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## RESEARCH ARTICLE

## Analyzing the effects of knowledge management on organizational performance through knowledge utilization and sustainability

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## Abstract

In today's turbulent business environment, gaining sustainable competitive advantage requires organizations to manage knowledge capabilities effectively and use resources efficiently. The primary objective of this study is to explore the relationship among knowledge management (KM) processes, including knowledge generation, knowledge codification, and knowledge sharing, with knowledge utilization, sustainability, and organizational performance. The research mainly examines both the direct effect of KM on organizational performance and its indirect effect through sustainability and knowledge utilization. A theoretical framework is introduced and tested using data gathered from companies within the services sector in Kuwait. The results indicate that knowledge utilization and sustainability fully mediate the relationship between KM and organizational performance. Both knowledge utilization and sustainability exert direct and positive effects on organizational performance while being directly influenced by KM. Accordingly, it is suggested that the firms enhance their performance by effectively managing knowledge capabilities appropriately, utilizing knowledge, and investing in sustainability and organizational resources.

## 1 | INTRODUCTION

In today's competitive world, with technological advancements and innovative business approaches, maintaining competitive advantage and profitability within organizations has become a significant challenge. The strategic and consistent utilization of internal and external resources is crucial in enabling organizations to gain sustainable competitive advantages. Knowledge is recognized as an intangible organizational asset characterized by its complex nature, making it challenging to comprehend, transfer, or effectively apply across various sectors within a company (Martins et al., 2019). Knowledge management (KM) represents purposeful and systematic coordination of an organization's human resources, technology, processes, and structural components, which aim to add value using knowledge reuse and innovation. This coordination is achieved through knowledge creation, transformation, and application. Moreover, it includes capturing valuable insights and best practices into organizational memory to foster consistent organizational learning. This approach manages enormous volumes of information in organizations to provide an ongoing flow of knowledge to the right people at the exact time, improving their efficiency and making company profits (Dalkir & Liebowitz, 2011).

Thus, in recent years, KM has emerged as a critical strategic asset for organizations as it empowers them to foster the process of converting information into an appropriate format of knowledge and ensures the achievement of the organization's goals (Martins

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et al., 2019). In alignment with the growing interest in organizational knowledge and KM, information systems (IS) researchers have introduced a category of IS known as KM systems (KMS). The primary goal of KMS is to handle the creation, sharing, and utilization of knowledge within organizations (Alavi & Leidner, 2001). Over the past years, KM has been strongly supported by most researchers in building the organization's competitive advantage and delivering improved performance (Jayasingam et al., 2013). Enterprises' KM capabilities define how perfectly knowledge is controlled, applied, and developed to enable productive generation and reuse of knowledge (Tseng & Lee, 2014). In addition, KM performance mentions the concept that KM processes allocate organizations' resources to achieve KM initiatives (Heeseok & Byounggu, 2003). KM initiatives should improve organizational KM capabilities to reach business objectives (Grant, 1996). Thus, based on the literature, KM has a positive and considerable impact on organizational performance (Abidi et al., 2023; Dzenopoljac et al., 2018).

On the other hand, the technological, environmental, economic, and social changes in the practical aspect of global management systems in recent years have persuaded organizations and enterprises to adapt to new economic conditions marked by high levels of competition and continuous changes in the external environment (Cancino et al., 2018; Kuzior et al., 2019). Moreover, rising customers' awareness regarding the misuse of natural resources, concerns about water, air, and soil pollution, and considerable changes in natural climate are compelling firms to pursue environment-friendly approaches (Abbas, 2020). Sustainability conceptually refers to the triple bottomline (TBL) of social, environmental, and economic considerations of a company, influencing both current and future generations (Elkington, 1994). The TBL signifies an organization's ability to generate profits while upholding social and environmental responsibility, in contrast to the traditional profit-maximizing approach for shareholders (Moldavanova & Goerdel, 2021). Sustainable development is meeting present needs while preserving the ability of future generations to fulfill their own needs, understanding the significance of concepts such as cleaner production, social responsibility, and ecoinnovation. There are considerable issues in these concepts related to environmental awareness and sustainable utilization of natural resources and human capital, which improves the probability of achieving a sustainable future (Bontis & Fitz-enz, 2002; Maruyama et al., 2019; Severo et al., 2018).

