthermore, while leadership recognizes the importance of KM, their involvement in KM initiatives has been inconsistent, limiting the organization's ability to fully leverage its knowledge assets. These challenges underscore the need for a more systematic approach to KM, supported by strong leadership and robust infrastructure.

The KM practices adopted by Zambezi Drone Solutions have significantly improved its project performance. The use of collaborative tools has led to efficiency gains, reducing project delivery times and improving coordination among teams. Mentorship programs and structured documentation have helped retain critical knowledge despite staff turnover, ensuring continuity across projects. Additionally, effective KM practices have enhanced stakeholder satisfaction by ensuring timely and accurate communication. These outcomes highlight the transformative potential of KM in driving innovation and organisational success.

4.2 Key Knowledge Management Processes and Tools

4.2.1 Knowledge Creation, Sharing, and Utilization

Table 0:2 Survey Response Distribution



Moreover, the given analysis compared various platforms that were used in the creation, dissemination and application of knowledge across organizations in regard to both formalized and less formal mechanisms of knowledge. These key practices include brainstorming sessions, reviews at the end of a project and finally the use of collaborative technologies. The focus has been derived specifically relating these to current organizations which find their ways into transitioning to hybrid and fully remote environments.

Regarding the issue of the adoption, online virtual platforms where video conferencing can take place, like Zoom, Microsoft Teams and others, saw their highest usages since COVID-19 and is still be pivotal for working online.

On the other hand, collaborative tools are particularly effective, offering dynamic, visual environments for real time collaboration in principle, perfect for dispersed groups. This all depends, however, on the degree with which participants are accustomed to the platforms and importantly how they are creatively used. At the same time, virtual platforms do have the benefit of allowing diverse participants to join in from different locations but more often than not have problems with engagement, especially if the groups are larger. They usually don't have that spontaneous, free

flowing atmosphere typical of face to face meetings to which creative ideas owe a great deal of their origin.

Face to face brainstorming remains the most effective means of getting spontaneous ideas and vibrant discussions because one can perceive nonverbal communications easily and share instantly. Still, it has its own limitations: it is geographic; it needs much logistic arrangement.

On the other hand, project management tools like Jira and Trello have gained much popularity, especially in those industries implementing Agile or Lean methodologies where post project reflection and continuous improvement can be well guided in a structured fashion. Virtual platforms such as Zoom and Microsoft Teams have recently been widely implemented in industries where remote or hybrid work is in higher proportions, especially within technology and consulting sectors. In person reviews are still very common in industries such as manufacturing and construction, where physical presence is usually a must for detailed discussions.

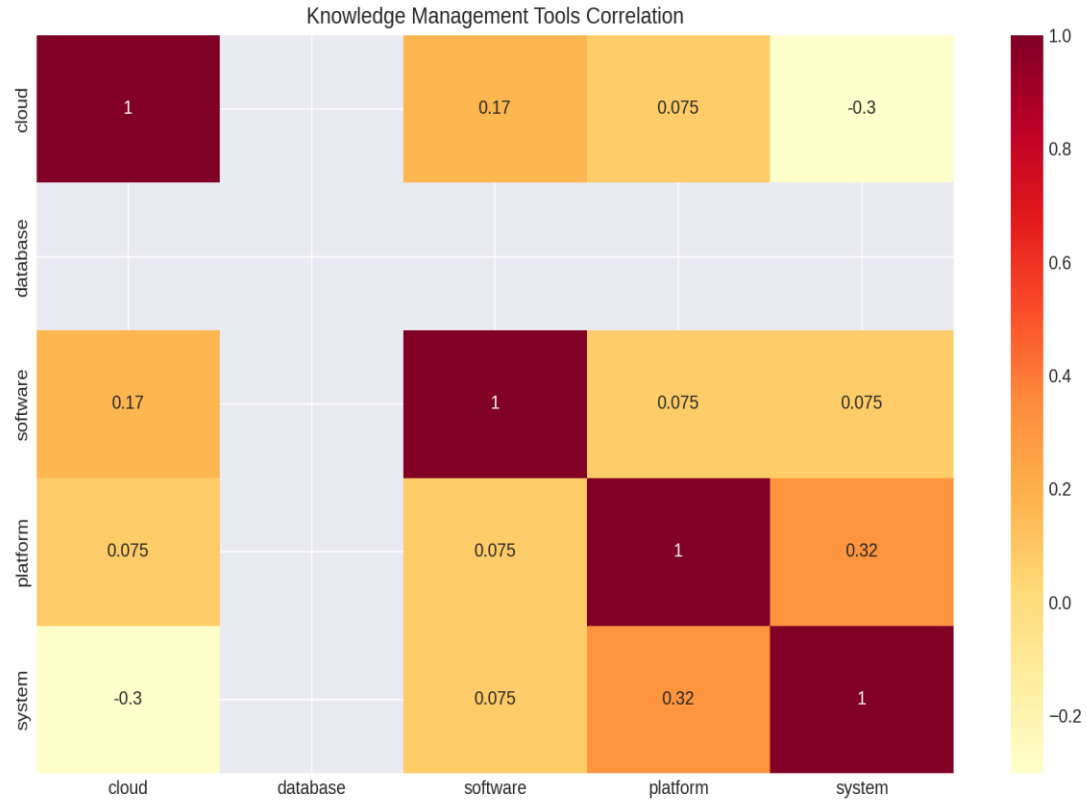
The efficiency of the platform used for post project reviews would therefore, depend on the nature of the review and the needs of the team. Project management tools provide a more structured approach to tracking project progress, identifying bottlenecks and documenting lessons learned though they lack the interpersonal interaction of in person reviews. Virtual platforms cultivate more efficient, accessible reviews from geographically dispersed teams but often with highly distracted or disengaged participants. In person reviews are irreplaceable in bringing nuanced, deep discussions and immediate, face to face feedback. These reviews usually take a long time and are burdensome to schedule, especially within distributed or remotely working teams.

Also, efficiency in collaboration tools regarding cloud sharing of documents, knowledge bases and messaging services plays a crucial role in structured and informal processes of knowledge sharing. Cloud collaboration platforms like Google Workspace and Microsoft 365, have really worked in enabling real time collaboration, version control and multi user access for informal exchanges in support of formal documentation. On the other hand, knowledge repositories like Confluence and Notion allow organizations to centralize and preserve knowledge, document best practices and create structured knowledge bases for long term retention, though they require

consistent management and updates to remain effective. Messaging tools, such as Slack and Microsoft Teams are excellent for informal knowledge sharing and rapid exchanges but they usually lack the structural framework necessary for long term documentation and their overuse results in information overload or a lack of clarity. In terms of adoption, cloud based document sharing tools have become pervasive with the recent evolution of working styles to remote and hybrid models and are considered indispensable for seamless collaboration and information flow. Knowledge repositories find increasing adoption in more knowledge intensive industries such as technology and consulting, though often more slowly in organizations where other forms of informal communication like email or messaging are more entrenched. Structured tools such as project management software and knowledge repositories are particularly suitable for long term knowledge retention, project overview and formalized workflow. On the other hand, informal collaborative tools excel in brainstorming, allow more creative and spontaneous exchanges of ideas and work well in everyday communications. The huge migration to work from home or hybrid models favoured the uptake of these platforms. Virtual collaboration tools are used widely across many industries.

