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The Impact of Knowledge Management Processes on Service Innovation: A study on Commercial Banks

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Abstract:

This study explores the relationship between knowledge management practices (KMP) and service innovation within the banking sector of Sudan. Rooted in the Knowledge-Based View (KBV) framework, this study examines how knowledge acquisition, sharing, application, and storage contribute to both incremental and radical service innovation. KMP are widely acknowledged as key factors influencing organizational performance, productivity, and competitive edge. To assess their influence on service innovation, including both radical and incremental types, a survey was utilized to gather data from the target population. Exploratory factor analysis (EFA) was utilized to examine the underlying structure of the data, followed by multiple regression analysis conducted using the Statistical Package for the Social Sciences (SPSS) to test the proposed hypotheses. The findings revealed a positive yet statistically insignificant relationship between knowledge acquisition and both radical and incremental innovation. Conversely, a significant and positive association was observed between knowledge sharing and both types of service innovation. Likewise, knowledge storage showed a positive association with both radical and incremental innovation. To conclude, the findings demonstrate a partial correlation between KMP and service innovation.

Keywords: Knowledge management processes, Sudanese Banks, service innovation, radical innovation, incremental innovation.

1. Introduction:

A dynamic and competitive business environment is marked by rapid transformations, necessitating organizations to innovate and adapt their services to stay relevant. To secure a sustainable competitive edge, service innovation must be fueled by both technological progress and evolving consumer demands. The increasing volume of academic research reflects a growing interest among scholars in exploring and conceptualizing service innovation (Witell et al., 2016; Wang et al., 2022). A variety of variables have been considered in previous studies in order to examine innovation. Researchers Jansen et al. (2006) examined how organizational learning impacted innovation, and Volberda et al. (2012) explored how flexibility impacted innovation (Volberda et al., 2022). In contrast, few studies have integrated these variables to study Knowledge Management Processes' impact on service innovation (Huang et al., 2023). Knowledge is seen as an important source of innovation and a strategic asset as a result of the knowledge-based view (KBV) (Grant, 1996). Businesses now face numerous obstacles as a result of the globalization of markets and technological advancements. Technology innovation raises the demand for creativity and fuels increased market competitiveness, which pushes businesses to look for new and distinctive ways to meet customer demands and boost productivity (Akbari and Ghaffari, 2017; Raudeliuniene and Szarucki, 2019). Due to globalization, advancements in technology, and the shift toward a knowledge-driven economy, knowledge management has emerged as a vital tool for attaining organizational goals, enhancing performance, and building brand identity and market dominance (Du Plessis, 2007). The theory of knowledge management, along with the process-oriented knowledge management cycle derived from these theories, has established a foundation for navigating dynamic and uncertain environments with limited resources. This approach enables organizations to effectively harness their knowledge potential and make strategic knowledge management decisions (Marques and Pandey et al., 2018; Raudeliuniene and Szarucki, 2019).

According to traditional definitions, KMP involves the creation, capture, organization, storage, utilization, and evaluation of information within a business (Brazauskaite et al., 2022; Tiwari, 2022). The contemporary depiction of the Knowledge Management Process (KMP) extends beyond the confines of individual firms. It is now understood as a process that mirrors the entire mechanism across organizational boundaries (Diab,

2021; Yeboah, 2023). The KMP can more effectively represent transformative innovations by adopting an interorganizational perspective. Ignoring this perspective leads to a significant oversight, as today's advanced innovation ecosystem relies heavily on a collaborative approach (Abubakar et al., 2019). There is evidence that KM plays an integral role in service innovation based on previous research. Through its creation, storage, transfer, and application, KM contributes significantly to organizational performance and strategic innovation (Abubakar et al., 2019).