The increasing importance of sustainability within corporate governance has spurred research efforts aimed at exploring the integration of sustainability into business operations. The connection between KM and sustainability causes a change in firm position since KM can significantly affect organizational frameworks. Therefore, companies aim to meet environmental, economic, and social responsibilities by effectively managing their knowledge practices and processes. In this respect, KM has emerged as a novel paradigm capable of bridging the gap between a company's current state and its desired state concerning the efficient and smooth achievement of sustainability objectives and targets (Chopra et al., 2021; Tajpour et al., 2022). There are two different approaches that KM can serve as an effective strategy for enterprises to foster the essential shift toward more sustainable operations. First, it can raise awareness among firms about the negative effects of their activities. Second, it can provide crucial support in implementing new approaches and strategies, enabling the perfect integration of sustainable practices and technologies into their operations (López-Torres et al., 2019). In this regard, KM development, alongside a concentration on sustainable approaches, helps organizations consolidate their position in the competitive marketplace.

Although a wide range of research has been conducted through sustainability, KM, and organizational performance, this field still has the potential for further research. As a few examples, Dzenopoljac et al. (2018) mentioned the direct and positive relationship between KM processes and business performance. Reich et al. (2014) demonstrated the significant positive impact of KM and knowledge alignment on achieving project management objectives. Tajpour et al. (2022) stated that knowledge acquisition enables improvement and sustainability in technology-driven businesses through social media. Moreover, Hristov and Chirico (2019) suggested a model that shows that the incorporation of sustainability and business strategy would enable companies to gain a more competitive advantage in the field. Zaim et al. (2019) proposed model indicates that knowledge utilization acts as a mediator in the relationship between KM and organizational performance. However, the purpose of this study is to investigate the relationship between KM and organizational performance through both knowledge utilization and sustainability. The recommended model shows the direct, indirect, and total effect of KM processes on organizational performance by the mediation role of sustainability and knowledge utilization. It is worth mentioning that none of the other studies have addressed this relationship before.

The following section presents the key concepts and theoretical background of KM, sustainability, and organizational performance. The third section explains the methodology, the fourth section describes the results and the fifth, sixth, and seventh sections consist of discussion, conclusion, and limitations, respectively.

#### THEORETICAL FRAMEWORK AND 2 HYPOTHESES DEVELOPMENT

#### Knowledge management 2.1

The knowledge embedded in individuals' minds, often referred to as human capital within the intellectual capital literature (Bontis, 1998, 1999), contains the personal experience and comprehension of individuals in firms, as well as organizational information resources, including internal and external documents and reports that are accessible in the organizations and outside of it (Marwick, 2001). It is worth mentioning that there are two different types of knowledge: tacit and explicit knowledge (Crane and Bontis, 2014). Tacit knowledge is personal and with specific content, such as attitudes or beliefs, that can be learned only through work and experience. Therefore, it is challenging to formalize or convey. In contrast, explicit knowledge is characterized as knowledge that can be easily articulated, written, and transferred using formal and systematic language (Nonaka &

Takeuchi, 1995; Polanyi, 2009). KM is defined as "the process of capturing, storing, sharing, and using knowledge" (Lee, 2001). From a managerial perspective, a systematic approach to KM encompasses four key focus areas. First, oversight and facilitation of knowledgerelated activities through a top-down approach. Second, the establishment and maintenance of a robust knowledge infrastructure. Third, renovation, organization, and transformation of knowledge assets. Fourth, leveraging the value of knowledge assets through effective utilization (Wiig, 1997). Thus, KM consists of all activities that use knowledge to achieve organizational goals by enabling organizations to face environmental challenges and stay consistent in a competitive marketplace (Greiner et al., 2007). Moreover, efficient KM application is considered an essential concern for developing high academic effectiveness, efficiency, and performance (Al-Emran et al., 2020). The process of KM consists of four crucial components: knowledge generation, knowledge codification, knowledge sharing, and knowledge utilization.