4.2.2 Tools for Knowledge Management

Table 0:3 Knowledge Management Tool Correlation



The primary tools employed include:

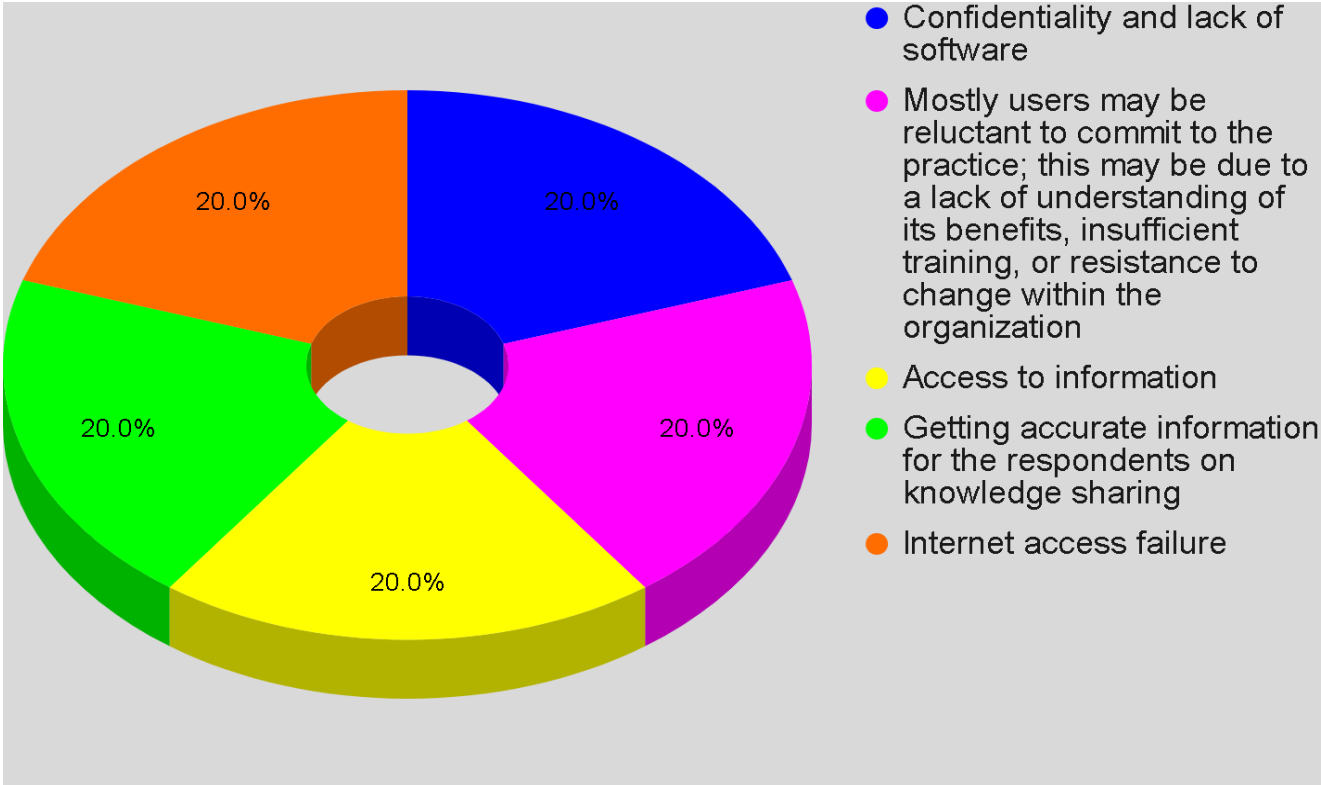
Cloud-based platforms (e.g., Google Drive, Microsoft Teams).

Knowledge repositories (e.g., shared drives, databases).

Project management software (e.g., Asana, Trello).

4.3 Challenges in Implementing Effective Knowledge Management

Figure 2 Top Knowledge Management Problems



The data collected regarding the challenges that were faced while implementing effective knowledge management practices brings out five key challenges, with each contributing an equal share in the overall implementation difficulties. From the pie chart, each of the five challenges contributes 20% of the total response, which indicates equal importance in rendering the KM system ineffective. These include: confidentiality and lack of appropriate software, internet access failures, access to information, getting accurate information from respondents and reluctance by users to commit to the KM practices.

4.3.1. Confidentiality and Lack of Software

One fifth (20%) of the respondents reported that one of the significant issues in trying to introduce the implementation of the KM included confidentiality and a lack of the right software. One of the biggest concerns is how sensitive information can be protected while sharing knowledge. The situation is made worse by the fact that specialized software is not able to offer sufficient security features and integrate well for the purposes of KM. This would imply a gap in available KM tools that can balance

security with functionality, essential to retain integrity and trust within an organization's knowledge sharing processes.

4.3.2. Internet Access Failures

Access to information was another major challenge reported by 20% of the respondents as a problem in getting the right knowledge at the right time. In most organizations, information is scattered across systems, databases, and departments. It is difficult for workers to find the relevant knowledge within a short period of time. Often their searches are quite time consuming since at fault is either the storage system of information or the centralization in general and there is even a risk involved of using data that has gone obsolete or is irrelevant.

4.3.3. Access to Information

Access to information emerged as another key challenge, with 20% of respondents highlighting the difficulty in retrieving the right knowledge at the right time. In many organizations, information is fragmented across various systems, databases and departments, making it challenging for employees to quickly locate relevant knowledge. This lack of centralized or well organized information storage systems often results in time consuming searches and the risk of relying on outdated or irrelevant data.

4.3.4. Getting Accurate Information from Respondents

Another 20% felt that the accuracy of information provided by respondents posed a challenge. Poor or incomplete data can considerably lower the quality of knowledge being shared within an organization. This may be due to a variety of reasons: miscommunication, lack of clarity concerning how the data was collected or a deliberate withholding of information. This issue gives notice that there must be a need for standardization of procedures, verification mechanisms that assure that the knowledge being shared is accurate and useful for decision making.

4.3.5. User Reluctance to Commit to KM Practices

Finally, 20% of the total respondents claimed that user reluctance to commit to KM practices is a major barrier. Even though facilities and tools are provided, employees might be very reluctant to engage in knowledge sharing activities. There are so many factors that may explain such reluctance: not clearly understand the added value of KM, perceived additional workload, resistance to new practices and so on. It also

depends on organizational culture and leadership. It is only when the organization builds up an environment of mutual trust, cooperation and shared responsibility that it encourages active participation by individuals in its processes regarding knowledge management.

4.4 Organizational Barriers

Knowledge Silos: "Teams often operate in a vacuum and knowledge sharing across departments is minimal," said a manager from ZADMIFO.

