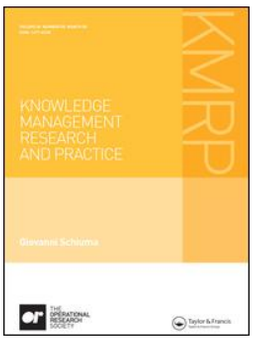

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Links between knowledge management and organisational sustainability: does the ISO 9001 certification have an effect?

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ABSTRACT

This study's aim is investigating the impacts of the determinants of knowledge management on organisational sustainability. It investigates the differences in performance among ISO 9001 certified and non-certified firms. The study uses data collected from 156 employees of various private firms in the Kurdistan Region of Iraq. It uses the partial least squares method to test the hypothesised model and the independent samples t-test toelaborate on the differences between ISO 9001 certified and non-certified firms. The results show that knowledge storage plays a key role in knowledge generation, sharing, and utilisation. It is also observed that knowledge management has a significant impact on organisational sustainability. Firms in the Kurdistan Region of Iraq fail to generate management knowledge due to their weak document storage capacities. This paper discusses the theoretical and practical implications of their weak document storage capacities and makes some suggestions for improving this situation.

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Knowledge; knowledge management; knowledge generation; knowledge sharing; knowledge utilisation; organisational sustainability; ISO 9001; Kurdistan Region of Iraq

1. Introduction

Organisational sustainability is a significant issue for all types of firms for reducing risks, facing uncertain situations, and seeking stability in rapidly changing markets (Carayannis et al., 2015). Nidumolu et al. (2009) define sustainability, as "a mother lode of organizational and technological innovations that yield both bottom-line and top-line returns." Therefore, besides managerial sensitivity, there is also a strong need for continuous learning and knowledge management (Chiabrishvili & Zaim, 2018; Menon & Menon, 1997) for achieving organisatio nal sustainability. This point of view believes that knowledge management and organisational sustainability are positively related to each other.

Knowledge management (KM) is a vital factor in busi nesses that needs to be managed efficiently for reaching organisational success in the long term. Scholars have noted that effective knowledge management stimulates competitive advantages for a company (Adams & Lam ont, 2003; Bryant, 2003; Halawi et al., 2005). Bryant (2003) notes that all administrative personnel should actively participate in different levels of knowledge management processes, which are mainly knowledge generation, sharing, and exploiting. In addition, some researc hers claim that intangible knowledge management has a comparatively greater effect on sustainable competitive advantages (Darroch, 2005; Hussi, 2004; Liebowitz, 2001) as compared to physical resources (such as financial reso urces, buildings, locations, or facilities). Intangible knowledge management refers to an organisation's internal and external performance including employee engagement and retention, customer satisfaction and loyalty strategi es, brand reputation, and stakeholder policies (Brito et al., 2020; Darroch, 2005). A number of empirical studies sup port a significant positive relationship between effective knowledge management and a business' success (Dzeno poljac et al., 2018; Oztekin et al., 2015; Zaim, 2006). Malhotra (2000) notes that KM encourages organisations to check their position in the market to increase their opportunities for a competitive advantage in a changing environment. Buckley and Carter (2002) argue that for reaching a prolific point by using knowledge tools, firms should know their resources for generating knowledge. These tools facilitate organisations to generate, transfer, and utilise the required knowledge.

Nazim and Mukherjee (2016) classify some of the KM tools as document management systems, workfl ow systems, data creation and storage systems, and si milar applications that simplify re-engineering and kn owledge generation processes. Clearly, the aim of usi ng these tools is making it easier for firms to select appropriate KM practices (Khalifa & Liu, 2003).

A learning organisation uses its resources to get a new understanding of its environment (Senge, 1990). Learn ing is an important process for organisations to adapt to a consistently changing environment (Jorna et al., 2009). However, this process should be continuous, follow market fluctuations, and get an organisation sustainable success. Jorna et al. (2009) argue that sustainable success and innovations cover four main market trends: adapting to

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real-world trends, regular organisational learning, innovative learning for strengthening organisational capabilities, and programmes/policies that use KM practices for sustainable long-term growth and performance. In this regard, every organisation needs to reach sustainability for its long-term effectiveness. Chiabrishvili and Zaim (2018) point out that there is a lack of empirical studies that focus on the effects that KM processes have on firms' sustainable long-term performance in Middle Eastern countries.

Zaim et al. (2018) studied the impact of KM processes on a firm's knowledge management performance using a variance-based approach as opposed to a process-based approach. They elaborate on the relations between knowl edge generation, sharing, storage, and utilisation as the main processes of knowledge management. They also tested the impact of these processes on firms' knowledge management performance and found that knowledge generation, sharing, and storage were the main drivers of knowledge utilisation. Moreover, knowledge utilisati on was the main significant influencer of KM's performance. This research uses Zaim et al.'s (2018) model for testing the relations between knowledge management processes. Besides, it also discusses the impact of these processes on organisational sustainability. Further, it also discusses ISO 9001 certified and non-certified firms' knowledge management and organisational sustainability performance. Zaim et al.'s (2018) study is taken as the base model which is modified for appropriateness for our study.

