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IMPACT OF KNOWLEDGE MANAGEMENT PILLARS IN ESTABLISHING KNOWLEDGE REPOSITORIES THROUGH THE MODERATING ROLE OF KNOWLEDGE LEAKAGE: AN APPLIED STUDY IN THE MINISTRY OF IRAQI PLANNİNG

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A B S T R A C T

Purpose - The leakage of knowledge assets, such as intellectual property amassed as a result of information leakage, poses a serious threat to businesses since knowledge is a critical strategic organizational asset that needs to be safeguarded as a competitive resource. organizational skills. The purpose of this paper is to ascertain how knowledge management pillars affect organizational knowledge repositories and how this relationship is established. The study assesses the moderating role of knowledge leaking in the relationship.

Design/methodology/approaches - The research employed survey methodologies and quantitative design as a research strategy for gathering data and evaluating the models. The proposed linkages are based on data gathered from 225 employees in the Ministry of Planning.

Findings - The results of the data analysis demonstrated that the modifying variable had a detrimental influence on the study model. It was positive except for the interaction between information repositories and the pillars of knowledge management. Many recommendations for additional research were made, and theoretic and practical consequences were explored.

Originality/Value - The study aimed to identify knowledge repositories and knowledge management pillars. In addition, knowledge leakage plays a role in enhancing knowledge repository efforts. Finally, the study was conducted in the context of the Iraqi Ministry of Planning. It is the only study that addresses research factors. As a result, it serves as a valuable resource for scholars and other interested parties in fields related to knowledge management.

K E Y W O R D S

Pillars of knowledge management, knowledge leakage, knowledge repositories, resource-based viewpoint (RBV) and knowledge-based viewpoint (KBV).

Introduction

Knowledge management has become an effective discipline in businesses as a result of the growing body of research on the knowledge-based economy (Murumba, 2011; Kabilwa, 2018; Fombad et al., 2017). A knowledge-based economy, in the words of the Organization for Economic Co-operation and Development (OECD,1996), is one that depends on the creation, modification, storage, distribution, and use of knowledge and information, or "the financial impact of creating, modifying, storing, distributing and using knowledge" (Al-Busaidi, 2019). This shows that information is seen as one of the fundamental components of business, enabling the creation of a high level of added value and enabling growth in the various business and investment sectors. High levels of performance, flexibility, innovation, and insight are required in both the existing and emerging corporate environments, as opposed to a typical improvement-based perspective. As a result, thorough and efficient planning is essential for knowledge management inside the business (DiGiacomo, 2003).

Given the widespread need for concepts and theories to support systematic intervention in the way the organization deals with knowledge, business organizations in all service and industrial sectors, as well as professional service organizations, have referred to the concept of knowledge management with great interest (Saleh,2013).

Based on what was confirmed in the literature review, there is disagreement over the terminology used to describe and define the fundamental pillars of knowledge management, though it is noted that they all deal with the same concepts and ideas. However, they differ in how some practices are categorized according to each pillar, specifically with regard to the working individual, although some differentiate it from culture. Nonaka and Takeuchi (1996); Alavi and Leidner (2001); Hung, Huang, Lin, and Tsai (2005); Girneine (2014); Biloslavo et al. (2018); Sampaio et al. (2019). First, according to definitions that listed leadership, organization, technology, and learning as the four pillars of knowledge management (Stankosky,2005; Oun et al.,2016; Andam and Rezaian,2017; Kabilwa,2018; Lovreni and Sekovani,2019; Matekenya et al.,2021). However, upon careful study, we also discover that they flow into the four pillars as outlined above, albeit in a more precise way. Other research, on the other hand, have shown that there are eleven pillars of knowledge management (Lehner & Haas, 2010). The ability of the organization to absorb and apply knowledge is one of the functions of knowledge management (Wakasa,2011; Alavi and Leidner, 1999; Volberda et al., 2010), and knowledge corridors are one of the efficient tools to create new knowledge about the different organizational concepts and then apply the knowledge (Martelo-Landroguez and Cegarra-Navarro,2014; Gutiérrez et al.,2015).

In organizations where knowledge is a competitive advantage, knowledge leakage is crucial to management, particularly when it comes to newly discovered intellectual property (IPR) for which safeguards have not been put in place (Ritala et al., 2015: 24; Ferenhof et al., 2015: 12; Ferenhof et al., 2016: 47; Ahlam, 2018: 30). Since the Edward Snowden information leak incident in 2013, enterprises worldwide have acknowledged the existence of information and knowledge breaches (Hassan and Nasereddin, 2018: 6773). According to Ahlam (2018) and Khelil et al. (2017), knowledge leakage is the potential for confidential information to be misplaced or accidentally disclosed to rivals or unapproved parties, posing a serious risk to the company. As an illustration, consider the depreciation of knowledge assets, which refers to the collective intellectual property of knowledge-intensive businesses (which include competent employees and their experience) (Altukrun et al., 2021: 2). Knowledge assets are enabling organizations to gain a competitive edge and create value (Herden, 2020: 163; Kengatharan, 2019: 1; Randall, 2013: 1). Table 1 illustrates the four categories into which

knowledge assets can be categorized, despite the challenges associated with precisely describing and quantifying knowledge in organizations—a fact supported by earlier research. Thus, leakage is a significant issue for companies and a topic for further investigation (Agudelo et al., 2015: 3; Ahlam, 2018: 16).