## 2.1.1 | Knowledge generation

Knowledge generation is the dynamic process of either creating novel knowledge or updating and improving existing knowledge through collaborative efforts and interpersonal relationships within organizations (Alavi & Leidner, 2001). There are five different ways of creating knowledge such as knowledge acquisition, dedicated resources, fusion, adaptation, and knowledge networking. Knowledge acquisition is one of the most effective ways of getting knowledge. It is the strategy of buying knowledge from other companies or hiring knowledgeable people who can bring knowledge to the organization. Dedicated resources are the method of generating knowledge by establishing special units for specific purposes. Another strategy for creating knowledge is fusion, which means gathering people from different departments to work together on a project. Adaption strategy drives firms to change and adapt to new technologies and challenges in the marketplace to survive in the competitive business world. Knowledge networking is the last way of generating knowledge, which argues that informal collaboration and networking among people creates knowledge (Nawab et al., 2015). Thus, knowledge is generated by individuals, groups, or other organizations and from internal or external resources (Alaarj et al., 2016). Knowledge generation is an effective factor in facilitating organizational learning and significantly contributes to enhancing organizational systems and processes (Loon, 2019). However, it is worth noting that a cumulative knowledge generation needs harmony between the struggle for priority in exploring new theories and collaboration in applying existing theories for their benefit (Ellemers, 2021).

## 2.1.2 | Knowledge codification

Knowledge codification is the process of transforming knowledge into messages that can subsequently be processed as a piece of information (Cowan & Foray, 1997). More specifically, knowledge codification

can be viewed as a three-step process. First, developing a codebook involves collaborating and establishing a model for better understanding and a language for effective communication. Second, creating messages intended for individuals who share the same language and comprehend the model. Last, the expansion of both the model and the language to improve the message content (Lissoni, 2001). Moreover, knowledge codification concentrates on two aspects of the information creation process. The primary stage of knowledge codification is transferring tacit knowledge to explicit knowledge using the same language to express or explain concepts. The next level is considered a part of the process of classification, which refers to the knowledge that has already been transformed into a piece of information (Hall, 2006). Thus, knowledge codification is pivotal in the KM process, particularly in enhancing the efficiency of knowledge transfer and reducing relevant costs (Prencipe & Tell, 2001).

## 2.1.3 | Knowledge sharing

Knowledge sharing is defined as the process of exchanging knowledge, experience, ideas, and skills through individuals, teams, organizational departments, and different organizations to generate new knowledge (Afsar et al., 2019; Ganguly et al., 2019). Knowledge holds value when employees actively participate in its sharing and utilization, and its growth and development depend on collaborative knowledge practices among employees. Thus, storing knowledge in individuals' minds without interacting with others puts knowledge at risk of loss. However, there are some barriers to the sharing process, which are distrust between employees, organizational culture and language differences, lack of time, limited meeting opportunities, a narrow definition of productivity, wrong beliefs that knowledge is only related to a specific group of people, impatience with mistakes, and lack of support (Nawab et al., 2015). Various tools and techniques are available for knowledge sharing, including training programs, informal gatherings, sharing of best practices and knowledge resources, communication platforms, and commitment to organizational culture (Abidi et al., 2023; Abusweilem & Abualoush, 2019). Knowledge sharing is the key element of a successful KM process and has a significant effect on knowledge utilization (Abusweilem & Abualoush, 2019). Thus, knowledge sharing considerably affects organizational innovation by producing new ideas, products, and business opportunities and subsequently increases organizational competitive advantage by reducing expenses and enhancing team performance (Abusweilem & Abualoush, 2019; Ganguly et al., 2019).

## 2.1.4 | Knowledge utilization

Knowledge utilization is an organization's method to manage, access, and apply knowledge effectively for strategic goals (Kianto et al., 2019). It is also defined as the process of applying and using codified and transferred knowledge to create and implement organizational processes that enhance organizational performance (Chen & Fong, 2015). Thus, effective knowledge utilization involves more than 4 \_\_\_\_WILEY-

storage and participation; it is based on translating knowledge into practical applications within real work scenarios. Accordingly, the success of an organization's KM program depends on the knowledge size used, in comparison to what is stored, and the proportion of an organization's problems solved through the knowledge utilization (Abusweilem & Abualoush, 2019; Shujahat et al., 2019). Therefore, knowledge utilization strongly affects organizational performance (Alaarj et al., 2016; Chen & Fong, 2015).