Numerous studies have explored the relationship between knowledge management practices and service innovation. However, this research aims to bridge existing gaps and limitations in the literature, forming the basis of its problem statement. First, while prior studies on knowledge management practices have primarily examined the manufacturing sector (Chhim et al., 2017; Pandey et al., 2018), this investigation shifts focus to the service sector, specifically banking, distinguishing it from earlier work. Second, much of the existing research has analyzed knowledge management components in various international contexts (Mahdi et al., 2019; Mishra et al., 2011), whereas this study concentrates on four key practices—knowledge acquisition, sharing, storage, and application—within the Sudanese context. This emphasis on an understudied environment sets the study apart and strengthens its academic value by addressing a previously unexplored dimension. Building on the preceding discussion, this study introduces four research questions to expand the understanding of knowledge management processes and their relationship with service innovation:

1. To what extent does know acquisition contribute to service innovation?
2. To what extent does know storage contribute to service innovation?
3. What is the nature of the relationship between know sharing and service innovation?
4. To what degree does know utilization influence or contribute to service innovation?

By addressing these questions, we can clarify how knowledge management processes drive service innovation and build upon existing research to provide a more comprehensive understanding. This study aims to gain new knowledge on four main objectives:

1. To assess the impact of Konw acquisition on the development and enhancement of service innovation.
2. To evaluate the role and influence of know sharing in fostering service innovation.
3. To explore the contribution of know storage practices to the advancement of service innovation.

4. To analyze the effect of know application on the implementation and outcomes of service innovation.

Consequently, the theoretical significance of this study lies in its endeavor to address this research gap by examining the interplay between KMP and service innovation. Furthermore, it aims to develop a conceptual framework that contributes to the advancement of KM theory and its practical applications. In addition, the study will provide scientific guidance and advice for banking operations in Sudan to achieve efficiency and effectiveness. The practical significance of this study lies in the fact that it will make managers aware of how complex and changing the business environment is. It also underscores the critical role of intangible resources in driving service innovation. Moreover, the study aims to inspire managers to engage actively in initiatives that foster innovation.

2. Literature Review

2.1. Knowledge management processes

An organization can utilize knowledge management (KM) activities to improve its business operations and form itself by employing knowledge at both the individual and collective levels (Azan et al., 2017). According to study findings from a literature analysis, the knowledge management procedures that have been studied thus far do not have the feedback elements and a clear knowledge management structure needed for the evaluation of the entire KMP (Raudeliu niene_ and Szarucki, 2019). An analysis of four KMP: acquiring, sharing, storing, and applying knowledge, provides assumptions for effective organizational knowledge management. Researchers and business professionals define KMP in various ways, while also identifying different KM models, cycles, and process combinations (Henttonen et al., 2016; Kaba et al., 2017; Pandey et al., 2018; Rafique et al., 2018). Consequently, it is essential to conduct a more extensive analysis and definition of the selected knowledge management procedures.

Know acquisition

This process involves gathering and analyzing knowledge from various internal and external sources across an organization (Pandey et al., 2018; Wang et al., 2019). Primary sources and methods for acquiring knowledge include interactions between individuals and organizations, as well as documented (codified) information like reports, manuals, and similar resources (Dokas and Panagiotakopoulos, 2006; Ramachandran et al., 2009; Wang et al., 2019). Know acquisition depends on an

organization's ability to identify, realize, and capture knowledge that improves performance (Henttonen et al., 2016; Pandey et al., 2018).

Know sharing

The sharing of knowledge, ideas, expertise, and skills occurs both within organizations and between them. Internally, individuals or teams share knowledge to foster collaboration and innovation. Externally, knowledge exchange takes place through collaborations, joint ventures, and various inter-organizational partnerships (Franco & Mariano, 2007; Sangari et al., 2015; Lee et al., 2016). Consequently, organizations are becoming increasingly interconnected. Know sharing not only improves products, services, and processes but also reinforces organizational competencies such as innovation, growth, problem-solving, operational effectiveness, and financial performance (Youssef et al., 2017; Chen et al., 2018; Le & Lei, 2018).

Know storage

Refers to an organization's capacity to acquire and preserve new knowledge within its shared memory, making it available and usable for others (Allameh et al., 2011). It involves the systematic organization and storage of knowledge within the organization's repositories or databases (Acharya and Mishra, 2017; Ceptureanu and Popescu, 2018; Mahdi et al., 2019). Knowledge is preserved in various formats, including employee expertise, organizational culture, formal strategies, systems, manuals, and documentation (Franco et al., 2007; Feghali et al., 2008; Mishra et al., 2011; Sumbal et al., 2017). Enhancing operational efficiency within an organization requires the systematic structuring and storage of knowledge. This approach ensures that information is readily accessible and easily shared across the organization (Raghu & Vinze, 2007; Supyuenyong et al., 2009; Franco & Mariano, 2010).