There are very few studies on the relationship between knowledge management and organisational sustainability. Further, no studies discuss ISO 9001 certified and non-certified firms from a KM performance point of view. Therefore, this study focuses on ISO 9001 certified firms' KM practices by comparing them to non-certified firms. Accordingly, one of the aims of this study is investigating how effective KM processes are for companies' sustainable performance in the Kurdistan Region of Iraq. Secondly, it also differentiates between ISO 9001 certified and non-certified firms' KM practices. To do this, we collected data from employees of 12 firms who were aware of knowledge and knowledge management. Seve ral employees from each firm filled in a questionnaire given to them as a hard copy. The collected data was analysed statistically using the partial least squares method to show KM's impact on organisational sustainability. Our study also did an independent samples t-test for testing the differences in KM practices between ISO 9001 certified and non-certified firms.

The rest of this paper is structured as follows. Section 2 gives an in-depth literature review for an understanding of the KM approach and the links between KM and orga nisational sustainability. Section 3 explains the research on KM and sustainability while Section 4 explains the methodology used. Section 5 gives the demographic deta ils of the sampled population. Section 6 applies the partial least squares method to test the hypotheses and the indep endent samples t-test to differentiate between ISO 9001 certified and non-certified firms' KM practices. Section 7 discusses the results by comparing our findings to those of previous studies. Sections 8 and 9 explain the theoretical and practical implications of this study. Section 10 gives some suggestions for firms along with the conclusions of the study. Section 11 gives the limitations of the study and offers suggestions for future studies.

2. Theoretical background

Drawing on current literature, knowledge management provides firms with a sustainable competitive advantage in the market (Hussi, 2004; Liebowitz, 2001). Knowledge is defined as the compound of individual information, experience, and values (Budur, 2018; Ismail Al-Alawi et al., 2007). Zaim (2006) defines KM as "the systematic management of all activities and processes referred to generation and development, codification and storage, transferring and sharing, and utilization of knowledge to promote an organization's competitive edge."

While discussing organisational knowledge, Nonaka (1994) makes a distinction between tacit knowledge and explicit knowledge. According to him, explicit knowledge is "knowledge that can be expressed in words and numbers and shared in the form of data, scientific formulae, specifications, manuals, and the like" (Nonaka & Konno, 1998). He adds that this kind of knowledge can be readily transmitted between individuals formally and systematically. Besides, he defines tacit knowledge as being "highly personal and hard to formalize, making it difficult to communicate or share with others" (Nonaka & Konno, 1998).

Dzenopoljac et al. (2018) note that effective KM encourages an organisation's members to share their experiences which support the transformation of tacit knowledge into explicit knowledge for achieving success in KM. Apart from tacit and explicit knowledge, current literature also classifies knowledge as private/public and individual/social knowledge (Bryant, 2003; Zaim, 2006).

Uriarte and Filemon (2008) maintain that organisati ons need to employ some KM tools that facilitate and clarify a firm's operations for increasing its efficient use of KM processes. Ruggles (1997) defines these tools as "tools which support the performance of the application, activities or actions such as knowledge generation, knowledge codification or knowledge transfer." Nazim and Mukher jee (2016) demonstrate that tools like document management systems, information management systems, searching and indexing systems, expert systems, communicati on and collaboration systems, and intellectual asset systems simplify knowledge generation, sharing, and utilisa tion processes.

In line with this, organisations should consider the pivotal functions and discrepancies between tangible and intangible knowledge operations while improving

their data processing capacities (Kamasak, 2017). Intangible knowledge management refers to an organisation's internal and external performance including employee engagement and retention, customer satisfaction and loyalty strategies, brand reputation, and stakeholder policies (Brito et al., 2020; Darroch, 2005). It is relatively difficult for competitors to imitate and transfer these factors to reach an advantageous position as compared to tangible resources (Bratianu & Orzea, 2010; Karamustafa & Ülker, 2020; Pereira et al., 2019). Therefore, scholars note two kinds of evaluations for investigating the advantages of an innovative and learning organisation classified as exploration and exploitation studies (Oh, 2019; Zhang & Zhu, 2019). Some exploitation studies cover the first version of knowledge management practices that focus on searching the environment for a more effective adaptation of knowledge operations (Jorna et al., 2009; Vera & Crossan, 2003). Existing studies show four types of KM processes in organisational effectiveness: human-oriented, operational, technology-oriented, and process-oriented management (Heisig, 2009; Inkinen et al., 2015; Kianto et al., 2018). However, recent investigations refer to four types of KM components of knowledge-generation, knowledge-codification, knowledge-transferring/sharing, and knowledge-utilisation in firms' sustainable success (Alashwal et al., 2016; Chiabrishvili & Zaim, 2018; Pearlson et al., 2015; Shujahat et al., 2019; Zaim, 2006; Zaim et al., 2019).

Dzenopoljac et al. (2018) maintain that developed countries are more active in the use of KM systems. They also show that Arab countries are not adequately effective in carrying out KM initiatives. In addition, organisations in developing countries may find it more difficult to adopt the ISO 9001 quality framework in line with KM practices for good results. These authors examined the efficacy of KM activities in Kuwait and found that knowledge generation and development were the strongest factors in companies' creative success whereas knowledge storage was the weakest; companies in Kuwait were predominantly service-oriented rather than being knowledge-oriented. Alsalim and Mohamed (2013) and Sadq et al. (2020) found a positive relationship between KM practices and organisational performance in Iraq. Al-Husseini and Elbeltagi (2018) show that knowledge sharing was significantly related to innovations in public and private higher education institutions in Iraq. Further, Kamal and Shawkat (2020) observed that employee experience was a good moderator between company dynamics and KM in Iraq. However, these studies are very limited when it comes to discussing the relationship between KM practices and organisational sustainability in Iraq.