Several studies argue that KM has a considerable impact on organizational performance, and rapidly applying and implementing knowledge in an organization's process and through employees enables the company to be more successful than its competitors (Bontis et al., 2002; Omerzel, 2010; Payal et al., 2019; Rašula et al., 2012; Torabi & El-Den, 2017). Thus, this study's primary purpose is to measure KM's effect on organizational performance. In early literature, KM is conceptualized in terms of knowledge generation, knowledge codification, knowledge sharing, and knowledge utilization. However, Zaim et al. provided empirical evidence to demonstrate the mediating role of knowledge utilization between KM processes and organizational outcomes. Accordingly, it is suggested that generating, codifying, and sharing knowledge provides value for the organization if utilized in the field (Zaim et al., 2018, 2019). Therefore, in this study, knowledge utilization is considered a separate element and acts as a mediator between KM and organizational performance. Three other dimensions of KM are considered as the KM process. Accordingly, the following hypotheses are introduced:

- H1. KM positively affects organizational performance.
- H2. KM positively affects knowledge utilization.

**H3.** Knowledge utilization positively affects organizational performance.

**H4.** KM has a positive effect on organizational performance through the mediation role of knowledge utilization.

## 2.2 | Sustainability

The concept of sustainability affects all dimensions of business life and has attracted much attention from practitioners, policymakers, and researchers in the last two decades. Albeit the lack of a standard and a widely accepted definition (Moore et al., 2017), the concept of sustainability can be defined as the capacity to fulfill current needs without compromising the ability of future generations to meet their own needs (Johnston et al., 2007). This ambiguity arises from the complexity and multi-disciplinary nature of the concept (Moore et al. 2017). In business management literature, sustainability is commonly recognized with three aspects, usually represented as interconnected rings: economic, environmental, and social. The economic aspect focuses on improving long-term effectiveness and efficiency to secure financial gains through market orientation and growth (Thaher & Jaaron, 2022). The environmental aspect emphasizes adopting eco-friendly strategies and limiting the impact of organizations on the natural environment. The social aspect, however, is related to enhancing well-being and quality of life by including socially responsible business management principles (Rodriguez et al., 2018). Accordingly, sustainability approaches mainly deal with fostering the competitive scope, improving resource productivity, and planning and implementing sustainable strategy (Teixeira & Junior, 2019).

Sustainability is a complex concept that comprises harnessing a full range of resources and competencies, such as political, administrative, and managerial, in addition to financial dimensions (Modrak et al., 2011). Due to increasing social, economic, and environmental awareness in business life, the need for sustainability on a strategic level is acknowledged by many authors (Modrak et al., 2011; Rodriguez et al., 2018; White, 2009). Accordingly, early initiatives in sustainability were related to social and environmental aspects. However, more recent studies have considered it an essential prerequisite for gaining long-term competitive advantage, strategic dominance within the global marketplace (Modrak et al., 2011), and improving sustainable organizational performance (Rodriguez et al., 2018; Thaher & Jaaron, 2022).

From a strategic perspective, a sustainability strategy is expected to upgrade the organization's image and reputation, which in turn leads to improved overall performance and stakeholders' value (León-Soriano et al., 2010; Thaher & Jaaron, 2022). Companies gain a competitive advantage by utilizing their resources, which are valuable, rare, inimitable, and non-substitutable. It is suggested that a sustainability strategy helps to improve an organization's capability to identify and utilize its strategic resources efficiently and, therefore, is positively linked to superior organizational performance (Hörisch et al., 2015).

However, organizational intangible resources, including knowledge and sustainability, are not always able to create value alone, and they need to be integrated to generate competitive advantages (Abbas, 2020; Dzenopoljac et al., 2021; Zaragoza-Sáez et al., 2023). Knowledge inherently flows and can be exchanged, shared, progressed, and accessed at the required time and place (Yusr et al., 2017). Furthermore, the transformative aspect of sustainability demands a KM strategy that is more focused on knowledge generation, sharing, and utilization (Bucci & El-Diraby, 2018). Strategic KM compromises a series of significant initiatives that need to be implemented to attain specific economic, social, and environmental objectives (Zaragoza-Sáez et al., 2023). Specifically, transferring knowledge in a global scope, across time, various places, and geographical boundaries, as well as sharing it between different developed partners and employees, is crucial for the feasibility of sustainable development (Mohamed et al., 2009). Therefore, KM integrated with sustainability has become a significant resource to gain competitive advantages (Abbas, 2020; Mardani et al., 2018). Organizations achieve sustainability through continuous engagement with KM and innovation-based business models (Akram et al., 2018; Lopes et al., 2017). In other words, an efficient KM process is a critical factor in achieving sustainability through directly affecting cleaner production and product life

cycle. In addition, KM strategy, along with overall organizational strategies, helps managers to make better decisions to gain sustainability and improve organizational performance (Abbas, 2020; Lim et al., 2017).