Know application

It consists of using available knowledge in order to achieve organizational objectives (Asoh et al., 2007). A know application is the utilization of knowledge that has been created, acquired, or stored (Franco and Mariano, 2007; Pandey et al., 2018). In order to increase efficiency, enhance decision-making processes, and improve organizational performance, knowledge application is necessary (Lopez and Esteves, 2013; Wahba, 2015; Kansakoski, 2017). Likewise, from a business model perspective focused on value capture (Saebi and Foss, 2015), knowledge application is a critical component of knowledge management processes, as it enables organizations to optimally utilize

available knowledge (Chhim et al., 2017; Pandey et al., 2018). This fosters innovation and improves overall organizational performance.

2.2. Service Innovation:

Researchers have increasingly acknowledged the critical role of innovation in driving organizational success, particularly in achieving superior performance (Adam and Arafa, 2024). and securing a competitive edge (Hwang et al., 2020). Consequently, innovation has become one of the most crucial organizational strategies, owing to its importance for sustainability and maintaining a competitive edge (Ghasemzadeh et al., 2019). As Drucker (2014) defines it, innovation encompasses the creation of new products and services, along with the adoption of new management practices, enabling organizations to create value and gain a competitive edge (Bhatti et al., 2020). Innovative service concepts are designed, promoted, and implemented to enhance and broaden existing offerings (Witell et al., 2016). To guarantee the success of a service, it is essential to maintain customer satisfaction and provide high-quality service (Tajeddini et al., 2020). Innovation can be categorized into two types: incremental and radical. Incremental innovation, as defined by Adam and Arafa (2024), refers to making minor improvements to services to better cater to particular market segments. On the other hand, radical innovation involves the introduction of completely new services that substantially enhance customer value (Adam and Arafa, 2024). It also encompasses the creation and application of novel methods for operations, market engagement, and addressing stakeholder requirements (Ringberg, Reihlen, & Rydén, 2018). This research defines service innovation as the development, improvement, and implementation of new service ideas designed to enhance current services (Adam and Arafa, 2024).

2.4. Research Model and Hypotheses

The research framework was constructed following a comprehensive analysis of existing literature to illustrate the impact of KMP on service innovation, encompassing both radical, incremental types, in the context of commercial banks in Sudan.

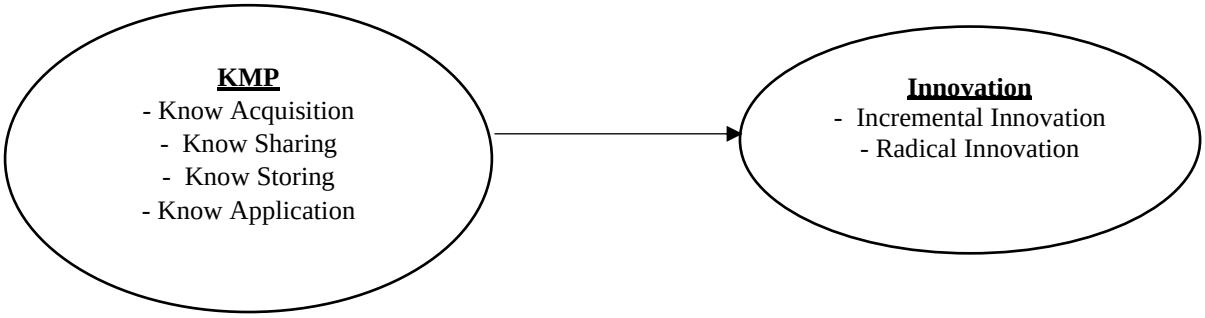

Figure 1: Impact of KM processes on service innovation

2.4. Research Hypotheses

2.4.1. The relationship between knowledge acquisition and service innovation.

Firms with superior acquisition of knowledge tend to be more innovative and thus perform at high levels. the results in the literature suggests that the knowledge acquisition is playing significant and positive relationship to service innovation. (Pandey et al., 2018; Wang et al., 2019) states that a positive relationship between knowledge acquisition and innonation, while (Dokas and Panagiotakopoulos, 2006; Ramachandran et al., 2009; Henttonen et al., 2016; Pandey et al., 2018Wang et al., 2019). investigated a significant impact of knowledge acquisition. Based on the above discussions the following hypothesis is generated:

HA1. The acquisition of knowledge and the innovation of services have a positive relationship.