Business effectiveness refers to a company's success that meets or exceeds expectations (Torlak et al., 2018). It has also been noted that growth in sales, an increase in the market share, effectiveness in competition, decrease in costs, and efficiency in products and services are some of the determinants of a business' success (Dzenopoljac et al., 2018; Torlak et al., 2019).

Every organisation's main objective is attaining sustainability. In this context, Jorna et al. (2009) maintain that sustainability refers to monitoring the balance between a company's operations and environmental fluctuations. Hence, sustainability is defined as, "the result of the activities of an organisation, voluntary or governed by law, that demonstrate the ability of the organisation to maintain viable its business operations (including financial viability as appropriate) whilst not negatively impacting any social or ecological systems" (Smith, 2012).

Gloet (2006) suggests that organisations should practice sustainable KM policies for increasing their market share through KM, which will lead to their sustainable success. However, Jorna et al. (2009) imply that a firm should have two important specialities for reaching sustainability in the market – a tendency to change or innovativeness and the capacity to be innovative. They further note that these processes are supported by learning capacity and an effective KM. Hence, they claim that rather than the first generation of KM processes, the second generation of KM processes which undertake process-based KM (knowledge generation, storage, transfer, and utilisation) have a more significant impact on sustainability. In line with this, Chiabrishvili and Zaim (2018) investigated the impact of KM practices on sustainability and found that knowledge storage and utilisation had a significant positive impact on companies' sustainability.

However, while there are a large number of studies on KM and firms' performance, very little is known about the relationship between KM and sustainability and the moderator effect that ISO 9001 QMS certification has on this relationship.

The International Organisation for Standardisation (ISO) provides an international certification system for organisations (Celik & Ölçer, 2018). The current ISO 9001:2015 standards have been updated and member countries started using them in 2015 (Demir & Guven, 2017). The aim of ISO 9001 quality management is helping organisations increase their internal and external effectiveness (Öztaş et al., 2017).

It has also been noted that ISO 9001 quality management systems increase managerial competencies and provide quality in communication, help employees to excel based on these standards, facilitate access to the market, and lead to customer orientation. All these factors have a significant impact on a company's competitiveness and performance in the market (Ionaşcu et al., 2017; Latan et al., 2020; Purwanto et al., 2020), while ISO 9001 is negatively related to cost and expenses (Celik & Ölçer, 2018; Demir & Guven, 2017). Further, the new ISO 9001:2015 regulations add that organisations are required to apply and utilise KM policies to reach effectiveness in the market (Brito et al., 2020).

Organisational knowledge management was introduced in September 15 to the followers of ISO 9001 as

"*7.1.6, Organisational Knowledge – The organisation shall determine the knowledge necessary for the operation of its processes and to achieve conformity of products and services. This knowledge shall be maintained and be made available to the extent necessary. When addressing changing needs and trends, the organisation shall consider its current knowledge and determine how to acquire or access any necessary additional knowledge and required updates*" (ISO, 2015; Wilson & Campbell, 2016). However, not enough empirical studies exist that support the correlation between ISO 9001 practi ces, KM, and organisational sustainability. For instan ce, Ahmed (2017) studied the applicability of ISO 9001's requirements in a private university in Iraq and found that the departments could not follow the requirements appropriately. Hence, by discussing the se aspects this study contributes to literature on this subject.

3. Research model and hypotheses

This study investigates the interaction between KM processes and organisational sustainability in ISO 9001 certified and non-certified firms. As previously stated, it uses Zaim et al.'s (2018) study which is based on the variance approach. This approach enables rese archers to consider how different indicators influence each other in a model. While the variance theory expla ins how independent factors affect the dependent variables, the process based theory explains the order and sequence of the changes in a model (Fidock & Carroll, 2009; Van de Ven & Poole, 2005).

Knowledge generation plays an important role in the effectiveness of a company's knowledge management (Zaim et al., 2007). Every effective organisation tries to generate knowledge by interacting with its general and specific environment (Dzenopoljac et al., 2018). Knowled ge generation involves obtaining, evaluating, and establishing phases (Khalifa & Liu, 2003). It has also been noted that knowledge generation refers to an acquisition process of written codifications (like publications and questionnaires), benchmarking, imitation, and observations (such as tacit responses), where people's attributes play an important role in knowledge processes (Kaya & Erkut, 2018; Zaim et al., 2013). However, Zaim (2006) argues that while knowledge generation may not be highly planned, it significantly impacts companies' competitive advantage. Zaim (2006) also observes that knowledge generation is the strongest component in the service sector, while knowledge sharing is the most influential indicator of a company's effectiveness in the manufacturing sector. Zaim et al. (2007) also show a positive correlation between KM processes and a company's performan ce, whereas knowledge transfers and sharing and then knowledge generation have the strongest impact on KM processes' success. Similarly, Dzenopoljac et al. (2018) observed that knowledge generation and development had the strongest impact on innovative performance in the service sector in Kuwait and Inkinen et al. (2015) show a positive correlation between strategic KM practices and a company's innovativeness in the market. Accordingly, the following hypotheses are proposed:

H1a: Knowledge generation has a positive impact on knowledge storage

H1b: Knowledge generation has a positive impact on knowledge utilisation

H1c: Knowledge generation has a positive indirect impact on organisational sustainability

Zaim (2006) argues that while knowledge sharing is a pivotal factor for organisations, managers generally do not understand the importance of current experience in their companies. While knowledge codification represents how a company's members cover and understand its market position, threats, and advantages, knowledge sharing is a process of exchanging codified knowledge with the members (Ismail et al., 2019). Dzenopoljac et al. (2018) note a positive relationship between knowledge sharing and a company's innovative abilities.