Moreover, the literature provides contradicting empirical evidence regarding the impact of sustainability on organizational performance (Thaher & Jaaron, 2022). Several studies demonstrated a positive link between sustainability and organizational outcomes, such as sustainability performance (Zaid et al., 2018), innovation capabilities and product development process (Rodriguez et al., 2018; Teixeira & Junior, 2019), reputation and image (Afum et al., 2021; Thaher & Jaaron, 2022), efficiency (León-Soriano et al., 2010), and organizational performance (Alshehhi et al., 2018; Chiabrishvili & Zaim, 2018; Saxena et al., 2021; Severo et al., 2015). On the other hand, some researchers claim that sustainability planning and management causes additional costs and decreases profitability and, therefore, is only positively associated with sustainability performance, not organizational (financial) performance (Enticott & Walker, 2008; Turk, 2009). All the considerations above lead us to formulate the following hypothesis:

H5. KM positively affects sustainability.

**H6.** Sustainability positively affects organizational performance.

**H7.** KM positively affects organizational performance through the mediation role of sustainability.

## 3 | RESEARCH METHOD

## 3.1 | Survey instrument

The survey tool consists of a self-administered questionnaire containing 50 questions. Among these, five pertain to demographic information. The questionnaire aims to evaluate KM processes, organizational sustainability, and performance. The KM construct comprises knowledge generation, knowledge sharing, knowledge codification, and knowledge utilization dimensions. KM guestions were developed initially by Zaim et al. (2007) and verified in several other research (Dzenopoljac et al., 2018; Oztekin et al., 2015; Zaim, 2016). Chiabrishvili initially developed organizational sustainability questions as part of a program overseen by the Defense Threat Reduction Agency within the Department of Defense, USA, during the period from 2006 to 2009. Subsequently, these questions were tested across more than 50 organizations in seven different countries. The final version of the questionnaire is adopted from Chiabrishvili and Zaim (2018). Each item was rated on a five-point Likert Scale ranging from 1 to 5 with the verbal statement "strongly disagree" to "strongly agree." Table 1 presents the used survey constructs, the number of items per construct, and references.

### TABLE 1 Survey constructs.

Construct	Number of items	Reference
Knowledge generation and development	7	Zaim et al. (2007)
Knowledge codification and storage	8	Zaim et al. (2007)
Knowledge sharing	8	Zaim (2016)
Knowledge utilization	8	Zaim ( <mark>2016</mark> )
Sustainability	9	Chiabrishvili and Zaim (2018)
Performance	5	Dzenopoljac et al. (2018)

## 3.2 | Data collection

Data were collected from companies operating in the services sector in Kuwait using the convenience sampling method. Convenience sampling is a sampling method where data are collected from an easily accessible and available group of people. It is usually suggested to ensure a less time-consuming, easily accessible, and inexpensive data collection process (Simkus, 2022). The questionnaires were distributed to individuals capable and willing to represent their respective companies and were readily accessible with the consent of the relevant organizations. Data collection occurred through either faceto-face interviews or electronic means, such as Survey Monkey or Google Survey Form.

The survey targeted a total of 1000 employees, with roughly 100 companies from the private sector and 50 companies from the public sector, all of whom operated within the service sector. Out of the distributed questionnaires, 413 proved to be helpful, representing 64 distinct companies. Of these, 21 were from the public sector, while 43 belonged to the private sector. Approximately 30% of the participants were employed in the public sector, with the remaining 70% working in the private sector. Kuwait is a high-income country with a predominantly oil-centric economy Field and only the services sector is targeted, so a dataset of 64 companies and 413 respondents sufficiently represents the population.

## 4 | DATA ANALYSIS

The dataset consisted of missing values and outliers with a proportion of approximately 1% of the total dataset, which was deemed insignificant and subsequently removed from the dataset. To analyze the relationship between variables and identify the most suitable model, the dataset was randomly divided into two parts. About 80% of the data constituted the training dataset for model training and data analysis. The remaining 20% served as the test dataset employed for testing and evaluating the performance of models. Different machine learning algorithms analyzed the dataset, including the Random Forest model,

## TABLE 2 Correlations.

	kn_generation	kn_codification	kn_sharing	kn_utilization	Sustainability	Performance
kn_generation	1.00***					
kn_codification	0.62***	1.00****				
kn_sharing	0.53***	0.57***	1.00***			
kn_utilization	0.55***	0.60***	0.58***	1.00***		
Sustainability	0.60***	0.64***	0.52***	0.61***	1.00***	
Performance	0.40***	0.46***	0.43***	0.47***	0.53***	1.00***

\*\*\*p < 0.001.