Table 1 Categories of knowledge assets

Fundamentals of Empirical Knowledge	Fundamentals of Conceptual Knowledge
• Sharing of Tacit Knowledge through Shared Experiences • individuals' Knowledge and Skills • Safety, trust, care, and attention • Tension, impatience, and passion	• Symbols, words, and images that denote specific knowledge • Concepts for products • The layout • Rights to trademark ownership
Fundamentals of Routine Knowledge	Fundamentals of systematic knowledge
• Methods and procedures that serve as commonplace tacit knowledge, • Expertise in day-to-day activities, • Organizational procedures, and • Organizational culture	• Explicit Methodology And Knowledge Sheet • Manuals, Specifications, and Docum-entation • The database • Licensing and Patents

Source: Nonaka, Ikujiro; Toyama, Ryoko; Konno, Noboru (2000). "SECI ba, and Leadership: a unified model of dynamic knowledge creation". Long Range Planning, 33(1), 5-34.

Building knowledge repositories is therefore one organizational strategy to protect organizational knowledge from both deliberate and accidental leakage and knowledge sharing (Farida et al., 2015: 5; Becerra-Fernandez and Sabherwal., 2015: 191 ; Alhawari, 2016: 18). Institutional repositories are becoming more and more commonplace worldwide (Moahi, 2009: 4). According to Damayanti (2018: 8), the subject of organizational repositories has gained international attention through workshops and conferences, but its development in developing nations has been extremely sluggish (Dhanavandan and Tamizhelvan, 2015) Zachary (2011: 479). According to Nunda and Elia (2019: 2), the repository's regulators have an organizational responsibility to manage their digital assets, which includes controlling access, preservation, and distribution over the long term.

A system architecture known as an organizational repository is used to store and manage an organization's intellectual property, making it simple and quick to access and retrieve it. or a collection of services offered by the group to handle and publish digital content produced by group or community members (Mgonzo and Yonah, 2014: 7; Okumu, 2015: 15).

The Knowledge Repository (KR) can help people in the vicinity obtain and apply important knowledge that is easily accessible without requiring social interaction (Valentine et al., 2017: 2). One of the primary forms of Knowledge Management (KM) systems is Knowledge Repositories (Kankanhalli et al., 2005: 113). The majority of organizations have amassed a significant amount of knowledge over the course of their existence by repeating the tasks at which they excel. For this reason, it is necessary to organize this knowledge, whether it is implicit or explicit, so that other members of the organization are aware of its source and origin (Anis et al., 2007 : 202; Fadel, 2014: 512; Damayanti, 2018: 8).

Furthermore, by incorporating four variables into a single model, conducting research in the service industry with a sizable sample size, and employing both knowledge ways and knowledge leakage as two moderating variables, this study aims to close the knowledge gap. This study was carried out in the service sector of the Ministry of Planning in Iraq in order to address the issue of organizational knowledge leakage in the public sector, particularly within the Ministry of Planning, as a result of employee transfers to other public sector ministries and reductions in the number of years of functional service.

This study's primary goal is to create a quantifiable model that can be applied to a large-scale sample under investigation. To achieve this, it will analyze the effects of knowledge management pillars on knowledge repositories using the two moderating variables, knowledge leakage and knowledge ways. A sample of people employed by the Iraqi Ministry of Planning is used in this study. Consequently, the three primary research issues are what this study seeks to address. What type of relationship does the foundation of knowledge management have with knowledge repositories, and what influences that relationship? Lastly, how does the connection between the repositories and the pillars of knowledge change as a result of information leakage?

The format of the paper is as follows. The theoretical backdrop and research model are explained in Section 2, and the research techniques are described in Section 3. The experimental Results are then discussed in Sections 4 and 5. In Section 6, the report wraps up with some limits, research implications for the future, and recommendations for managerial practice.

Theoretical background and research model

The previous literature that served as the research's theoretical foundation is presented in this part. A common misconception about knowledge management is that it is an interdisciplinary, multifaceted idea. There are numerous definitions of knowledge management in the literature (Nsubuga-Mugoa, 2019: 23, Meihami and Meihami, 2014: 81, Na, 2015: 18, Saleh, 2013: 32, Shropshire et al., 2019: 2). To determine what each researcher is concentrating on, comparisons must be done (Meihami and Meihami, 2014:81). The scientific and applied literature, corporate organizations in the industrial sectors, and professional services organizations have all given knowledge management a lot of attention. The primary objective of the pressing demand for several theories and concepts related to knowledge management is to enable the methodical intervention in the organization's handling of organizational knowledge (Saleh, 2013: 32). One advantage of not having a single definition for knowledge management is that different researchers and stakeholders will have different perspectives based on their experience, education, and level of seniority in the field (Jain, 2017: 1; Valacherry et al., 2020: 252; Na, 2015: 19).