Zaim et al. (2007) note that knowledge sharing represents a value when it can be transformed into application so that the consequences of knowledge management can be recognised through a company's sharing capabilities with its members.

Zaim (2006) argues that knowledge sharing has the strongest impact on organisational performance in the long term and Chiabrishvili and Zaim (2018) maintain that KM practices lead to knowledge storage and utilisation which has a significant impact on sustainability, while knowledge generation and sharing have weak effects on sustainability. Zaim et al. (2019) also note a po sitive correlation between organisational performance and both knowledge generation and utilisation, while th ey do not find any significant relation between knowledge sharing and knowledge utilisation. Therefore, this study tests the following hypotheses:

H2a: Knowledge sharing has a positive impact on knowledge storage

H2b: Knowledge sharing has a positive impact on knowledge utilisation

H2c: Knowledge sharing has a positive indirect impact on organisational sustainability

Scholars have noted that once the data is stored, shared, and utilised it can be transformed into a useful asset for a company (Dzenopoljac et al., 2018). Cepeda-Carrion et al. (2017) also show that knowledge gains

mean when it is stored, codified, and utilised by the depar tments based on their objectives. Martelo-Landroguez and Cepeda-Carrión (2016) define knowledge storage as "the retention of stored information from an organization's history and its quick and easy access in order to be applied on present decisions." Hence, knowledge storage is accepted as the memory of an organisation (Martelo-Landroguez & Cepeda-Carrión, 2016) which represents important aspects of an effective KM (Chou, 2005). In line with this, Soto-Acosta et al. (2018) note that stored and utilised knowledge is significantly influential in a co mpany's innovativeness which in turn positively leverag es its organisational performance in the market. Accordi ngly, accessibility to knowledge might be positively related to knowledge utilisation and indirectly associated with a company's performance. Therefore:

H3a: Knowledge storage has a positive impact on knowledge utilisation

H3b: Knowledge storage has a positive indirect impact on organisational sustainability

Knowledge utilisation refers to the application of stored and transferred knowledge in the workplace. Mil ls and Smith (2011) suggest that active knowledge utilisa tion promotes value creation processes which promote organisational performance. Researchers also argue that knowledge utilisation should provide correct communication for a better understanding of a company's KM obje ctives (Ouakouak & Ouedraogo, 2019). It has also been noted that in bigger organisations in particular knowled ge utilisation decreases conflicts among work groups (Du ncan, 1972; Ouakouak & Ouedraogo, 2019). Zaim et al. (2019) show that knowledge utilisation plays a key role in a company's performance when it comes to KM practices. Therefore, the following hypothesis is proposed:

H4: Knowledge utilisation has a positive impact on organisational sustainability

Based on the ISO 9001:2015 certification, organisa tions are required to utilise KM practices to reach effectiveness and comparative advantage in the market (Brito et al., 2020). Researchers have also noted the similarities and compliances between KM and ISO 9001 while making assumptions that both have the same aim of reaching continuous improvements in providing customer-orien ted products and services (Wilson & Campbell, 2016) and that both systems use data storage, knowledge utilisation, employee capabilities, and organisational learning (Fonseca & Domingues, 2017; Molina et al., 2004). Schola rs have also noted that an appropriate combination of both the systems has a continuous impact on a company's sustainable development in the market (Abdullah & Ahm ad, 2009). Additionally, Brito et al. (2020) show that quality management systems are facilitators of KM po licies in a company as they provide a constant quality-oriented culture within the organisation. Therefore, it is proposed that the ISO 9001 quality management system has a positive impact on companies' KM. For this the following hypotheses are proposed:

H5a: ISO 9001 certified firms perform significantly better in knowledge management practices as compared to non-certified firms

H5b: ISO 9001 certified firms perform significantly better in organisational sustainability as compared to non-certified firms

The model of the study is given in Figure 1.

4. Research method

The research framework for this study is adopted from Zaim et al. (2018). We test the relationships between the knowledge management processes (knowledge gen eration, sharing, storage, and utilisation). Apart from Zaim et al.'s (2018), model which tests the impact of knowledge management practices on a firm's knowledge management performance, we also test the impa ct of knowledge management practices on organisatio nal sustainability. Lastly, we also elaborate on the diffe rences between ISO 9001 certified and non-certified firms in knowledge management practices and orga nisational sustainability.

This study follows two approaches and the research was done in two phases. In the first phase, a questionn aire was designed to find out knowledge management and organisational sustainability in various private firms in the Kurdistan Region of Iraq. The questionnaire had four main dimensions of knowledge manage ment: knowledge generation (seven items), knowledge storage (eight items), knowledge sharing (eight items), and knowledge utilisation (eight items). These dimensions were developed by Zaim et al. (2007). Chiabri shvili and Zaim (2018) also developed additional questions about the organisational sustainability dimension (nine items).

The survey questionnaire was administered to various private firms in the Kurdistan Region of Iraq dur ing September-November 2019. In the absence of a fi rm register, the convenient sampling method was used for data collection. Each item was rated on a 7-point Likert type scale ranging from strongly disagree (1) to strongly agree (7).