2.4.2. The relationship between knowledge sharing and service innovation.

The knowledge sharing is playing important role in building and affecting the service innovation such as (incremental innovation and radical innovation) in the firms. In accordance with the findings in literature knowledge sharing was posited to have significant and positive relationship with service innovation. (Franco & Mariano, 2007; Sangari et al., 2015; Lee et al., 2016). indicates a positive relationship between knowledge sharing and foster collaboration and innovation, while, (Youssef et al., 2017; Chen et al., 2018; Le & Lei, 2018) states that a positive effects of knowledge sharing. based on the above discussions the following hypothesis is generated:

HA2. A positive association exists between know sharing and service innovation.

2.4.3. The relationship between knowledge storing and service innovation.

The knowledge management literature has indicated that a formidable relationship exists between knowledge storing and service innovation. Furthermore (Acharya and Mishra, 2017; Ceptureanu and Popescu, 2018; Mahdi et al., 2019). show that there is a significant relationship between knowledge storing and service innovation. while (Raghu & Vinze, 2007; Supyuenyong et al., 2009; Franco & Mariano, 2010) investigated that there is a significant relationship of knowledge storing. based on the above discussions the following hypothesis is generated:

HA3. A positive link is observed between know storing and service innovation.

2.4.4. The relationship between knowledge application and service innovation.

The knowledge application is playing important role in building and affecting the service innovation. previous research such as (Lopez and Esteves, 2013; Wahba, 2015; Kansakoski, 2017). show that a significant and positive effects of knowledge application with other relationship. While, (Chhim et al., 2017; Pandey et al., 2018) examined that a positive relationship of knowledge application. Therefore, based on the above discussions the following hypothesis is generated:

HA4. There is a positive relationship between the application of knowledge and the improvement of service innovation.

3. Methodology

This research employed a quantitative, cross-sectional approach, using a survey-based framework for data collection. A structured questionnaire was distributed to 120 employees from Sudanese banks located in North Kordofan State. The survey was meticulously crafted to align with the study's goals and to support later analysis. It was structured into three parts: bank profile, independent variables, and dependent variables. Exploratory factor analysis (EFA) employing principal component analysis was performed to uncover the underlying factors. The KMP was evaluated based on four key dimensions: know acquisition, know sharing, know storage, and know application (adapted from Adam et al., 2019). Service innovation was measured using two dimensions: incremental and radical, as adapted from (Adam and Arafa, 2024).

Table 1. Measurement items for the study variables.

Variables	Items	Source
knowledge management processes	25	(Adam et al, 2019).
Service innovation	10	(Cheng & Krumwiede, 2012).

4. Results

4.1 Respondents Characteristics

In table (3.1.2), which summarizes the respondent profile, it is revealed that (66.4%) are males and (33.6%) are females. Regarding respondents' ages (40.8%), (23.9%) are between the ages of 30-40, whilst (16.8%) are between 40-50 years, and (0.9%) are between the ages of 50-60 years. According to the data, a few respondents (1.8%) hold secondary certificates, while most of the respondents (98%) studied at a university as the highest level of education, distributing the degree into (67.3%) Bachelor's degrees, (7.1) higher diplomas, (22.1) master's degrees, and 0.0% doctorates. According to respondents' job titles (5.3%), (12.4%) are branch managers, (28.3% are department heads, (10.6% are accountants, and (43.4%) are employees. The results indicated that 27.4% of respondents had fewer than five years of experience, while 29.2% had between 5 and 10 years of experience in the bank. Furthermore, 14.2% of respondents had under 15 years of experience, 8.8% had less than 20 years, and 20.4% possessed over 20 years of experience.