Knowledge management is a crucial and influential field in carrying out the tasks and activities of various organizations, as the emergence of a knowledge-based economy has highlighted the need for effective utilization of knowledge (Murumba, 2011: 1; Kabilwa, 2018: 2; Madeleine et al., 2017: 1). A knowledge-based economy is one that depends on the production, distribution, and use of knowledge and information. The Organization for Economic Cooperation and Development (OECD, 1996) defined this term as the financial impact of knowledge creation, modification, storage, distribution, and use (Al-Busaidi, 2019: 1). In addition, knowledge is the fundamental component of production that promotes the expansion of high-tech businesses and investments, both of which result in the creation of significant added value. Rather than the typical focus on improvement, insight, creativity, adaptation, and superior

performance reflect governing requirements for the new business environment, as well as efficient and thorough planning for knowledge management in the company (DiGiacomo, 2003: 7-8).

The literature review pertaining to the concept of knowledge management pillars reveals a lack of agreement on terminology for defining and characterizing them. However, it is observed that these concepts and ideas are similar, despite differences in how certain practices are categorized based on the pillar, particularly in relation to working individuals. While some scholars (Nonaka & Takeuchi, 1995; Alavi & Leidner, 2001; Hung, Huang, Lin, & Tsai, 2005; Girneine, 2014; Biloslavo et al., 2018; Sampaio et al., 2019) distinguish it from organizational culture, others do not. In the definitions that identified four basic pillars of knowledge management (leadership, organization, technology, and education) (Stankosky, 2005; Oun et al., 2016; Andam and Rezaian, 2017; Kabilwa, 2018; LovrenčićAnd Sekovanić, 2019; Mateken ya et al, 2021), others see that the individual and his culture are partial and one. Conversely, some research (Lehner & Haas, 2010) suggests that there is a more comprehensive set of knowledge pillars for knowledge management; nevertheless, a closer examination reveals that this material is likewise broken down into four pillars, albeit with more specific details.

A knowledge repository is a structure that regularly examines and methodically records the sources of organizational knowledge (Chidambaram et al.,2014:203). In the knowledge repository, information is kept for potential future use (Fadel et al., 2014: 511; Batista et al., 2015: 2; Muda and Yusof, 2016: 92). As a result, the two main functions of the knowledge repository are the regular application of knowledge and its storage. The researchers characterized it as a database that offers a set of services for recording, storing, indexing, conserving, and dispersing the organization's output in digital formats (Ampong, 2016: 8; Bibbo et al., 2012: 17), referring to a larger range of roles, alternatively it stands for an integrated system that facilitates two-way communication and allows users to search through both structured and unstructured data while finding answers to their questions. to enable cooperative action to recover and safeguard organizational knowledge assets (Chidambaram et al., 2014: 203). By gathering knowledge from the working workforce, knowledge repositories help encourage knowledge exchange among their staff (Muda and Yusof, 2016: 92). These repositories' dependence on the knowledge content as well as the authors' publication and contribution policies present a problem, though. The complete material is accessible when contributors use an open access strategy; otherwise, access to that text or content is either difficult or restricted (Farida et al, 2015: 3).

Because it is accessible and may be used without social contact, knowledge repositories (KRs) have the potential to assist interested parties in gaining relevant knowledge (Valentine et al., 2017: 2). By repeating things they are proficient at, many businesses have started to accumulate a significant quantity of knowledge throughout the course of their life. This is the reason behind the necessity of controlling the amount of information, whether explicit or tacit, so that people inside the company are aware of where and how to obtain it (Anis et al., 2007: 202; Fadel, 2014: 512; Damayanti, 2018: 8). Furthermore, we concur with the researchers' description of knowledge repositories as "an information technology-based system designed to support the storage, reuse, and reuse of organizational knowledge assets" (Fadel, 2014: 512; Hung et al., 2015: 9).