The collected data was analysed based on its properties. Raw data contained some missing values which were imputed using the estimated means method. Sec ondly, a common method of variance analysis was used for double checking that there was no single sou rce data. Based on the Eigen values exceeding one, five factors were derived which explained 72 percent of the

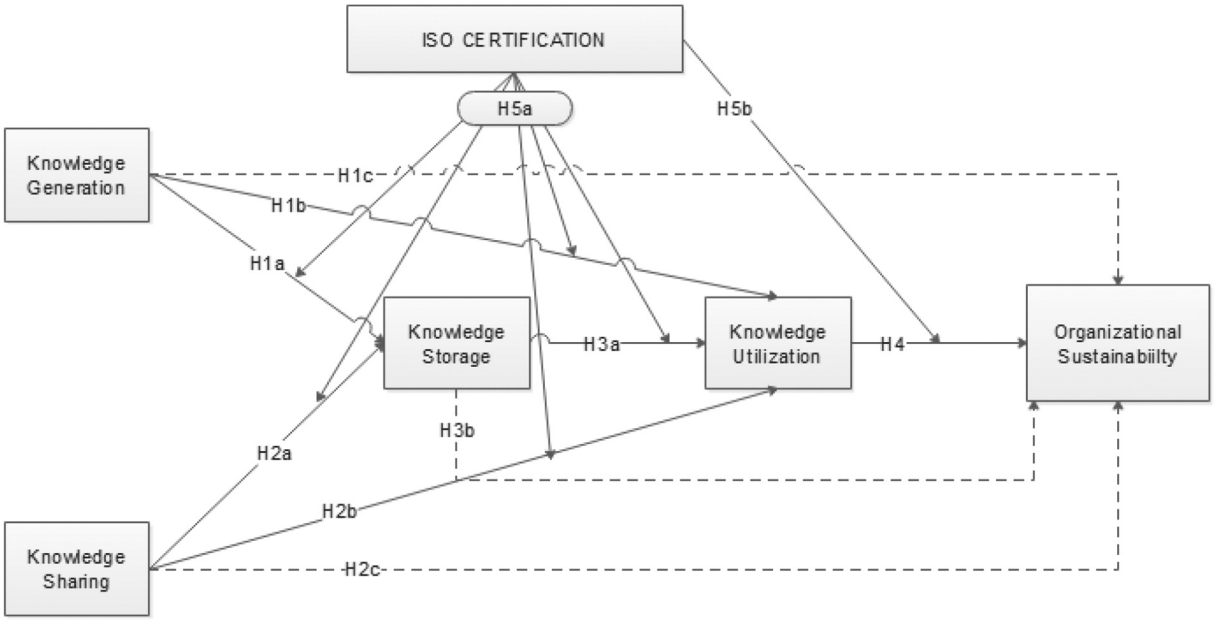

Figure 1. Model of the study.

overall variance. The first factor accounted for 40 percent of the variance which is below 50 percent and therefore it can be concluded that there is no single source data problem. Next, we proposed the validity and reliability tests before the analysis. After validating the data, we used the partial least squares method to test the hypotheses. We also did an independent samples t-test for testing whether there were any significant differences in knowledge management and organisational sustainability for ISO 9001 certified and non-certified firms.

5. Demographic information

Knowledge management and ISO 9001 are new concepts in the Kurdistan Region of Iraq. Therefore, it was difficult to find firms which were aware of quality management systems and knowledge-based management. Hence, we had to select the firms carefully to consider those that were capable of filling the survey questionnaire. Fifty private firms, some of which were ISO 9001 certified and others which were not certified, were used for the survey. Only 12 firms responded positively; 250 questionnaires were distributed among the managers and employees. Only 156 of them returned appropriately filled questionnaires. Finally, the data analysis was proposed based on the completed questionnaires.

The results comprised of 42 percent ISO 9001 certified firms and 58 percent non-certified firms. Among the respondents, 9 percent were in the cosmetics sector, 10 percent in the soft drinks sector, 14 percent in the drug manufacturing sector, 22 percent in the food trading sector, 12 percent in the furniture-trading sector, 15 percent in the hospitality sector, and 5 percent in the quality control sector. Among the respondents, 65 percent were males while 35 percent were females; 5 percent were high school graduates, 8 percent were vocational school graduates, 50 percent were university graduates, 30 percent were masters or PhD degree holders, and 7 percent preferred not to specify their education levels. Based on the professional positions of the participants, 5 percent were general managers, 30 percent were unit directors or supervisors, 40 percent were experts and employees, and 25 percent preferred not to specify their positions.

6. The partial least squares approach

The partial least squares (PLS) approach is a two-step technique that first reduces the large number of predictors to a smaller set of uncorrelated components and then performs a least squares regression on these components instead of on the original data. Thus, the method reduces the dimensions of the data where the components are highly corrected within each component but not between components.

It is well known that the partial least squares approach is a convenient method when the sample size is small (Chin & Newsted, 1999). Barclay et al. (1995) suggest 10 times responds for each item in case they are formative constructs for a sample size for PLS. Otherwise, a sample size of 70 for using PLS is enough. In our study, all the constructs were reflective rather than formative; therefore, 156 usable responses were appropriate for using PLS.

Initially, internal consistency, item reliability, and discriminant validity were used for evaluating the

acceptability of the measurement of the model (Barclay et al., 1995). In the model, there were 40 items under five dimensions and they were tested using the SmartPLS software (Table 1).

The loadings of the items were selected to indicate individual items' reliability. To accept an item in a construct, item loading must hold a sufficient value. We considered Igbaria et al.'s (1995) recommendations that the items must hold a minimum 0.3 loading value to be considered significant. Moreover, items with a 0.4 loading value were considered significant; they were considered very significant when their loading value exceeded 0.5. Therefore, we used 0.4 as the threshold for accepting items under the concerned dimensions. The results of our model show that all items under the concerned dimensions held loading values above 0.4. As the t-value of each item was above 2.58, we accepted all of them as significant with their constructs.