Ironically, Knowledge Silos have been one of the major obstacles to effective KM. Silos arise when information remains locked within specific departments or groups and does not flow to other parts of the organization. This kind of fragmentation often arises because of hierarchical structures, a lack of cross functional communication, or organizational cultures unhelpful toward sharing knowledge. The net effect is that the lessons learned and best practices remain in a vacuum, duplication of effort and waste continue and opportunities are lost. Overcoming silos requires explicit organizational strategies such as cross functional teams, common knowledge repositories and incentive structures that foster collaboration and sharing across departments. Resistance to Change: "Some employees are resistant to accepting new KM practices or tools," said another respondent.

Another important obstacle to KM adoption is resistance to change. People do not easily switch to new systems and practices. Employees resist change because they are comfortable in existing workflows, they are apprehensive about an increased workload, or they are sceptical of the benefit that KM brings to them. Knowledge sharing is also perceived by some employees as threatening their job security or, at the very least, their status in the organization. To address this, the organizations should have appropriate strategies for change management including effective communication from the leadership level about the benefits of KM and comprehensive training programs to make the transition smooth.

Lack of leadership involvement was also pointed out, such that "KM initiatives without strong leadership backing can't get off the ground," said one participant.

Leadership involvement is in this sense important for implementing Knowledge Management practice. Otherwise, every KM initiative can easily be left behind,

defocused or off target from the higher concerns of the organization without clear commitment from top management. Effective leadership needs to advocate for knowledge sharing practices by providing the necessary resources, infrastructure and expectations for engagement.

4.5 Adoption Rates

These have become the modern KM building block staples and find usage throughout modern KM, with their critical infrastructures allowing for document sharing, real time collaboration and version control. This has been accelerated by the shift to distribute and hybrid working models, which have necessitated agile, cloud based solutions to enable seamless collaboration across geographically dispersed teams. In contrast, collaborative knowledge repositories such as Confluence and Notion have reached widespread adoption within knowledge intensive sectors but are less pervasive than general document sharing tools. Specialized platforms are often more costly in terms of training and investment and can often be more slowly adopted by organizations relying heavily on informal methods of communication or resistant to more structured KM practices. Communication and project management platforms like Slack, Microsoft Teams and Trello have equally seen wide adoption especially in industries with a high level of remote work. These tools enable informal knowledge sharing, fast information exchange and real time updating. They have therefore become very popular among teams requiring swift and efficient communication. In as much as they are effective in everyday interaction, most lack the structure necessary for the long term documentation of knowledge or systematic organization. Thus they often form complements to more formal KM tools used when organizations would like to elicit and then manage knowledge to be used and leveraged over an extended period to capture such knowledge into a repository.

4.6 Technological Challenges in Organisations

Technological challenges in organization normally emanate in and from an angle of system incompatibility, integration issues amongst several fragmented flow issues with many organizations. Without proper integration, these systems fail to communicate, resulting in inefficiencies and duplicated efforts. As he said, cybersecurity should be like encryption or multi factor authentication to avoid breach in sensitive data while sharing knowledge securely without compromising privacy.

On limitations related to digital infrastructure, for instance, in relation to poor or no reliable internet connectivity, an outdated system, one responded, "Poor internet connectivity delays real time knowledge sharing in rural areas."

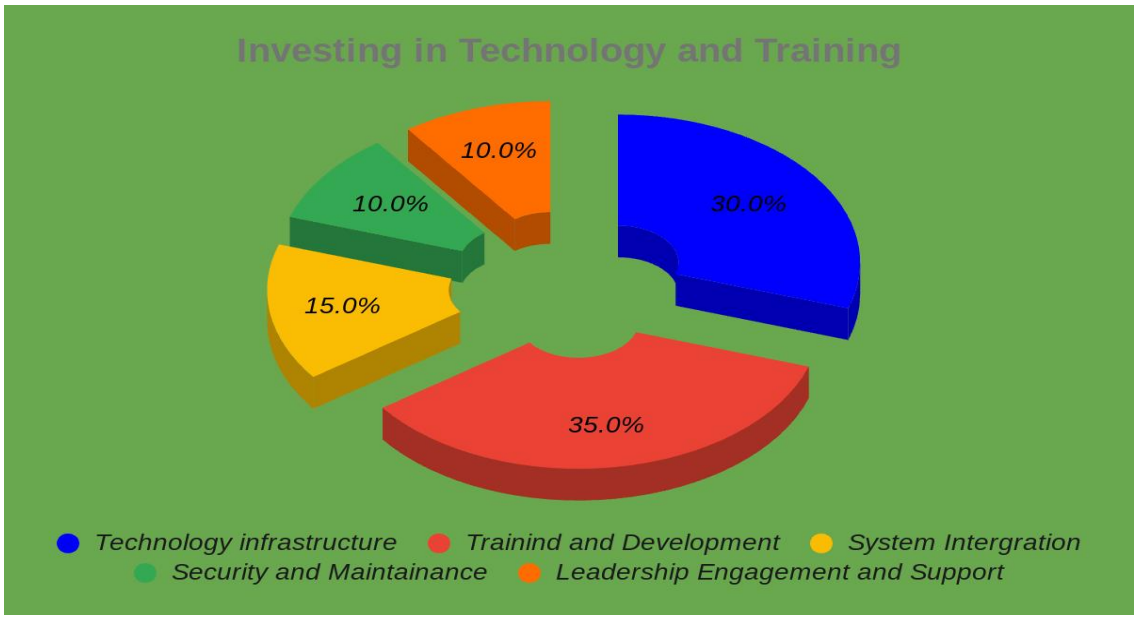
Digital infrastructure limitations, such as unreliable internet connectivity and outdated systems, were common challenges. *"In rural areas, internet connectivity issues delay real time knowledge sharing,"* stated a respondent.

4.7 Key barriers

Organizations face several key technological barriers in the implementation of Knowledge Management (KM) systems. System integration issues arise when different tools and platforms across departments do not communicate well, leading to fragmented knowledge and inefficiencies. Additionally, data security and privacy concerns are significant, particularly with cloud based tools, as employees may be hesitant to share sensitive information due to the risk of data breaches. Inadequate infrastructure, including outdated hardware and poor internet connectivity, can also limit the effective use of KM tools, especially for cloud based solutions.

4.8 Technology Investing and Training

Figure 3 Investing in Technology and Training



A majority of respondents suggested investment in sophisticated KM tools with regular training. "Continuous training ensures staff are knowledgeable in using KM tools effectively," noted an IT manager.

Therefore, to enhance KM practices, investment needs to be in both technology and training. Advanced technology platforms ensure frictionless knowledge sharing and access to the most valuable information, thanks to the latest document sharing tools, knowledge repositories and collaboration software. These tools reduce friction in communication, record important knowledge that otherwise would disappear and structure how the data can be found rather than being lost. Moreover, investing in extensive training programs helps the employees learn how to work with such tools and cultivates knowledge-sharing practices. Training should not be limited to the technical aspects of KM systems, but it is also necessary in terms of acquiring basic soft skills, including communication, collaboration and knowledge sharing. The full utilization of KM systems for optimum productivity, innovation and overall performance by an organization should be complemented with an appropriate availability of resources and training.