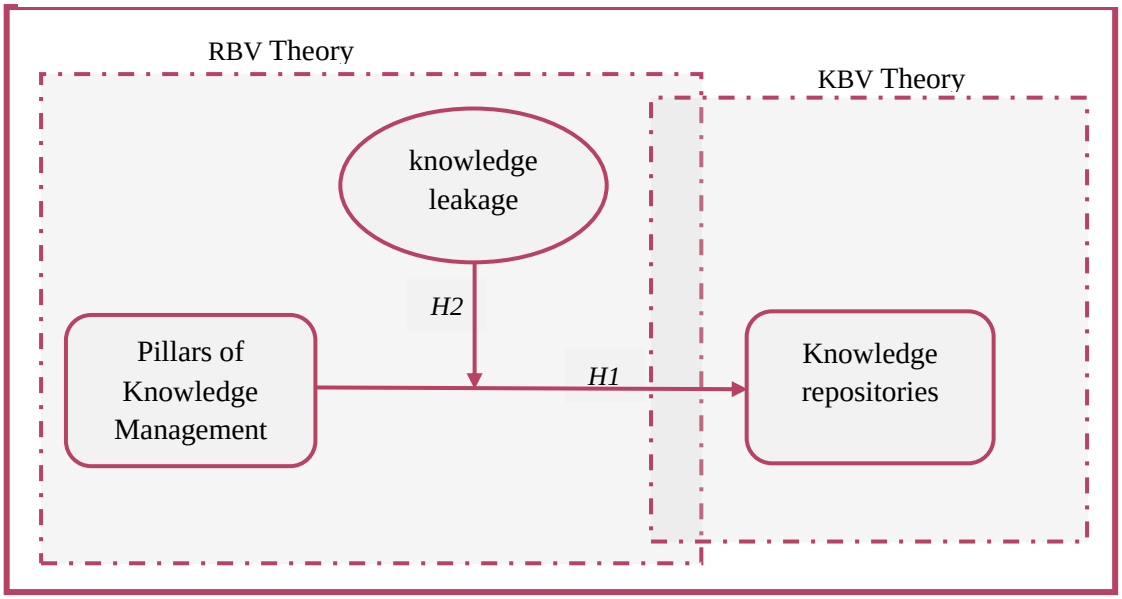
Many academics have noted that the knowledge-based view of the company (KBV) is the foundation for the knowledge leakage phenomena. The foundation of a firm's competitive advantage, according to the KBV, is knowledge (Frishammar et al., 2015: 76; Serna et al., 2017: 4; Sindakis et al., 2017: 235; Inkpen et al., 2018: 1). The resource-based view is one of the prevalent concepts in the field of strategic management that have been mentioned in knowledge management literature (Ahmad et al., 2015; 1;

Khelil and Haddad, 2017: 204; Arias-Pérez et al, 2020), and the integration of dynamic capabilities (Chan et al., 2006: 853; Ahmad et al., 2015: 3; Lin et al., 2016: 1762) and the knowledge-based view (Carayannopouloset al, 2010: 254; Ahmad et al, 2013: 4; Sharif et al., 2021: 1) into organizational procedures to explain the idea of knowledge leakage. It is evident that the significance of information leaking is connected to a number of theories and notions (Arias-Pérez et al, 2020; Sharif et al, 2020: 1; Sharif et al., 2021: 1).

Organizations face a significant problem in trying to balance the requirement to retain confidentiality with the desire to increase information sharing (Ahmad et al., 2015: 3; Durst et al., 2015: 9; Adaileh et al., 2017: 95). In this discussion, the knowledge perspective frequently centers on the differentiation between "explicit" and "tacit" knowledge. Because it is harder to articulate or record than explicit knowledge, implicit knowledge is thought to leak less frequently than explicit knowledge (Ahmad et al., 2013: 6). Furthermore, workers who retire or move to other organizations that compete with them carry their knowledge with them, demonstrating that knowledge leakage is not limited to explicit knowledge alone (Tan et al., 2015: 12; Sindakis et al., 2017: 238; Vafaei-Zadeh et al., 2019: 13).

Employees who purposefully or unintentionally divulge critical internal company information to outside parties without authorization are likewise guilty of knowledge leaking (Frishammar, Ericsson, and Patel 2015: 75; Khoza, 2019: 1, Ritala et al. 2015: 22; Khoza, 2019: 1). The interplay between the various stages of knowledge retention might lead to knowledge leaking (Levallet et al., 2016: 100). In the context of knowledge leakage, the majority of the research appears to classify fundamental knowledge as the crucial kind of knowledge (Mohamed et al., 2006: 3; Durst et al., 2015: 2).

Figure 1: Research model



Research Hypotheses

Pillars of knowledge management and knowledge repositories

For instance, the literature (Matekenya et al., 2021; Lovrenđić and Sekovanić, 2019; Stankosky, 2005; Oun et al., 2016; Andam and Rezaian, 2017; Kabilwa, 2018) pointed out the characteristics of the knowledge pillars (leadership, organization, technology, learning). Knowledge sharing is one of the objectives of knowledge repositories (Doctor, 2008: 335; Chu, 2014: 159), and it is frequently

considered a crucial part of knowledge management (kassahun, 2016: 395). Furthermore, a study by Andersen and APQC found that senior leadership's lack of commitment to sharing organizational knowledge is a significant factor in organizations' inability to utilize our world of knowledge (Holsapple and Joshi, 2000: 241). This is because knowledge repositories' primary objective is knowledge sharing (Ankanhalli et al., 2005: 114; Kankanhalli et al., 2005: 115). Farida et al., 2015: 6, and Alhawari, 2014: 120).