Secondly, following Fornell and Larcker (1981) procedure according to which consistency should not be below 0.7 we tested the internal consistency of the latent variables. Based on the results of Cronbach's Alpha and composite reliability (CR), the thresholds were exceeded. Finally, the average variances extracted (AVE) were above 0.5 for all latent variables. Hence, the latent variables were considered reliable. Table 2 gives the details.

Discriminant validity of the latent variables was evaluated based on Fornell and Larcker (1981) recommenda

Table 1. Reliability and validity of the items.

Dimension	Item	Loading	Cronbach's Alpha	CR	AVE
Knowledge Generation	Q1	0.739	0.930	0.929	0.652
	Q2	0.819			
	Q3	0.790			
	Q4	0.861			
	Q5	0.813			
	Q6	0.768			
	Q7	0.855			
Knowledge Storage	Q8	0.744	0.931	0.931	0.627
	Q9	0.838			
	Q10	0.807			
	Q11	0.771			
	Q12	0.815			
	Q13	0.755			
	Q14	0.809			
	Q15	0.793			
Knowledge Sharing	Q16	0.785	0.896	0.899	0.537
	Q17	0.553			
	Q18	0.811			
	Q19	0.793			
	Q20	0.861			
	Q21	0.900			
	Q22	0.600			
	Q23	0.423			
Knowledge Utilisation	Q24	0.717	0.938	0.938	0.656
	Q25	0.850			
	Q26	0.782			
	Q27	0.877			
	Q28	0.815			
	Q29	0.763			
	Q30	0.831			
	Q31	0.832			
Organisational Sustainability	Q32	0.830	0.952	0.952	0.690
	Q33	0.856			
	Q34	0.885			
	Q35	0.848			
	Q36	0.801			
	Q37	0.805			
	Q38	0.852			
	Q39	0.835			
	Q40	0.755			

Note: Average variance extracted (AVE); composite reliability (CR).

Table 2. Correlations among the constructs.

	Knowledge Generation	Knowledge Sharing	Knowledge Storage	Knowledge Utilisation	Organisational Sustainability
Knowledge Generation	0.808[a]				
Knowledge Sharing	0.633	0.833			
Knowledge Storage	0.647	0.758	0.792		
Knowledge Utilisation	0.612	0.725	0.779	0.810	
Organisational Sustainability	0.614	0.680	0.714	0.736	0.831

Note: a: diagonal numbers represent the square root of the average variance extracted (AVE).

tions. The square roots of AVE should be above the correlations between the other variables. The correlations are represented by the numbers in the off-diagonal of the matrix. Besides, the diagonal values represent the square root of the average variance extracted. The procedure requires that the correlations' values must be below the square roots of AVE (Barclay et al., 1995). The results show that each latent variable is a valid and a separate construct.

Tables 3 and 4 show direct and indirect effects of different independent variable on organisational sustainability based on the suggested hypotheses. It was observed that although most of the hypotheses were supported, one hypothesis was rejected (H5 in Table 3). It was observed that the model explained 62 percent of the variance in knowledge storage, 73 percent in knowledge utilisation, and 70 percent in organisational sustainability (see Table 4).

We had some interesting results, for example, knowledge generation did not significantly affect kno wledge utilisation as its t-statistic was 0.545. Besides, it was also seen that knowledge generation effected knowledge storage significantly. Moreover, knowledge storage and knowledge sharing had a significant impact on knowledge utilisation. Lastly, among direct relations it was observed that knowledge utilisation significantly affected organisational sustainability. Hence, hypotheses H1A, H2A, H2B, H3A, and H4 were accepted while H1B was rejected (see Table 3).

Based on the analysis, knowledge generation indirectly effected knowledge utilisation over knowledge storage. This shows that knowledge generation did not have a direct impact on knowledge utilisation unless it was stored. Secondly, it was observed that knowledge sharing had a significant indirect impact on knowledge utilisation over knowledge storage. These results show that knowledge storage is a good mediator between knowledge generation, knowledge storage, and knowledge utilisation.

The results in Table 4 show that knowledge generation had an indirect impact on organisational sustainability over two dimensions: knowledge storage and kn owledge utilisation. As knowledge generation did not have a significant impact on knowledge utilisation dire ctly, it was mediated as knowledge storage first and then as knowledge utilisation. It was also observed that kno wledge utilisation mediated knowledge storage, knowledge sharing, and organisational sustainability. There fore, hypotheses H1C, H2C, and H3B are accepted. As a result, all variables in the model had a direct or indi rect impact on organisational sustainability. The results prove that there is a significant relation between knowledge management and organisational sustainability.

Lastly, we used the independent samples t-test to investigate whether there was a significant difference between ISO 9001 certified and non-certified firms in knowledge management and organisational sustainability (Table 5).

It can be seen in Table 5 that firms which were ISO 9001 certified could generate significantly better knowledge than firms that were not ISO 9001 certified. Secondly, it can also be seen that knowledge utilisation and organisational sustainability were significantly better in ISO 9001 certified firms. However, there were no significant differences in knowledge storage and knowledge sharing between ISO 9001 certified and non-certified firms. These results show that although ISO 9001 certified firms were able to generate knowledge, they had problems in storing and sharing this knowledge. The results also show that quality management systems need to be improved at these points. Therefore, hypothesis H5A was partially accepted (p-value is in the range of 0.01 and 0.39) while hypothesis H5B was fully accepted (p-value =0.01).