4.2. Exploratory factor analysis for independent variables:

In this research, twenty items assessing the independent variable (knowledge management processes) were evaluated using the maximum likelihood (ML) approach. An overview of the results is presented in Table 2. All remaining items surpassed the recommended threshold of 0.45 for the measure of sampling adequacy (MSA). The Kaiser-Meyer-Olkin (KMO) value stood at 0.736, exceeding the minimum acceptable threshold of 0.60. Moreover, Bartlett's test of sphericity (BTS) yielded statistically significant outcomes ($p < .01$), affirming the appropriateness of the items for factor analysis.

Table 2. EFA for Independent Variables.

Items	Component			
	1	2	3	4
We use the internet to obtain information in our field of specialization.	.849			
We depend on external sources for information about new services.	.793			
The available information about competitors helps to innovate new services.	.788			
The bank has a specific programme for acquiring knowledge.	.737			
The management encourages teamwork for the purpose of acquiring knowledge.	.580			
The bank has a clear mechanism regarding knowledge acquisition.	.575			
Internal information is collected to identify strengths and weaknesses.	.737			
We have a computer network to share knowledge.		.823		
The management encourages dialogue among employees to exchange and gain experiences.		.772		

Knowledge is distributed by training employees periodically.	.655		
There is a knowledge sharing system between different departments and levels.	.547		
The latest advanced file sharing systems are used to ensure efficient knowledge sharing.	.823		
The bank has stored data that can be converted into information to help employees perform their duties.		.816	
Knowledge is organized and stored in a database.		.732	
We rely on computers to store knowledge.		.816	
Management encourages employees to apply their knowledge.			.713
Employees are trained to use their knowledge.			.702
Raising the awareness of employees about knowledge and the importance of using it.			.713
Knowledge is used to solve urgent problems within the bank.			.713
Knowledge is used to change the competitive position of the bank.			.702
KMO	**.874**		
BTS	**1511.344**		
TVE	**66.264**		

Source: *Compiled by the researcher based on data (2025).*

4.3. Exploratory Factor Analysis for dependent variables:

Table 3 shows the summary of the results from exploratory factor analysis using maximum likelihood (ML) using ten items to measure the dependent variable (radical and incremental innovation). All remaining items met and exceeded the recommended threshold of 0.45 for the measure of sample adequacy (MSA), with a Kaiser-Meyer-Olkin (KMO) value of 0.761, exceeding the minimum threshold of 0.60. Additionally, Bartlett's test of sphericity (BTS) produced statistically significant outcomes ($p < .01$), validating the appropriateness of the items for factor analysis.

Table 3: EFA for for dependent variables

Items	Component	
	1	2
The services provided by the bank are totally new.	.849	
The bank offers innovative services that are distinctively new and set it apart from its competitors.	.793	
The innovative services offered by the bank, keep pace with the customer needs.	.788	
We emphasize the quality of innovative services provided to ensure customer satisfaction.	.737	
We use the latest advanced technologies to provide innovative services.	.580	
Management is supporting and encouraging incremental innovation.		.575
There are considerations to change current services.		.737
The provided services are usually reviewed by the management.		.823
The current services are usually reassessed.		.772
There is a clear mechanism for involving all departments in the service innovation process.		.655
KMO	**.892**	
BTS	**804.838**	
TVE		

								61.446

Source: *Compiled by the researcher based on data (2025).*

4.4. Descriptive, Reliability and Correlation Analysis

To investigate the relationships between independent and dependent variables, a correlation analysis was conducted. Bivariate correlations were utilized to evaluate all dimensions of the constructs outlined in this study. Within this context, a correlation coefficient approaching 1 indicates a stronger association between the two variables. Bivariate correlations enable an initial assessment of hypothesized relationships. When the correlation is less than one, it indicates a weaker association between the two variables, which could be either positive or negative. A correlation coefficient below 0.30 is generally regarded as weak, while a coefficient between 0.30 and 0.70 is considered moderate. However, if the correlation coefficient surpasses 0.70, the relationship between the variables is deemed strong. A negative value signifies an inverse relationship.