The operational components of knowledge assets are covered by the organization dimension, which also includes formal and informal functions, processes, organizational structures, control standards and metrics, process re-engineering and improvement, and process improvement (Lovernčić et al., 2019: 374). In order to guarantee the flow, tracking, and best use of all of the organization's knowledge assets, this pillar is built on the concepts and methods of system engineering (Stankosky, 2005: 6). An important and practical instrument for using knowledge repositories is the acceptance and use of technology (Bansler et al., 2004: 281). Three key concepts are knowledge generation, application, and sharing (Choi et al., 2010: 855) (Lee et al., 2012: 187). According to (Chhim et al., 2017: 5), technology plays a significant role in facilitating knowledge exchange by lowering obstacles related to time and location between knowledge workers and facilitating access to knowledge-related information.

H1. The pillars of knowledge management are positively linked to knowledge repositories.

The relationship of knowledge leakage as an moderation variable between the pillars of knowledge management and knowledge repositories

When information leaves an organization in an unwelcome, uncontrollable manner and is detrimental to it, it is referred to as knowledge leakage (Ritala et al., 2018: 13; Flammer and Kacperczyk, 2019: 1246). New research has demonstrated the constraints placed on individuals by knowledge management systems to lessen the effects of this action (Galati et al., 2019: 20). These consequences increase when critical knowledge is disclosed, and knowledge that is disclosed to the outside loses its strategic value and can be exploited in an opportunistic manner to lessen the advantages enjoyed by the organization that is the source of the information (Raza-Ullah and Eriksson, 2017: 246).

Furthermore, leakage erodes the commitment and allegiance of outside partners, who could wind up behaving opportunistically and wrongly appropriating previously shared organizational core knowledge. This represents a loss of time, money, and other resources in addition to fundamental knowledge (Abhari et al., 2018:4). As a result, we observe the detrimental feedback effects caused by knowledge leakage, which begin at the micro level with deficiencies in abilities and skills and result in low operational efficiency in terms of time and cost. This, in turn, reflects on the organization's overall level, which is indicated by declining performance and reputation in the external environment (Massingham, 2018: 1; Zheng et al., 2018: 2; Rashida et al., 2019: 19).

Research method

A cross-sectional survey methodology was employed in order to gather data and subsequently test the theoretical model. Following the data gathering procedure, the questionnaires were examined for any missing information and any data entry mistakes. The measuring methodology was adjusted in light of factor and content analysis to guarantee the constructs' validity and one-dimensionality. The hypothetical model was tested using structural equation modeling based on covariance (SEM) in SPSS during the following phase. Additionally, it was used to investigate the relationships between latent

variables and measured variables (structural theory assessment) as well as between measurement theory assessment and latent variables (Hair, Hult, Ringle and Sarstedt, 2016: xi).

Sample and data collection

A direct survey was used to collect the experimental data, and it was carried out during the start and end of March 2023. We chose the Ministry of Planning in Iraq via basic random sample utilizing the Ministry of Planning's database in the Human Resources Department, which offers profiles and information for all ministry employees, in order to increase the generalizability of the findings. The National Center for Administrative Development and Information Technology, the Central Statistical Organization, the Central Agency for Standardization and Quality Control, and the Ministry of Planning's main office make up the Ministry of Planning. Since technology is one of the pillars of knowledge management, we were eager to choose sample members who work in departments directly related to knowledge and information technology. Additionally, we selected certain sectoral departments of exceptional importance within the Ministry of Planning by having them complete tasks and activities that are both directly and indirectly related to knowledge and information technology. The responsibilities and actions of various ministries, governorates, and unaffiliated organizations revolve around a variety of tasks, including selecting investment projects, creating yearly and five-year plans, and creating annual budgets and budgetary allocations. 240 out of the 295 employees who received the questionnaire answered it, yielding an approximate 81% response rate. 225 of the returned questionnaires—with 15 incomplete and over 6% of the data missing—were included in the final sample. To deal with missing residual data, mean value substitution (Hair, Hult, Ringle, and Sarstedt, 2016: 57) was employed.

The final sample comprised all Ministry of Planning formation personnel; no Ministry-affiliated formation was left out. It is possible to get clarification on the specifics of each entity and the quantity of questionnaires received for study. The Central Agency for Standardization and Quality Control (43), the Central Agency for Statistics (59), the Ministry of Planning's headquarters (98), and the National Center for Administrative Development and Information Technology (22) questionnaires. However, three people did not disclose where they work.

The ministry was 83 years old, and the respondents had an average of 17 years of work experience in their current position. There are 35 decision makers in the sample who are in the categories of lower management (division official), middle management (department manager), and senior management (general manager). With the exception of the difference between the Ministry's headquarters and affiliated formations, none of the control variables had a significant impact at $p < 0.05$. The same holds true for non-response bias, since there were no documented signs of it, and participation rates from early and late were not statistically significant ($p < 0.05$).