Table 3. Results of the hypotheses' tests (direct effects organisational sustainability).

Independent variables		Dependent variables	Hypothesis	Standardise path coefficient (t-value)	Significance of hypothesis
Knowledge Generation	→	Knowledge Storage	H1A	0.279 (2.877)	Yes***
Knowledge Generation	→	Knowledge Utilisation	H1B	0.053 (0.545)	No
Knowledge Sharing	→	Knowledge Storage	H2A	0.581 (6.597)	Yes***
Knowledge Sharing	→	Knowledge Utilisation	H2B	0.533 (5.432)	Yes***
Knowledge Storage	→	Knowledge Utilisation	H3A	0.341 (3.548)	Yes***
Knowledge Utilisation	→	Organisational Sustainability	H4	0.836 (29.391)	Yes***

Table 4. Hypotheses' results (indirect effects organisational sustainability).

Independent		Mediator		Dependent	Hypothesis	Standardised Estimate (t-value)	Significance of hypothesis
Knowledge Generation	→	Knowledge Storage → Knowledge Utilisation	→	Organisational Sustainability	H1C	0.124 (2.023)	Yes*
Knowledge Sharing	→	Knowledge Utilisation	→	Organisational Sustainability	H2C	0.612 (5.142)	Yes***
Knowledge Storage	→	Knowledge Utilisation	→	Organisational Sustainability	H3B	0.285 (3.531)	Yes***

Adjusted R^2 for knowledge storage = 0.616Adjusted R^2 for knowledge utilisation = 0.733Adjusted R^2 for organisational sustainability = 0.698
Note: Significant at less than 1% (***), 1–5% (**), and 5–10% (*).

Table 5. Results of the independent samples t-test.

		N	Mean	Std. Deviation	p-value
Knowledge Generation*	ISO 9001 Certified firms	66	4.6515	1.13434	0.05
	ISO 9001 Non-Certified firms	90	4.2794	1.19521	
Knowledge Storage	ISO 9001 Certified firms	66	4.9867	1.01079	0.39
	ISO 9001 Non-Certified firms	90	4.8347	1.16718	
Knowledge Sharing	ISO 9001 Certified firms	66	4.7367	0.94083	0.23
	ISO 9001 Non-Certified firms	90	4.5361	1.13134	
Knowledge Utilisation**	ISO 9001 Certified firms	66	5.0246	1.04863	0.01
	ISO 9001 Non-Certified firms	90	4.4917	1.35134	
Organisational Sustainability**	ISO 9001 Certified firms	66	4.8300	0.92844	0.01
	ISO 9001 Non-Certified firms	90	4.1654	1.38560	

Note: Significant at less than 1% (***), 1–5% (**), and 5–10% (*).

7. Discussion

Tables 3 and 4 present the direct and indirect effects of KM's determinants on organisational sustainability. It was initially observed that knowledge generation and knowledge sharing had a significant impact on knowledge storage. These results are similar to Zaim et al.'s (2018) findings. Hence, knowledge generation and knowledge sharing are essential for successful and healthy knowledge transfers (Jasimuddin & Zhang, 2011).

It was also observed that knowledge generation, sharing, and storage had a significant impact on knowledge utilisation. These results were partially similar to Zaim et al.'s (2018) findings. However, we could not find any direct relations between knowledge generation and knowledge utilisation. Instead, we found that knowledge storage mediated the relationship between knowledge creation and knowledge utilisation. However, Zaim (2006) suggests that knowledge storage and codification are significantly important processes for inventorying knowledge in organisations and utilising it later. In addition, Lueg (2001) maintains that knowledge storage is essential for filtering the unwanted parts of the knowledge which will ease the utilisation of the created knowledge. Lastly, Nemati (2002) implies that knowledge storage is a vital process for reutilising the created knowledge and converting it into a company's property. In this regard, we found that knowledge storage was a full mediator between knowledge generation and knowledge utilisation. Based on this finding, we suggest that knowledge storage processes play a significant role between knowledge generation and knowledge utilisation in firms.

For ISO 9001 certified firms in particular, the 2015 version of the QMS certification means that these firms have to establish knowledge management oriented systems. Knowledge generation must be through hard or soft documentation. These documents must be stored and converted into appropriate data which might be utilised later. In this way, firms can convert their tacit knowledge into explicit knowledge that can be utilised more easily.

Based on the results of our analysis, knowledge generation, sharing, and storage are important for implementing knowledge management. These findings are similar to findings in literature (Coakes, 2006; Martelo-Landroguez & Cegarra-Navarro, 2014). Based on the results of our study, although the impact of knowledge generation and knowledge sharing was significant on knowledge storage. It was also observed that ISO 9001 certified firms were not significantly more successful in knowledge storage processes as compared to non-certified firms. Normally, ISO 9001 certified firms are expected to have stronger documentation and recording systems and they are expected to store knowledge to be used in the future. However, this was not the case for firms in the Kurdistan Region of Iraq. Our results show that although these firms were able to generate knowledge, they failed to store and share this knowledge. The reasons for this might be lack of abilities in implementing the ISO 9001 quality management system's requirements.