LASSO regression, and Ridge regression. The LASSO regression model was considered the final model to examine and measure the relationship between the predictors and the response variable for several advantages. LASSO regression is a regularization method specifically designed to tackle the problem of multicollinearity. Introducing a penalty term in the regression model (regularization technique) helps avoid overfitting and improves the transparency of the model by reducing the variability in the estimates. Additionally, LASSO regression provides a way to evaluate the importance and coefficient of each independent variable in predicting the response variable by shrinking the coefficients toward zero. This feature allows us to identify the most influential variables and calculate the coefficients of the relationships between variables (Alhamzawi & Ali, 2018). However, other analysis models (e.g., Random Forest and Ridge regression) were also used to validate the final model and compare the accuracy of the models.

## 4.1 | Correlation analysis

Table 2 presents the pair-wise correlation matrix for the variables in the final analysis model. The correlation values varied between 0.4 (between knowledge generation and performance) and 0.64 (between knowledge codification and sustainability). All variables were significantly correlated at a *p*-value <0.001. This high correlation is consistent with prior studies (Zaim et al., 2019). Table 2 shows that all variables are positively and significantly correlated with each other and the organizational performance at the 1% significance level. While this indicates a statistically significant relationship with organizational performance, it also suggests the presence of multicollinearity which may be a serious concern for regression models. Hence, we employ LASSO regression in our analysis that can handle the multicollinearity problem.

## 4.2 | LASSO regression model

To test our hypothesis, we use the LASSO regression model. This type of regression is well-suited for models showing high levels of multicollinearity. To conduct our analysis, first, we establish a relationship between the predictor variables and the response variable without

considering the mediating variables (Mathieu & Taylor, 2006). In this analysis, we measure the total effect of the KM on organizational performance. Table 3 shows that the relationships between knowledge generation, knowledge codification, knowledge sharing, and performance are positive but statistically insignificant at a p-value >0.05. Based on these findings, we reject our first hypothesis that suggests the positive effect of KM on performance without considering any other mediators. This finding might contradict prior studies. These studies argue that the KM process comprises knowledge generation, codification, knowledge sharing, and knowledge utilization, showing a positive impact of the KM process on enhancing organizational performance (Zaim et al., 2019). We could relate this significant positive effect on organizational performance to having knowledge utilization as a component in the KM process, which is not our case. Instead, we use knowledge utilization as a mediator. Second, we test the direct effect of the KM process, knowledge utilization, and sustainability on organizational performance. The results in Table 3 show that the direct effect of knowledge utilization on organizational performance is positive and significant, with a coefficient score of 0.651 and a pvalue <0.05, supporting our third hypothesis. Similarly, the results indicate a positive and significant direct effect of sustainability on organizational performance with a coefficient score of 0.915 and a pvalue <0.05, supporting our sixth hypothesis. These findings are consistent with previous literature (Abusweilem & Abualoush, 2019; Ahmad et al., 2017; Alaari et al., 2016; Magon et al., 2018; Pham & Kim, 2019).

Table 3 also shows a positive and significant relationship between all KM process components and knowledge utilization at a *p*-value <0.001, providing support for our second argument. The coefficient of direct effect of knowledge generation on knowledge utilization is 0.705, knowledge codification to knowledge utilization is 0.588, and knowledge sharing on knowledge utilization is 0.916. Similarly, the results show that the direct effect of the KM process on sustainability is positive and significant with a *p*-value <0.001. This result supports our fifth hypothesis and is consistent with prior studies (Abbas & Sağsan, 2019; Demir et al., 2023). The coefficient of knowledge generation on sustainability is 0.631, knowledge codification on sustainability is 1.093, and knowledge sharing on sustainability is 0.487. Third, the following analysis calculates the indirect effect of the KM process on performance through the mediators (knowledge utilization and sustainability). As shown in Table 3, the indirect effect of the KM