Chapter summary

This chapter presented the findings and analysis of knowledge management practices in ZADMIFO and Zambezi Drone Solutions. It explored how knowledge is created, shared and utilized within the organizations, examining tools, strategies and processes employed to manage knowledge effectively. The chapter highlighted challenges such as knowledge silos, limited resources and resistance to change and also insights into leadership involvement and the influence of organizational culture on knowledge management. The analysis further discussed the impact of the practices on project performance, emphasizing the role of digital infrastructure and adoption of emerging technologies in shaping knowledge management processes.

CHAPTER 5

DISCUSSION OF FINDINGS

5.1 Introduction

The core aim of the study was to investigate and analyse the knowledge management practices adopted in project based organizations with specific emphasis on ZADMIFO and Zambezi Drone Solutions. This study identified the most common knowledge management approaches practiced by these two organizations, challenges faced in managing knowledge and the ways in which these approaches impact project performance.

This study was guided by the following questions:

I. What are the key knowledge management approaches that ZADMIFO and Zambezi Drone Solutions employ?
II. Why do project-based organizations face challenges in implementing effective KM practices, particularly in resource constrained environments like Zambia?
III. How do KM practices influence project performance in ZADMIFO and Zambezi Drone Solutions?
IV. What methodologies can be adopted to improve KM practices in project-based organizations, and how can these methodologies be implemented effectively?

The basis of this study lies in that it points out a severe void in the research works on knowledge management, especially at project based organizations where the organizations are faced with special difficulties while capturing, sharing and leveraging knowledge. This paper, therefore, investigates the KM practices of ZADMIFO and Zambezi Drone Solutions as empirical evidence on practical implementation of strategic KM, how it does impact directly on the success of projects. It also aims to identify some common problems organizations face while managing knowledge effectively and to suggest a few strategies that help in improving KM practices in similar contexts.

This chapter interprets the findings presented in Chapter 4 by analysing their significance in the light of existing literature and the research questions outlined earlier. It synthesizes the results into new insights regarding the effectiveness of knowledge management practices in project based organizations, focusing on how ZADMIFO and Zambezi Drone Solutions apply these practices. Discussion should therefore develop an understanding of the research problem through relating findings to theoretical frameworks, responding to the literature review through any identified gaps and further interpretation of themes from data.

5.2 Knowledge Management Practices in ZADMIFO and Zambezi Drone Solutions

5.2.1 Predominant KM Practices

Other identified KM practices included knowledge sharing sessions, use of digital tools like cloud platforms and documentation of lessons learned. These practices reflect knowledge management processes identified in Nonaka's 1995 SECI model: socialization, externalization, combination and internalization. The findings have shown however, that most such practices are not consistently done and are mostly driven by individual initiative rather than organizational policy.

For instance, while there were many mentions of the need for informal knowledge sharing, there were perceived gaps with regard to avenues in which this would take place formally. This then points to the need for the institutionalization of KM practices within organizations, a precept supported in the literature where embedding KM in the culture of the organization has been cited as an important approach to implementation Dalkir (2017).

5.2.2 Emerging Insights

The new insights that this study provides into the knowledge management of such organizations are that dependence on digital tools is high for KM but integration among these is at a minimum rendering it inefficient. This is despite the fact that the storing and retrieval of knowledge have become easy with cloud computing and project management software. This agrees with an earlier study by Alavi and Leidner (2001), that any form of integration is essential in any given KM system to improve access to the knowledge.

It also emerged that both organisations had structured and informal processes for the generation, sharing and utilisation of knowledge. The generalized practices involved brainstorming sessions, post project reviews and collaboration tools.

About structured knowledge sharing, most participants focused on formal channels, with a preponderance of team meetings and workshops. One participant said, "We have monthly knowledge sharing sessions where project teams present their findings and lessons learned," which forms a clear basis on which key insights get diffused across teams in an extremely organized way.

Both organizations implement various technologies with digital tools and platforms for Knowledge Management. Cloud storage, project management software and databases are among the essential tools underlined by the participants from both organizations. Thus, as further underlined by a participant from Zambezi Drone Solutions: "Our organization relies so much on Google Workspace for collaboration and storage in real time," these kinds of digital platforms really create seamless access for knowledge sharing.

5.3 Challenges in Knowledge Management

5.3.1 Key Challenges Identified

The most important challenges discussed by ZADMIFO and Zambezi Drone Solutions are those put forward in the literature, namely, issues of knowledge silos, not welcoming change and lack of resources to adequately implement KM activities. In fact, respondents identified that senior staff hoard knowledge while there is no training on the KM system as key blockers.

These findings affirm observations by Andreeva and Kianto (2012) that organizational culture and leadership influence the effectiveness of KM. The study also established that these challenges are compounded by an underdeveloped digital infrastructure, while this is a less pronounced theme in the previous studies, it is quite critical within the Zambian context

5.3.2 Organizational Barriers

Organizational leadership became an important determinant. The respondents indicated that low managerial interest in KM programs is a discouraging factor for the latter to be implemented. This finding supports earlier studies by highlighting the

facilitation role of leadership both in terms of creating a supportive culture and providing resources for KM (Gupta and Govindarajan, 2000).

5.4 Impact of KM Practices on Project Performance

5.4.1 Contribution to Project Success

These findings indicate that appropriate KM practices do bear positive influences on project outcomes, in terms of improved decision making, innovation and collaboration within teams when implemented. For example, respondents highlighted that knowledge shared at project debriefs led to the improved planning of subsequent projects.

This confirms the RBV theory stating that organizational knowledge is an important asset to attain a competitive advantage (Barney, 1991). This knowledge has been further developed by the present study through identifying the influence of KM practices on certain project measures such as timeliness and stakeholder satisfaction.

5.5 Strategies for Enhancing KM Practices

5.5.1 Recommendations from Respondents

Respondents suggested some ways to achieve better KM practices. These included:

Encouraging a Knowledge Sharing Culture Building collaboration and trust could be considered a key approach in this matter. "We have to create an environment where sharing knowledge pays off," said one communications officer.

The participant explained that openness, trust and collaboration are important in creating the right culture to drive effective KM. The participant explained that when the employees feel empowered to share ideas, solve problems together and learn from one another, this creates an environment that would drive innovation and enhance decision making for better organizational performance.

Another participant added that Leaders are important in influencing this culture through modelling knowledge sharing behaviour. Leaders encourage others to practice collaborative behaviour by showing active sharing of insights, recognizing contributions and giving incentives for participation. This recognition and reward system motivates the employees more in contributing to knowledge sharing.