Measures

Nine dimensions, spread among three fundamental variables, were used to measure the model. Eight academics with expertise in knowledge management and five executive directors who serve as knowledge management trainers for the Ministry of Planning assessed the scales in the first instance to confirm their validity. They are knowledgeable in knowledge management and have an average of ten to fifteen years of administrative experience. The questionnaire items for each variable were reworded to make them more clear in response to their feedback. The research standards were translated into

Arabic and then back into English once the appropriate adjustments were made. Prior to administering the survey and ultimately gathering the last set of data for analysis, the survey was pilot tested in Arabic. Prior to gathering the final data for analysis, an experimental test of the questionnaire was conducted in Arabic. Multiple dimensions were employed to measure each aspect, with a 5-point Likert scale ranging from 1 (strongly disagree) to 5 (strongly agree). For every combination, reflective scales were employed (Diamantopoulos & Winklhofer, 2001: 269).

The researcher employed the (Damayanti et al., 2018) scale to investigate the crucial or contributing aspects to the application of the knowledge s repositories success. The study examines how knowledge leakage that takes into account two dimensions can alter the connection between the independent and dependent variables (Arias-Pérez et al., 2020: 1). Subsequently, based on the research (Stankosky, 2005), the researcher talked about how the development of information repositories affects the independent variable, which is the pillars of knowledge management.

Data Analysis

The hypotheses presented in Section 3 were assessed using variance-based least-squares structural equation modeling (PLS-SEM), a technique that has gained popularity among management researchers in recent years (Hair, Sarstedt, Pieper, and Ringle, 2017: 11). To enhance the dependability of the current findings in this paper, Hair et al. (2017:22) used a sample size that was marginally larger than the mean of the PLS-SEM research they reviewed. Before the path coefficients were interpreted, the scaling model was examined, and significance was determined by bootstrapping at the structural model level using the software program SPSS V.23 (Arbuckle, 2013). For every indicator, the t-statistic was also looked at. In accordance with guidelines from recent research, the smoothing approach was applied to 225 samples; modifications made during the smoothing process were not accepted (Hair et al., 2016).

Results

Assessment of measurement model

The study uses the PLS-SEM model evaluation methods outlined by Hair et al. (2012) to assess the measurement model. The evaluation criteria are displayed in Table 2 below; these will be covered in greater detail in the following section.

A 0.7 criterion was used when treating indicator dependability in terms of factor loading (Hair et al., 2017: 127). Additionally, if other items assessing the same construct had greater reliability scores, loads of at least 0.5 were allowed (Hair et al., 2017: 127). As a result, for each of the knowledge management pillars—leadership, organization, learning, and information technology—four components were left out. and the removal of two items from content- and information-technology-related knowledge repositories. as well as one aspect of the knowledge corridors. Cronbach's alpha was used to assess the PLS-SEM's internal consistency dependability in accordance with Hair et al. (2019) recommendations. A threshold of 0.7 for CR was used (Pallant, 2011:100), and all combinations were able to meet this.

Using the mean of the recovered variance and an initial threshold of 0.5, convergent validity was investigated (Hair et al., 2010: 679–680). Correlations between combinations were evaluated in order to evaluate discriminating validity; the results showed that there was sufficient discrimination, ranging from 0.46 to 0.66 (Table 3). According to Fornell and Larcker (1981:47), Table 2 also displays the square root of **AVE** on diameter, which was greater than the correlations for each structure and suggests that there is excellent discriminating validity between the combinations. Descriptive statistics were

utilized to give an overview of the data that was gathered. The standard deviation values varied from 0.650 to 0.750, whereas the mean values ranged from 3.51 to 3.82. The initial research hypotheses were supported by the values of the positive correlation coefficient between the variables at the average level for each of the six main components, which varied from 0.424 to 0.507. (Table 4).

Table 2. Measurement model assessment

Factor	Sub factor	Item	Loading	Average Loading	AVE	a	CR	Factor	Sub factor	Item	Loading	Average Loading	AVE	a	CR
PKM	Lrd	Ld1	.755	0.76	.602	.892	.912	KR	Com	Co1	.741	.67	.506	.730	.836
		Ld2	.767							Co2	.693				
		Ld3	.774							Co3	.722				
		Ld4	.796							Co5	.663				
		Ld5	.787							Co6	.734				
		Ld7	.676						IT	Te1	.686	.68	.507	.752	.837
	Org	Og1	.687	.65	.524	.801	.891			Te2	.673				
		Og2	.655							Te3	.684				
		Og3	.754							Te4	.765				
		Og4	.744							Te5	.746				
		Og5	.774						PRT	Pr1	.731	.74	.548	.811	0.858
		Og6	.794							Pr2	.688				
	Lrn	Le1	.667	.66	.500	.743	.833			Pr3	.830				
		Le2	.756							Pr4	.746				
		Le4	.691							Pr5	.696				
		Le5	.653					KL	IKL	IKL1	.770	.76	.578	.818	.873
		Le6	.762							IKL2	.743				
	Inf	IT1	.918	.73	.545	.790	.855			IKL3	.722				
		IT3	.709							IKL4	.781				
		IT4	.657							IKL5	.785				
		IT5	.681						UKL	UKL1	.838	.83	.689	.886	.917
		IT7	.695							UKL2	.816				
										UKL3	.812				
										UKL4	.826				
										UKL5	.858				