## TABLE 3 Results of the LASSO regression model.

Variables	Direct effect	p- values	Indirect effect (kn_utilization)	p-values	Indirect effect (sustainability)	p-values	Total effect	p- values
Kn_generation	0.028	0.751	0.459	0.0004**	0.577	6.683e-13**	0.341	0.274
Kn_codification	0.242	0.153	0.383	0.0004**	1.000	6.683e-13**	0.635	0.089
Kn_sharing	0.196	0.954	0.596	0.0004*	0.445	0.014*	0.473	0.728
Kn_utilization	0.651	0.034*						
Sustainability	0.915	0.016*						

\*p < 0.05; \*\*p < 0.001.



**FIGURE 1** Structural model, relationships, and coefficients. \**p* < 0.05; \*\**p* < 0.01. Significant relationships at *p*-value <0.05. [Colour figure can be viewed at wileyonlinelibrary.com]

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**TABLE 4** Accuracy and significance of variables in different models.

LASSO73%Sustainability, kn_utilization, kn_codification, kn_sharing, kn_generationRandom forest67%Sustainability, kn_utilization, kn_sharing, kn_codification, kn_generationRidge regression65%Sustainability, kn_utilization, kn_generation	Model	Accuracy	Important variables
Random       67%       Sustainability, kn_utilization, kn_sharing, kn_codification, kn_generation         Ridge       65%       Sustainability, kn_utilization, kn_codification, kn_codification, kn_sharing, kn_codification, kn	LASSO regression	73%	Sustainability, kn_utilization, kn_codification, kn_sharing, kn_generation
Ridge 65% Sustainability, kn_utilization, regression kn codification, kn sharing.	Random forest	67%	Sustainability, kn_utilization, kn_sharing, kn_codification, kn_generation
kn_generation	Ridge regression	65%	Sustainability, kn_utilization, kn_codification, kn_sharing, kn_generation

process on performance through knowledge utilization is positive and significant at a *p*-value <0.001, supporting our fourth and main argument. Using knowledge utilization as a mediator, the coefficient of knowledge generation on performance is 0.459, the coefficient of knowledge codification on performance is 0.383, and the coefficient of knowledge sharing on performance is 0.596. Furthermore, the results show a positive and meaningful relationship between the KM process and performance through sustainability at a *p*-value <0.001, which also validates our seventh and key hypothesis. Using sustainability as a mediator, the coefficient of knowledge generation on performance is 0.577, the coefficient of knowledge codification on performance is 1.00, and the coefficient of knowledge sharing on performance is 0.445. Taken together, the insignificant direct and total effect of the KM on performance, the significant effects of KM process variables on both knowledge utilization and sustainability, the considerable impact of knowledge utilization and sustainability on performance, as well as the significant indirect effects of the KM process on performance through both knowledge utilization and sustainability, we can conclude that the influence of the KM process on organizational performance is fully mediated by sustainability and knowledge utilization (James et al., 2006). The structural model with significant relationships and coefficients is illustrated in Figure 1.

As a robustness, to support the validation of our model, we implement Random Forest and Ridge Regression models on the test and train datasets. As shown in Table 4, both models show that sustainability and knowledge utilization are the most critical variables in the model and have the most significant impacts on performance, with the accuracy rate of 67% and 65%, respectively, compared to the accuracy rate of 73% for the LASSO regression model.

## 5 | DISCUSSION

The major finding of this research is the mediating role of sustainability and knowledge utilization between KM and organizational performance. Research findings make it evident that achieving superior organizational performance is positively linked with effective KM (Chiabrishvili & Zaim, 2018; Hörisch et al., 2015). It is suggested that utilizing knowledge effectively and efficiently is recognized as a major source of wealth creation, ensuring sustainability, and a key factor for gaining a competitive advantage (Chiabrishvili & Zaim, 2018; Zaim et al., 2022). According to the knowledge-based view, which is an extension of resource-based view (RBV), knowledge is considered one of the most valuable resources of companies. Denford and Ferriss (2018) claim that organizations aim to extract valuable knowledge and skills from people and other resources and use them to develop better capabilities and processes to create value. Therefore, a bunch of researchers argue that generating, codifying, sharing, storing, and using knowledge effectively is essential for gaining strategic competitive advantages (Davenport & Prusak, 1998; Nonaka, 2005; Zaim et al., 2019), improving companies' overall performance (Dzenopoljac et al., 2018; Spangler et al., 2014), and helping them to achieve their sustainable objectives (Hörisch et al., 2015; Sapta et al., 2021).