Providing appropriate tools and platforms is also important in breaking the barriers to knowledge sharing. Accessible platforms that allow information exchange ensure a situation whereby hitches in knowledge flow within the organization are nullified, hence reinforcing the culture of knowledge. These recommendations are based on best practices from the literature, including the need to create a culture of trust and collaboration O'Dell & Grayson, 1998, and invest in technology that supports the KM processes (Dalkir, 2017).

5.6 Impact of Knowledge Management Practices on Project Performance

Knowledge management has a significant effect on project performance, right from the very inception of a project to its closure. The integration of structured KM practices into project management processes ensures that at the right time, the right information and expertise are available to an organization. This improves not only decision making but also spurs innovation, enhances collaboration and reduces risks, hence contributing to more successful project outcomes. A number of ways in which the KM practices may affect project performance are discussed below.

Another participant said, "When project managers and team members use up to date and accurate knowledge, they are better positioned to identify risks early, manage resources more effectively and solve problems sooner." By doing so, better decisions are made in ensuring that project improvement comes about in terms of higher success rates of project objectives.

Both organizations also noted that "collaboration is at the core of effective project delivery." Such KM practices allow the facilitation of knowledge sharing with tools such as Microsoft Teams, Slack and cloud based services that build a team culture. This is because by offering a single space for sharing ideas, documents and solutions, KM tools increase the quality and speed of collaboration. With shared knowledge and expertise, the team members are more likely to be proactive in communication which reduces misunderstandings and conflicts. The strengthened collaboration leads to a unified approach in problem solving, innovation and project delivery, directly contributing to better project outcomes.

KM practices are vital in effective risk mitigation and problem solving. Knowledge repositories store knowledge from past projects and are a source of understanding of potential risks and the strategy to handle them. This makes project teams more vigilant

and proactive with respect to risk occurrence. If a similar risk occurred in a past project, then the team from that knowledge can take necessary preventive measures in order to minimize the impact of unhandled issues. Real time knowledge sharing tools further facilitate the solving of problems as challenges arise, enabling teams to quickly and effectively address problems. Consequently, project performance is less likely to be derailed by unexpected risks or obstacles.

KM fosters a culture of continuous improvement by guaranteeing the capture, analysis, and application of knowledge from each project to future projects. The continuous learning process thus enables organizations to refine their project management practices over time. The lessons learned, success stories and innovative approaches may continue to provide inspirations toward creative solutions of new challenges. Therefore, the organizations are able to adapt easily to different changing environments, adopt new methodologies and practice innovation for the benefit of successful project execution. This iterative learning process, while systematically improving project outcomes also contributes to long term growth and competitiveness for the organization in general.

Probably the most valuable benefit of KM is knowledge retention. When employees move to other roles or out of companies, critical knowledge about technical expertise and knowledge of organizational matters is lost. Good KM practices ensure that critical knowledge is captured and stored in central repositories for seamless knowledge flow within teams. This lessens the learning curve for new team members and helps assure continuity across projects. In this respect, KM practices ensure that continuous availability of expertise needed to execute projects successfully is guaranteed even with the personnel turnover.

KM practices are among the key drivers that assure collaboration and efficiency within a project team. Managing the organization's explicit and implicit knowledge in a systematic way would allow organizations to create an enabling environment for smooth collaboration, reduce redundancies and make quick decisions. This section explores the direct impact of KM practices on collaboration and efficiency, two critical factors in the success of projects.

5.7 Improved Decision-Making

Decision making is a very important aspect of project efficiency, and this can be significantly reinforced with knowledge available in structured and accessible forms. KM practices provide the necessary information and tools to the project teams for making proper decisions without much deliberation.

The respondents highlighted that access to organized knowledge contributed to improved decision making. “Having a repository centralized enables making informed decisions at speed," stated an operations manager.

5.8 Enhanced Collaboration and Efficiency

Good KM practices ensured improved collaboration and efficiency. One respondent said, "We can see the clear saving of a lot of time and better coordination which started upon the introduction to cloud based tools."

The working environment here requires knowledge to keep flowing freely within multi-departmental, multi-level, and expertise areas. This especially applies in challenging projects that need contributions and inputs from all functional teams located in marketing, engineering, financial, and other operations.

5.9 Positive Impact on Project Outcomes

Both organizations reported that KM practices improved project outputs by reducing duplication and enhancing innovation. "Knowledge sharing has enabled us to innovate and avoid repeating past mistakes," shared a project officer.

Organizations with strong KM practices are better positioned to deliver quality project outputs, meeting goals on time and within budget. KM helps inculcate a culture of continuous learning and adaptability. Innovation can be fostered and the teams learn to respond to the changed requirements of projects. Capturing and sharing knowledge lets the teams gain from insights and lessons of previous projects for informed decisions and problem solving. Utilize collaborative tools and platforms that can enhance cross functional collaboration, thus giving access to diverse expertise and reduce challenges. In addition, KM practices develop best practices and standardized processes that enhance consistency, reduce risks and make project success more likely. Overall, the contribution of KM practices to better project performance is highly valued for organizational growth and competitiveness.

Improved Collaboration and Efficiency: Effective KM practices facilitated collaboration and efficiency. "We have seen significant time savings and better coordination since the use of cloud based tools," a respondent shared. The participant further reiterated that effective KM practices create an environment where knowledge can flow freely within and across various departments, roles and areas of expertise. This is important in complicated projects that require inputs from diverse functional teams in areas such as marketing, engineering, finance and operations.

5.10 Strategies for Improving Knowledge Management Practices

5.10.1 Strengthening Leadership Involvement

In this respect, respondents proposed strengthening leadership to champion KM activities. "Leaders need to set the tone and make knowledge management one of the top priorities," a participant maintained.

Leaders can lead by example by creating an enabling atmosphere for continuous sharing of knowledge, rewarding collaborative behaviour and embedding knowledge management into organizational culture. Periodic reviews and feedback mechanisms assist leaders in detecting gaps and realizing improvements in KM practices. Clear governance structures, roles and accountability further reinforce the leadership commitment. Leaders can to put KM at the heart of the decision making process and align it with organizational objectives for its integration into daily practice. Investment in technology, resources and training can allow teams to share knowledge effectively. Above all, leadership support is very much essential to drive the knowledge sharing and innovation processes for continuous improvement in organizational performance.

5.10.2 Investing in Technology and Training

Many of them recommend investing in advanced KM tools and training on a regular basis. "Continuous training ensures that the staff is better equipped to use the KM tools," an IT manager adds. Technology investment and training go hand in hand to achieve better KM practices. Advanced technology platforms, which include document sharing tools, knowledge repositories and collaboration software have made sharing and providing access to information things that were critical easier. It streamlines communication, captures valuable knowledge and structures the way data is organized and retrieved, reducing any form of knowledge loss.

5.10.3 Improved Decision-Making

Respondents said that there is an access to well organized knowledge and it really improved the decision making process. "Having a centralized repository allows us to make informed decisions fast," the operations manager explained.

Well organized, easily accessible knowledge greatly improves decision making a key element of project effectiveness.