Notes: PKM : Pillar of Knowledge Management, Lrd : Leadership, Org : Organization, Lrn : Learning, Inf : Information Technology; KR : knowledge repository, Com : Content, IT : Information Technology, PRT: Promotion; KL : Knowledge leakage, IKL : intentional knowledge leakage and UKL : Unintentional knowledge leakage. CR : composite reliability, AVE : average variance extracted.

Table 3 Correlation and discriminant validity

Factor	PKM	KR	KL
PKM	(0.73)		
KR	055	(0.73)	
KL	0.65	0.57	**(0.81)**

Notes: square-root of AVE in parentheses on the diagonals; PKM= Pillar of Knowledge Management; KR = knowledge repository; KL = Knowledge leakage

Table 4 Descriptive statistical and correlation

Variables	Mean	S.D	PKM	KR	KL
PKM	3.81	0.656	1		
KR	3.71	0.702	0.453	1	
KL	3.52	0.751	0.425	0.496	1

Notes: PKM: Pillar of Knowledge Management; KR: knowledge repository; KL : Knowledge leakage; **P < 0.01

Assessment of structural model and testing of hypotheses

In order to determine whether the model data and the hypotheses were consistent, the size and importance of structural corridors were examined in the suggested Amos structural model (see Table 5). Knowledge repositories appear to benefit from the foundations of knowledge management, according to hypothesis H1. The results of the experiment show that knowledge repositories and the foundations of knowledge management have a medium and positive relationship ($\beta = 0.454$, $t = 7.574$, $P < 0.05$). Hypothesis H2, Knowledge leakage modifies the relationship inversely between knowledge repositories and the pillars of knowledge management. The experimental Findings indicate that there is a significant negative effect of knowledge leakage on the relationship between knowledge management pillars and knowledge repositories ($\beta = -0.041$, $t = -1.017$, $P < 0.311$).

Table 5 Findings of hypothesis & testing

Hypothesis	Causal path	β	t –value	p-value	Result
H1	PKM ⟶ KR	0.454	7.574	0.000	Supported
H2	KL*PKM ⟶ KR	-0.041	1.017	0.311	Not Supported

Notes: PKM: Pillar of Knowledge Management; KR: knowledge repository; KL: Knowledge leakage; KL*PKM: interaction Knowledge leakage with Pillar of Knowledge Management.

Discussion

Theoretical implications

Considering that information is seen as a determining factor in business performance since, as we previously discussed, it is a necessary resource for any organization (Omondi and Muthimi, 2019: 54; Edwards, 2015: 23; Liebowitz, 2016: 43). The organization's capacity to preserve and create a competitive advantage depends on its members' ability to gather, return, and use their specialized knowledge (Chu, 2015: 159; Omondi and Muthimi, 2019: 54; Kankanhalli et al., 2005: 114). Because it is accessible and usable without requiring social interaction, the argument for building a knowledge repository (KR) aids those in the surrounding community in accessing important knowledge (Valentine et al., 2017: 2). The nature of the interaction between the research paradigm's components knowledge repositories and management pillars—as well as the altered function of organizational knowledge leakage are all determined in this section of the study. This is in line with the knowledge-based theory, which highlights the drawbacks of gathering both present organizational information and knowledge to come. and use it to their advantage to fulfill the organization's objectives (Lopez and Esteves, 2011: 90).

The establishment of knowledge repositories is also influenced by the dimensions of the knowledge pillars (learning, leadership, organization, and technology) (Stankosky, 2005:6; Kassahun, 2016:395; Lovrenčić et al, 2019:374). Through the establishment of knowledge repositories, leadership aids in the promotion and consolidation of knowledge generation, storage, and sharing (Alhawari, 2014:120; Farida et al., 2015:6). The organization's duty is to guarantee the flow, tracking, and best use of all of its knowledge assets. This is done through the application of system engineering principles and methodologies (Stankosky, 2005:6). Technology adoption and use is a helpful and crucial tool for applying knowledge repositories (Bansler et al., 2004:281). This is because technology improves access to knowledge information and facilitates the exchange of knowledge by lowering barriers between knowledge workers in terms of time and space (Chhim et al., 2017:5).