Although the literature shows that KM is positively associated with sustainability (Chopra et al., 2021), how it should be integrated into organizational performance is still ambiguous. Our research findings suggest that KM processes lead to superior organizational performance through knowledge utilization and sustainable strategies. This finding aligns with the findings of Zaim et al. (2019), which reveal that knowledge utilization mediates the relationship between KM and performance based on data collected from companies operating in the service industry in Turkey. Another research by Zaim et al. (2018) also provides empirical evidence regarding the mediating role of knowledge utilization between KM processes and human resource management performance. Zhang et al. (2019) also claim that sustainability mediates the relationship between management and technological innovation with organizational performance. They argue that sustainability mediates the relationship between innovation and performance through the effective and efficient use of resources.

One of the astonishing findings of this research is the insignificant relationship between KM processes and performance. This finding is inconsistent with the existing literature that provides empirical evidence regarding the association of KM processes with organizational performance. The possible explanation is that most of the KM models include knowledge utilization as one of the processes of KM. Therefore, it is most likely that they ignore the mediating role of knowledge utilization in this relationship. However, it is suggested that capturing, codifying, storing, and sharing knowledge alone does not contribute value to organizational performance unless they are acted upon (Zaim et al., 2007, 2019). In fact, in many cases, indiscriminate hoarding of knowledge may lead to several problems, including information overload and "knowledge clutter" in organizations that can lead to hinder performance (Edmunds & Morris, 2000; O'Reilly, 1980; Speier et al., 1999; Zaim et al., 2019).

# 6 | CONCLUSION AND MANAGERIAL IMPLICATIONS

Efficient and effective management of knowledge resources is vital for organizations to secure a competitive edge in knowledge-based economies. This study provides additional empirical evidence to this already acknowledged statement. In addition, this research's findings reveal that knowledge utilization and sustainability strategy mediate this relationship. These results indicate that generating, codifying, and sharing knowledge only enhances organizational performance if utilized and combined with a sustainable strategy.

Knowledge utilization refers to an organization's ability to capture, recognize, and convert knowledge into useful products and services, use it in decision-making processes, and reflect it in behaviors. Hence, creating genuine value by generating, codifying, and sharing knowledge is intertwined with an organization's ability to harness knowledge to attain its strategic objectives effectively. Therefore, one of the suggestions of this research for academic scholars and practitioners is to emphasize the significant role of knowledge utilization in KM implementation. Furthermore, it is also notable for managers to understand how KM processes improve organizational performance.

Another significant contribution of this research is the mediating role of sustainability in KM implementation. A sustainable strategy requires a long-term, comprehensive, and interconnected mindset. It includes organizations' awareness of their environment, which is vital in achieving strategic goals. Therefore, KM processes enhance organizational performance if implemented in line with a sustainable perspective. Especially in today's turbulent business environment, managers must consider sustainable strategies while implementing KM processes.

The research findings also reveal that knowledge utilization and sustainability directly and significantly impact organizational performance. Therefore, from a managerial perspective, it is essential to integrate knowledge utilization and sustainability with strategic operational processes. Many companies remain hesitant about sustainability due to increasing costs, and several managers consider sustainability as an idealistic burden for organizations. However, the results of this study imply that implementing sustainable strategies and utilizing knowledge is not only associated with increased organizational performance but also leverages the effects of other organizational processes, including KM.

## 7 | LIMITATIONS

One of the most important limitations is data collected from one country (Kuwait) and one industry (services). Considering those cultural, economic, and social environments can make significant changes in the analysis of KM implementation, it would be helpful to make a comparative analysis based on data collected from different countries as a future sturdy suggestion. The second limitation is the sampling method used in this research. As mentioned earlier, the convenience sampling method was used in data collection, which can be criticized for the limited representation of the population. However, researchers are already aware of the difficulty of data collection from companies. In addition, considering Kuwait's unique culture and traditions, it is even more difficult for an expat to collect data from Kuwaiti companies. Therefore, we collected data using our networks, which seems to be the only way to access the local companies in Kuwait.

## DATA AVAILABILITY STATEMENT

The data that support the findings of this study are available from the corresponding author upon reasonable request.

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