5.11 Implications of the Study

Implications provide useful insights that could influence how knowledge is managed within project based contexts, especially in the developing market of Zambia. The most important ramifications of this research, in reverse order of the logical result of this, start with the broader policy and societal implications through the theoretical contribution towards the practical outcome of the following.

5.11.1 Policy Related Implications

At the policy level, results from this investigation provide key inputs for both designing and implementing effective government initiatives which deal specifically with SME support along with enhancing management for effectively capturing and securing knowledge base by these enterprises. This study informs policymakers on the best strategies to promote KM, given the unique challenges that businesses face in Zambia such as limited infrastructure, resource constraints and the need for digital transformation. For example, the study identifies investment in both technology and training as being important to enhance KM practices. Advanced technology platforms in document sharing, knowledge repositories and collaboration software can enhance effective sharing of knowledge and accessing useful information. Again, SMEs need to establish supportive frameworks that encourage sharing and collaborative practices. Such a framework could provide guidelines towards establishing the standardization of KM, which would be relevant to the particular needs of the Zambian business environment. It also points out the areas of public private partnership in the development of KM such as training programs and infrastructure that would eventually equip enterprises with the resources to upgrade their knowledge management capabilities.

Overview of the study

This study explored knowledge management practices in project based organisations focusing on ZADMIFO and Zambezi Drone solutions. Chapter one introduced the study by outlining the research problem, objectives and significance of examining KM practices and their impact on project performance. Chapter two provided a review of relevant literature including KM concepts, processes, tools and theoretical frameworks such as SECI model, Resource based view. Chapter three detailed the research methodology including the qualitative approach, case study design, data collection and ethical considerations. Chapter four presented the findings, highlighted how knowledge is created, shared and utilised as well as challenges faced and influence on project outcomes. This chapter ties together key insights from the previous chapters to prepare for the study's conclusions and recommendations.

CHAPTER 6

CONCLUSION AND RECOMMENDATIONS

6.1 Introduction

The objective of this chapter is to provide an overview of the research conducted by synthesizing the analysis from the previous chapters with a view to establishing grounded conclusions regarding the effectiveness of knowledge management practices in project based organizations. It underlines important gaps and opportunities in KM processes, tools and strategies and thus shows a clear pathway for organizational improvement.

6.2 Conclusion

The overall objective of the study was to establish the effectiveness of knowledge management in project based organizations in Zambia with a focus on ZADMIFO and Zambezi Drone Solutions. Critical review of the KM practices, tools and challenges and their influence on project performance has given insight into the diabolical nature of managing organizational knowledge in resource scarce environments.

These findings reveal how formalized KM practices including knowledge sharing sessions and digital tools, complement the informal exchanges that are so important in stimulating knowledge transfer. The inconsistency of such practices commonly reduces their positive potential and forms the demand for systematic approaches. It also points out some pivotal barriers to effective KM implementation: resistance to change, resource limitations and poor digital infrastructure. Overcoming such barriers requires organizational leadership commitment to securing KM as a strategic objective and aligning it with other wider operational objectives.

6.3 Recommendations

From the findings, the following recommendations are suggested to improve KM practices in project based organizations:

6.3.1 Development of a KM Framework

A practical KM framework titled Integrated Knowledge Management Framework for Project-Based Organizations (IKM-PBO).

This framework provides a structured approach to implementing KM practices, focusing on four key components: Leadership and Culture, Technology and Infrastructure, Processes and Practices and Monitoring and Evaluation. The framework is designed to address the specific challenges faced by ZADMIFO and Zambezi Drone Solutions, such as resistance to change, knowledge silos, and staff turnover.

Organizations can use the framework to guide their KM initiatives, ensuring that knowledge is captured, shared, and utilized effectively.

Table 0:4 Integrated Knowledge Management Framework for Project Based Organisations (IKM-PBO)

Integrated Knowledge Management Framework for Project-Based Organizations (IKM-PBO)			
Component	**Objective**	**Key Actions**	**Expected Outcomes**
1. Leadership and Culture	Foster a culture of knowledge sharing and collaboration.	- Leadership actively promotes KM initiatives and integrates them into organizational policies.	- Increased employee participation in KM activities.
		- Establish incentives and recognition programs for knowledge sharing.	- Stronger collaboration across teams.
		- Conduct regular KM training sessions to build a KM-oriented mindset.	- A culture of continuous learning and innovation.
2. Technology and Infrastructure	Provide tools and infrastructure to support KM processes.	- Invest in user-friendly digital tools (e.g., cloud platforms, project management software).	- Seamless knowledge sharing and access.
		- Develop centralized knowledge repositories for storing and organizing critical information.	- Reduced knowledge loss due to staff turnover.
		- Implement robust cybersecurity measures to protect sensitive knowledge assets.	- Enhanced data security and privacy.
3. Processes and Practices	Standardize KM processes for consistency and effectiveness.	- Implement structured knowledge-sharing sessions (e.g., post-project reviews, brainstorming meetings).	- Improved knowledge retention and reuse.
		- Develop guidelines for documenting lessons learned and best practices.	- Reduced duplication of efforts.
		- Establish mentorship programs to facilitate tacit knowledge transfer.	- Enhanced problem-solving and innovation.

4. Monitoring and Evaluation	Continuously assess and improve KM practices.	- Define key performance indicators (KPIs) to measure the effectiveness of KM initiatives.	- Continuous improvement of KM practices.
		- Conduct regular KM audits to identify gaps and areas for improvement.	- Alignment of KM initiatives with organizational goals.
		- Use employee feedback to refine KM processes and tools.	- Increased adaptability to changing project requirements.

6.3.2 Investment in Digital Infrastructure

A detailed plan for investing in digital tools and infrastructure. The study recommends investing in user-friendly digital tools, such as cloud-based platforms (e.g., Google Workspace, Microsoft Teams) and project management software (e.g., Trello, Asana), to facilitate seamless knowledge sharing. Additionally, organizations should develop centralized knowledge repositories to store and organize critical information. This plan can be used by organizations to prioritize their technology investments and ensure that their digital infrastructure supports effective KM practices.

6.3.3 Leadership Training Programs

A leadership training program focused on KM. The study highlights the importance of leadership involvement in driving KM initiatives. A training program can be developed to equip leaders with the skills and knowledge needed to promote a culture of knowledge sharing, provide resources for KM, and integrate KM into organizational policies. Organizations can implement this training program to strengthen leadership commitment to KM and ensure that KM practices are aligned with organizational goals.

6.3.4 Mentorship and Documentation Programs

A mentorship and documentation program. The study recommends establishing mentorship programs to facilitate the transfer of tacit knowledge from senior to junior employees. Additionally, organizations should develop guidelines for documenting lessons learned and best practices to ensure that critical knowledge is retained. This program can be implemented to reduce the impact of staff turnover and ensure continuity across projects.

6.3.5 Monitoring and Evaluation System

A monitoring and evaluation system for KM practices. The study emphasizes the importance of continuous improvement in KM practices. A monitoring and evaluation system can be developed to define key performance indicators (KPIs) for KM, conduct regular audits, and use employee feedback to refine KM processes. Organizations can use this system to assess the effectiveness of their KM initiatives and identify areas for improvement.