Table 4: Descriptive Statistics, Reliability, and Correlation Analysis for Study Variables.

Variables	***Cronbach 's alpha***	***mean***	***Standard Deviation***	***1***	***2***	***3***	***4***	***5***
Acquisition	.883	4.1340	.67285	*1*				
Sharing	.826	4.1150	.67602	*.726***	*1*			
Storing	.723	4.2478	.64207	*.513***	*.473***	*1*		
Application	.624	3.9794	.79092	*.575***	*.612***	*.424***	*1*	
Radical	.599	3.9912	.71334	*.478***	*.421***	*.359***	*.453***	*1*
incremental	.927	4.0037	.69457	*.625***	*.709***	*.544***	*.548***	*.484***

Source: *Compiled by the researcher based on data (2025).*

4.5. Hypotheses Testing

The analysis of the first hypothesis reveals no significant relationship between knowledge acquisition and innovation, whether radical or incremental (Beta = .082, p = .401; Beta = .082, p = .401). On the other hand, the results for the second hypothesis reveal that knowledge sharing has a significant impact on both radical and incremental innovation. Knowledge sharing shows a strong relationship with radical innovation (Beta = .441, p = .000) and a notable association with incremental innovation (Beta = -.441, p = .000). Therefore, H2 concludes that knowledge sharing and innovation radical and incremental are completely related, which is accepted. knowledge storing is positively related to innovation radical and incremental in the third hypothesis of the research. A positive correlation was found between knowledge storing and incremental and radical innovation (Beta.206, p=.006; Beta.206, p=.006). These results support the

hypothesis that knowledge storing is positively related to innovation. As a result, H3 indicates that knowledge storage and innovation could be fully interconnected, indicating that hypothesis 3 was accepted. Finally, knowledge using is positively related to innovation radical and incremental. However, in the fourth hypothesis of the study, knowledge using was not positively correlated with either incremental or radical innovation (Beta .077, p=.351; Beta .077, p=.351). H4 therefore states that knowledge using and innovation may not be related, which indicated that hypothesis 4 was not accepted.

Table 5: Hypotheses Testing

Variables	Radical and incremental innovation		Situations
	Beta	Sig	
knowledge acquisition	.082	.401	Not Supported
knowledge sharing	.441	.000	Supported
knowledge storing	.206	.006	Supported
knowledge using	.077	.351	Not Supported
F		31.054	
R^2		.769	
R^2 Square		.592	
Adjusted R^2 Square		.573	
Std. Error of the Estimate		.45448	

Source: Prepared by the researcher from data (2025).

8. Discussion

This study sought to analyze the immediate impact of knowledge management practices specifically knowledge acquisition, sharing, storage, and application on both incremental and radical service innovation in Sudan's banking sector. The hypothesis testing results indicate that knowledge acquisition does not have a significant relationship with service innovation, whether radical (Beta = .082, p = .401) or incremental (Beta = .082, p = .401). Previous research has consistently established a strong link between knowledge management practices and service innovation across various sectors, including services (Yanhui Wang et al, 2024; Colin & Dennis Krumwiede, 2012). This study extends this body of knowledge by examining the relationship between four constructs of KMP within the context of banks sector. knowledge acquisition has been shown to be a significant driver of service innovation. For instance, (Pandey et al., 2018; Wang et al., 2019) found a positive correlation of knowledge acquisition, while (Dokas and Panagiotakopoulos, 2006; Ramachandran et