Both Intentional and unintentional information leaks result in a quantitative decline in the amount of knowledge contained in knowledge stores as well as a moral decline because important knowledge is lost through retirement and migration once employment ends. Apart from being able to take a long vacation (three to five years), this is also permitted under the Civil Service Law for public sector employees. This is in line with resource-based theory (RBT), which contends that the deployment of organizational resources and capabilities in the form of goods and services particularly those that are valuable, scarce, unique, and irreplaceable is helpful in preserving competitive advantage (Ahmad et al.,2015:2). Therefore, not every instance of organizational information leaking reduces a company's competitive advantage. It is obvious that in order to decrease leakage, knowledge pertaining to competitive advantages must come first. As a result, negative feedback effects are produced, which are mirrored at the macro level and begin at the micro level with things like a lack of abilities and skills and end at a low level of time and cost efficiency in operations. For the organization, this is reflected in a decline in performance and productivity, which culminates in a decline in the company's external environment's trust and reputation (Massingham,2018:1;Zheng et al.,2018:2;Rashida et al.,2019:19).

Practical implications

The obtained findings, which are in line with the findings of other studies, might be used to assess the research's practical implications. According to the research, senior management and decision-makers

should use knowledge repositories as a way to gather, store, acquire, and use both internal and external knowledge. As a result, the Ministry of Planning and other ministries that operate in both the public and private sectors can use the accessible knowledge to carry out their varied jobs and operations, thereby assisting individuals in accessing vital information. The decision to create a knowledge base for the Ministry of Planning also marks the first institutional-level initiative in Iraq. It is likely that managers will be able to alter how they interpret their perceptions and produce new knowledge about various organizational concepts by developing and utilizing these paths.

Management in companies where knowledge serves as a competitive advantage must be aware of the risks associated with knowledge leakage, especially when it comes to new and current intellectual property (IPR). On the other hand, knowledge management activities (such as information transfer and sharing) can lead to a problem called knowledge leakage. One of the recognized methods for cutting down on corporate knowledge waste is the creation of knowledge repositories.

Limitations and Future Research Directions

The present study has limitations, both in terms of its methodology and its findings, as it follows the same pattern as previous investigations. First, the research's cross-sectional design. The information was gathered at roughly the same time. Time is of the essential when developing knowledge corridors, as they take time to develop. To see changes in the aspects of knowledge corridors (knowledge absorption and application), we might need to conduct a longitudinal study. Second, because the Findings apply to the setting of public services in Iraq, care must be taken when interpreting the results. the challenge of extrapolating the research's findings given that it was centered on the sphere of public services (comprehensive strategic planning). Given that the Ministry of Planning's knowledge corridors will differ slightly from those of other companies. To investigate any potential discrepancies in linkages, future research may investigate these relationships in cultural, professional, and other diverse kinds of non-public service groups.

This is the first quantitative study that combines research factors that we are aware of. The reasonableness of the research's findings and the ongoing inquiry and organizational exploration of the relationship between the variables are likely caused by the disparities in the methods used to measure the various knowledge management and knowledge warehousing pillars. Further research can employ different, more impartial metrics. Future research should additionally examine the non-significant link of the knowledge leakage moderation role in the relationship between the independent and dependent variables. The somewhat lower sample size is one of the reasons why finding this link with a higher degree of confidence is more difficult. More research may yield a larger sample size and higher levels of confidence. As a result, the study must take into account multiple organizational levels.

Furthermore, the same respondents who reported on the pillars of knowledge management and knowledge repositories are used to measure other organizational level research components, such as knowledge repositories and their measurements. Future research can measure these characteristics at the organizational level without relying on individual replies, which could improve the validity of the study's findings. Data gathered from members of the Ministry of Planning and its linked formations was used to test the study model, which was based on a particular sample rather than a random one.

As a result, it is important to interpret and extrapolate the Findings within this constraint and within this particular regulatory framework. Considering the narrow focus of the current research. Intentional or unintentional knowledge leaking sub-dimensions may be the focus of future research, which could lead

to a better understanding of how to interpret the relationship. The Ministry of Planning and its affiliated formations were the subject of the research, which concentrated on the foundations of knowledge management and knowledge leakage in service-based enterprises. Future research may concentrate more on more specialized industries within this industry since different work environments may have different effects on the ways in which the knowledge management pillars contribute to knowledge repositories.

Conclusion

The topic of knowledge repositories and their role in collecting, storing and disseminating organizational knowledge is a widely growing topic in the academic and professional arena. The current research tested and presented a mechanism for how the pillars of knowledge management contribute to knowledge repositories. We focused on knowledge repositories due to the lack of initiatives at the public sector level in Iraq that adopt such projects. The research contributes to the knowledge management literature by providing greater clarity through the definition of knowledge repositories and knowledge leakage. The research highlights the importance of knowledge management pillars within organizations and explains how they can contribute to creating knowledge repositories. The results of the research indicated that knowledge leakage has a negative impact on the relationship as a moderating variable among the research variables.

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Declarations

Conflicts of Interest: The authors have no competing interests to declare that are relevant to the content of this article.

Ethics approval and consent to participate

The use and sharing of survey data was approved based on formal approval from the Iraqi Ministry of Planning and was implemented in accordance with institutional guidelines.

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