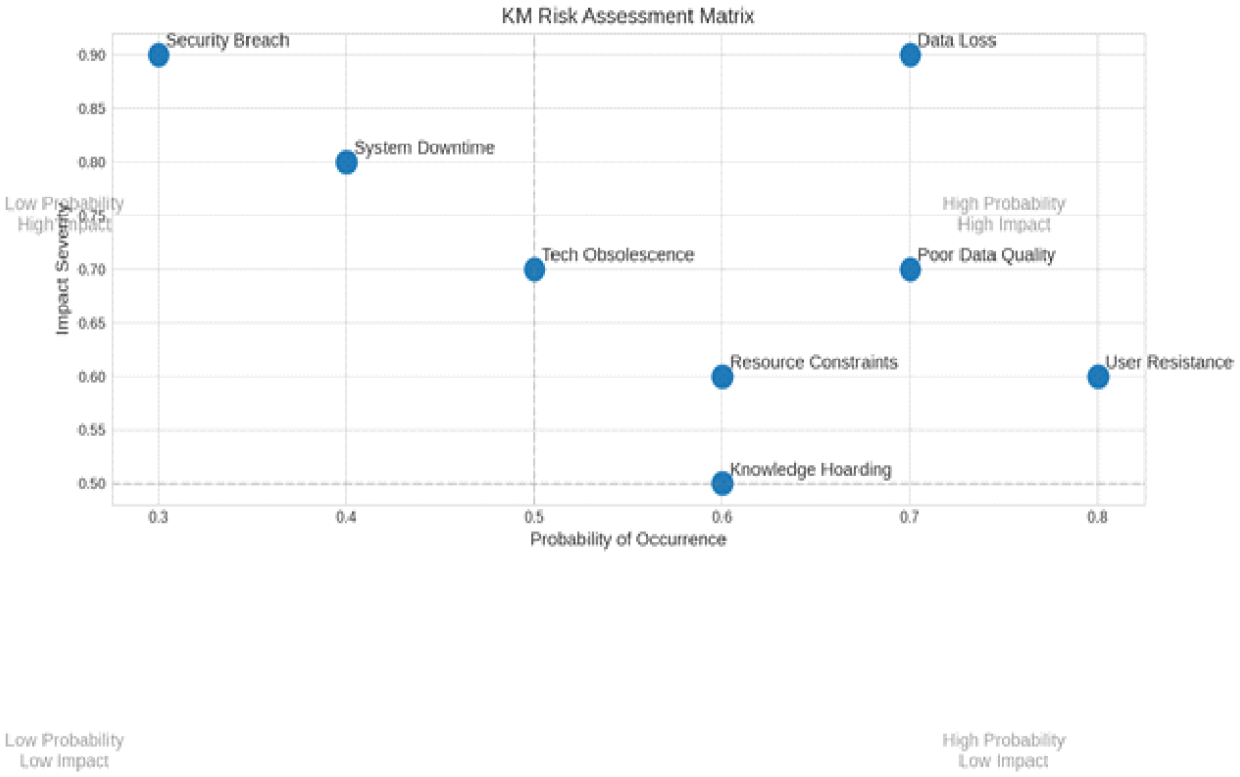
6.4 Risk Management Framework

Risk management in knowledge management implementation is a very crucial success factor that would help the organizations anticipate the pitfalls and plan mitigating strategies that may cause minimum disruptions. In KM, some of the key elements under the risk management framework include identification, mitigation and contingency planning.

Identification of potential risks requires an in depth assessment of the internal and external factors that may hinder the processes of KM. These range from technological challenges for instance, the infrastructure is unreliable or cybersecurity threats comes from cultural resistance when it is difficult for employees to accept new systems or the persistence of knowledge silos. Other critical risks include staff turnover leading to loss of institutional knowledge when experienced staff members leave without transferring their expertise.

Contingency planning for resilience in case of sudden disruption to the KM system. Secure backups of digital repositories are important to safeguard knowledge assets against system failure. Crisis management teams are focused on overseeing the recovery of KM operations and therefore solve challenges in real time. Identifying alternative communication channels such as offline tools or manual processes would make sure continuity is not compromised due to technical downtime. Regular risk assessments add to that by showing new and emerging threats and updating those contingency plans appropriately.

Table 0:3 KM Risk Assessment Matrix



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Appendices

Introduction (Open ended questions)

1. What is your current role in the organization and how many years have you worked in project based organizations?
2. 2. How would you describe your familiarity with Knowledge Management (KM) practices within your organization?

SECTION TWO : KM Practices and Processes

This section focuses on understanding the strategies, processes, and tools your organization uses to manage knowledge.

3. How is knowledge created, shared, and used within your organization?
4. What strategies does your organization use to encourage knowledge sharing across departments or among team members?
5. What tools or systems does your organization use to manage knowledge (e.g., software, databases, cloud platforms)?
6. How does your organization ensure that knowledge from completed projects is transferred to future projects?

SECTION THREE : Challenges and Barriers in Knowledge Management

This section aims to identify the challenges and barriers your organization encounters when implementing knowledge management practices.

7. What are the most common challenges your organization faces in managing knowledge effe effectively?
8. How does digital infrastructure (e.g., internet access, cloud computing) influence KM practices in your organization? and How do you see emerging technologies (e.g., AI, cloud computing) shaping KM practices in your organization?
9. What organizational barriers (e.g., funding, resistance to change, knowledge silos, lack of communication) do you face when implementing KM practices?
10. What challenges arise when attempting to transfer knowledge between projects or teams?

11. How does leadership involvement or lack of affect KM in your organization and How does your organization's culture influence the way knowledge is managed and shared?

SECTION FOUR : Impact and Outcomes of Knowledge Management

The questions explore how knowledge management influences project performance, decision-making, innovation, and overall organizational success.

12. How does knowledge management contribute to achieving project goals and improving project outcomes?
13. How does your organization measure the effectiveness of KM practices in improving project outcomes?
14. What strategies does your organization employ to retain knowledge when staff members leave or change roles?

SECTION FIVE : Future Improvements and Trends in Knowledge Management

This final section seeks to gather any additional thoughts or suggestions regarding knowledge management practices in your organization

15. How has your organization's KM practices adapted to remote work or other changes in work structures?
16. What role does training play in enhancing KM practices within your organization?
17. What improvements would you suggest for your organization's KM practices?
18. What future trends or changes do you foresee in KM practices for project-based organizations?