al., 2009; Wang et al., 2019) ware demonstrated a similar relationship in Finland, linking knowledge acquisition to innovation. (Henttonen et al., 2016; Pandey et al., 2018) further supported this notion by indicating that depends on an organization's ability to identify, realize, and capture knowledge that improves performance. However, the findings for the second hypothesis reveal that knowledge sharing significantly influences both types of innovation. Specifically, it has a strong positive effect on radical innovation (Beta = .441, p = .000) but a negative association with incremental innovation (Beta = -.441, p = .000). These outcomes suggest that knowledge management practices (acquisition and sharing) partially support service innovation. This suggests that KMP have a limited impact on service innovation. This conclusion contrasts with several prior studies (e.g., Mahdi et al., 2019; Azan et al., 2017; Mishra et al., 2011; Supyuenyong et al., 2009), which found a fully positive relationship a discrepancy that may stem from differences in cultural and environmental factors. On the other hand, this result aligns with previous research by (Youssef et al., 2017; Chen et al., 2018; Le & Lei, 2018), which also found a weak relationship of KMP. In contrast, Yanhui Wang et al, (2024) reported a more substantial impact of knowledge management process through a lens of transformative innovation, also prior studies like (Franco & Mariano, 2007; Sangari et al., 2015; Lee et al., 2016) show taha a strong positive effect of KMP, the difference between it and the current study in the culture and environmental factors. Additionally, the study found a significant positive link between knowledge storing and both incremental and radical innovation (Beta = .206, p = .006 for both), indicating that storing knowledge fully supports service innovation. These findings corroborate the work of previous research (e.g., Acharya & Mishra, 2017; Ceptureanu & Popescu, 2018; Mahdi et al., 2019), who reported a significant relationship between knowledge storing and innovation.

Finally, this study's findings underscore the significance of knowledge application as determinants of service innovation. but the results show that knowledge application does not have a significant positive relationship with either incremental (Beta = .077, p = .351) or radical innovation (Beta = .077, p = .351). previous research has shown that the impact of KMP can vary depending on other factors (Franco and Mariano, 2007; Pandey et al., 2018). While prior studies (Lopez and Esteves, 2013; Wahba, 2015; Kansakoski, 2017) knowledge application can enhance service innovation. This study extends these findings by emphasizing the role of knowledge management practices in fostering service innovation. Specifically, the

knowledge application facilitates the accelerated adoption of innovative service delivery methods, transforming intangible services into tangible products with enhanced benefits.

9. Conclusions:

This study sought to investigate the influence of KMP on service innovation in the banking industry. This study seeks to develop a conceptual framework to explore the relationship between knowledge management practices and service innovation within Sudan's banking sector. The findings reveal that knowledge management practices in Sudan comprise four key components: knowledge acquisition, knowledge sharing, knowledge storage, and knowledge application, with banks in the country implementing these practices to some degree. The results indicate that knowledge sharing has a positive impact on both radical and incremental innovation, while knowledge storage also demonstrates a significant positive relationship with these two types of innovation. However, the study found that knowledge application does not significantly correlate with either incremental or radical innovation. Additionally, no meaningful link was observed between knowledge acquisition and service innovation.

Knowledge management processes empower managers to create an environment that fosters innovation by promoting a thorough understanding of the business landscape. Consequently, management strategies should prioritize creating a culture that fosters and sustains innovation. From a managerial perspective, the insights from this study can assist leaders in cultivating a unified vision, thereby improving the organization's ability to effectively adapt to changes in the external environment.

10. theoretical Managerial implications

This study offers several *theoretical contributions.* First, it draws on survey data from 120 banking employees, enhancing its generalizability, particularly given the scarcity of quantitative research in existing literature. Overall, knowledge management practices play a crucial role in shaping service innovation. The second key contribution bridges a research gap by highlighting the importance of knowledge management practices in driving different forms of service innovation, including incremental and radical innovation. The findings align with prior studies, confirming a strong positive link between knowledge management practices and service innovation.

Managerial implications: This research provides valuable insights for banking executives and managers. First, it highlights the critical role of knowledge management in driving service innovation, enabling decision-makers to recognize its impact and

prioritize enhancing their knowledge management strategies. Second, the findings from testing the study's conceptual framework enhance managerial awareness, fostering a shared understanding among leaders. This improved comprehension allows firms to adapt more efficiently to market shifts and external challenges, strengthening their competitive edge.

11. Limitations and recommendations for future research

Drow on its limitations, this research has identified several opportunities for future research within the banking sector. factors affecting the success of the adoption of knowledge practices, and that future research should take knowledge acquisition and use of knowledge as dimensions of knowledge management processes processes. There is a need for research in this area, particularly in the service industry. Second, future research should consider the use and innovation dimensions. Finally, future studies may investigate mediating variables in the relationship between knowledge management processes and innovation.

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