Observation Form

Researcher's Name: Kalezhi Kafunti
Organization: ZADMIFO
Date of Observation: October 15, 2024.
Time of Observation: 10:00 AM – 12:00 PM
Location: ZADMIFO Headquarters, Lusaka, Zambia
Participants Observed: Project Manager, IT Officer, Communication Officer, Team Members

Aspect Observed	Description	Notes/Comments
Knowledge Sharing Practices	Team members held a monthly knowledge-sharing session to discuss project updates and lessons learned.	The session was facilitated by the Project Manager. Employees used Microsoft Teams to share documents and presentations.
Use of Digital Tools	Google Workspace and Microsoft Teams were used for real-time collaboration and document sharing.	Google Drive was used to store project reports, while Microsoft Teams was used for communication and virtual meetings.
Challenges Observed	Poor internet connectivity in rural areas delayed real-time collaboration.	Some team members reported difficulty accessing shared documents during the session due to slow internet speeds.
Leadership Involvement	The Project Manager actively facilitated the knowledge-sharing session.	The Project Manager encouraged participation and ensured that key insights were documented for future reference.
Employee Engagement	Employees actively participated in the session, sharing their experiences and insights.	Team members were enthusiastic and contributed valuable input, particularly regarding lessons learned from past projects.

Additional Notes:
The knowledge-sharing session was well-organized, but the lack of a structured follow-up process was noted. Some employees suggested creating a centralized repository for storing lessons learned.

Observation Form

Researcher's Name: Kalezhi Kafunti
Organization: Zambezi Drone Solutions
Date of Observation: November 4, 2024.
Time of Observation: 2:00 PM – 4:00 PM
Location: Zambezi Drone Solutions Office, Lusaka, Zambia
Participants Observed: Operations Manager, IT Specialist, Drone Operators, Project Team Members

Aspect Observed	Description	Notes/Comments
Knowledge Sharing Practices	A post-project review was conducted to discuss the outcomes of a recently completed drone mapping project.	The review was structured, with team members presenting their findings and lessons learned.
Use of Digital Tools	Slack and Trello were used for project management and informal knowledge sharing.	Slack was used for real-time communication, while Trello was used to track project tasks and progress.
Challenges Observed	High staff turnover led to the loss of tacit knowledge.	The Operations Manager noted that some critical knowledge was lost when experienced employees left the organization.
Leadership Involvement	The Operations Manager led the post-project review and emphasized the importance of knowledge retention.	The Manager encouraged team members to document their insights and share them with new employees.
Employee Engagement	Team members actively participated in the review, sharing their experiences and suggestions for improvement.	Employees were engaged and provided constructive feedback on how to improve future projects.

Additional Notes:
The post-project review was effective in capturing lessons learned, but there was no formal process for integrating these insights into future projects. Employees suggested creating a mentorship program to facilitate knowledge transfer.

Clearance Form

UNIVERSITY OF LUSAKA

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UNILUS-RESEARCH ETHICS COMMITTEE

UNILUS-RESEARCH ETHICS COMMITTEE

Ref no: FWA00033228-5810/24

Date: 13th December 2024

STUDENT NAME: KALEZHI KAFUNTI

RESEARCH TOPIC: KNOWLEDGE MANAGEMENT IN PROJECT BASED ORGANISATIONS. A CASE STUDY OF AFRITANK AND ZAMBEZI DRONE SOLUTIONS IN LUSAKA.

The above research was submitted to the research ethics committee for review. The study has no major ethical problems and is approved subject to the following:

1. The study cannot be changed without express permission of the UNILUS research ethics committee.
2. Approval from the necessary authority should be sought.

Congratulations and the committee wishes you success in your work.

Professor Kasonde Bowa

MSc(Glasgow),M.Med(UNZA),FRCS(Glasgow),FACS,FCS,DPH(LSTMH),MPH(UCL)

Chairman- UNILUS REC
Professor of Urology and Consultant Urologist Deputy Vice-Chancellor – Research and Innovation
Executive Dean - School of Medicine and Health Sciences

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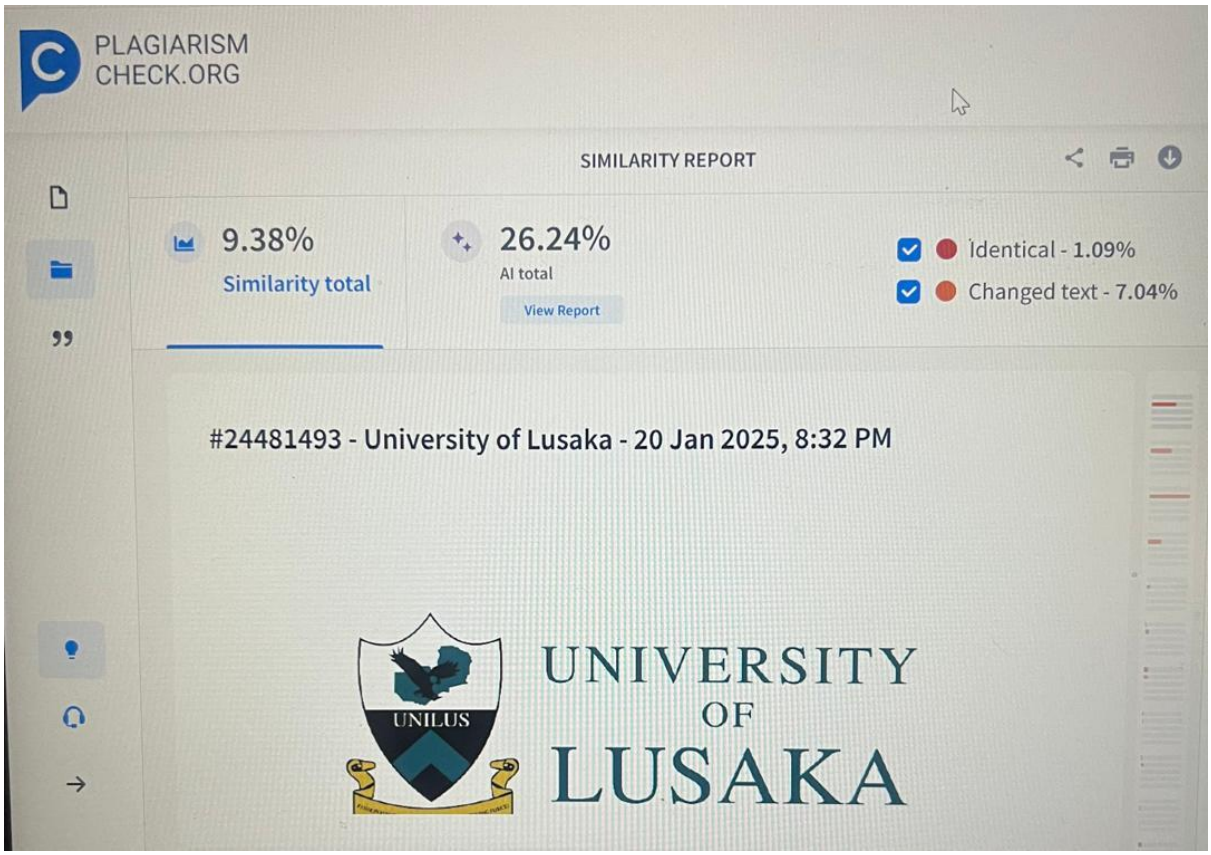

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