Our results also show that knowledge utilisation by ISO 9001 certified firms was better than non-certified fir ms. Based on these results, it can be concluded that ISO 9001 certified firms' knowledge utilisation involved using tacit knowledge which is knowledge that individuals or organisations have but are not aware that they have this knowledge. Each individual's approach to people around him may differ. Individuals might have knowledge that determines their communication with people based on their past experiences with their environment. This information cannot be known explicitly unless it is written, stored, evaluated, studied, learned, or even noticed by the individual himself. This can be considered as a weak point of firms in the Kurdistan Region of Iraq as they cannot convert their tacit knowledge into explicit kno wledge.

Our results also show that knowledge generation, sharing, storage, and utilisation had significant direct-indirect effects on organisational sustainability. There fore, it can be said that knowledge management practices impact organisational sustainability. These results are similar to those of Choi et al. (2008), Chiabrishvili and Zaim (2018), and Robinson et al. (2006) suggest that kno wledge management practices foster organisational sustainability. Although our results show that ISO 9001 certified firms performed better in organisational sustainability as compared to non-certified firms, our results also show that this performance was a result of tacit knowled ge and not explicit knowledge. Hence, firms must develop strong knowledge storage processes for reaching organisa tional sustainability in the long run.

Our results also show the problems faced by firms in the Kurdistan Region of Iraq. Although it was obse rved that ISO 9001 certified firms performed significantly better through knowledge generation, knowledge utilisation, and organisational sustainability, they still had major problems in knowledge storage and sharing. The results also show that ISO 9001 certified firms failed to perform better in knowledge storage and knowledge sharing as compared to non-certified firms. While firms spent money to obtain ISO 9001 certification, they had not seen its advantages as yet.

Nonaka and Konno (1998) SECI model of organisa tional knowledge creation suggests that in its combination phase, the model relies on collecting externa lised knowledge and editing and processing it through documents, plans, reports, and market data. This can be done conveniently through adequate storage processing. Secondly, Nemati (2002) argues that the knowledge storage process is vital for reusing the knowledge when needed so that the knowledge in question belongs to the company rather than to the knower. This finding shows that the tacit knowledge of the knower is converted into explicit knowledge via storage which belongs to the company. Dzenopoljac et al. (2018) add that Arab countries are not adequately effective in carrying out KM initiatives because of a deficiency in their knowledge sharing and storage processes. Based on the United Nations Development Programme's Arab Human Development Report (n. d.), the main reason for this is lack of information and communication technology infrastructure. In this regard, the findings of our study suggest that unless ISO 9001 certified firms improve their knowledge sharing and knowledge storage processes by establishing strong information and communication technology systems, it will be difficult for them to reach explicit knowledge which can be stored and reused in the long run.

8. Practical implications

KM processes are an important factor in organisations' sustainability. This study is a pioneer as it empirically tested the relationship between ISO 9001 quality management systems, KM processes, and organisational sustainability.

Based on the results of our study, ISO 9001 certified firms failed to apply quality management procedures in line with KM processes in the Kurdistan Region of Iraq. Therefore, organisations in this region should put in place appropriate training programs to understand the importance of quality management systems in accordance with KM procedures.

Our study also suggests that ISO 9001 certification has the potential to improve firms' knowledge management practices and organisational sustainability in the Kurdistan Region of Iraq. Hence, firms which are ISO 9001 certified should revise and improve their documentation systems continuously and store these documents conveniently so that they can be used in the next planning period.

Further, organisations should find strategies for transforming their tacit knowledge into explicit knowledge which is something that they have failed to do in this region. Managers need to facilitate strategies within their firms from the knowledge generation phase to the utilisation process. Besides, employees should be trained to transform their tacit knowledge of regulations, procedures, and processes to organisation and industry.

Lastly, a combination of ISO 9001 and KM can be used as a source of dynamic capacity that leverages a compa ny's internal and external effectiveness in the region. Hence, for increasing the applicability and importance of ISO 9001 and KM procedures in an organisation, its administrators should be committed to training and implementing similar programs in the organisation.

9. Theoretical implications

This study has both theoretical and practical implications one of the most relevant of which is a better understanding of knowledge management practices used by firms in the Kurdistan Region of Iraq. Secondly, the study also discusses the differences in knowledge management practices between ISO 9001 certified and non-certified firms in the region. Our findings show that knowledge management practices in both ISO 9001 certified and non-certified firms are not strong enough and need further improvements.

Previous studies have observed that knowledge generation does not impact knowledge utilisation if the knowledge is well stored. We suggest that knowledge storage is a full mediator between knowledge generation and knowledge utilisation.

Our study also shows that unlike relations between knowledge generation and knowledge utilisation, knowledge sharing directly impacts knowledge utili sation. We further suggest that this kind of utilisation will lead to tacit knowledge rather than explicit knowledge unless it is stored and used by the whole organis ation.

Our study suggests that knowledge utilisation is a direct influencer of organisational sustainability. ISO 9001 certified firms perform better in organisati onal sustainability but this is because they use tacit rather than explicit knowledge. For long-term organi sational sustainability, firms need to find ways of turning their tacit knowledge into explicit knowledge.

10. Conclusion

This research had two main aims: (1) investigating the impact of knowledge management practices on organ

isational sustainability, and (2) evaluating the performance of ISO 9001 certified firms in knowledge management and organisational sustainability in the Kurdistan Region of Iraq.

Our results critically showed that knowledge storage played a key role in knowledge utilisation and consequently in organisational sustainability. There fore, our study suggests that organisations should develop systems which store their experiences and then generate and share knowledge. In this way, stored knowledge will be conveniently used for sustainable development. Our study also showed that ISO 9001 certified firms' knowledge storage functions were not significantly better than those of non-certified firms. These results show firms' poor performance in implementing ISO 9001 quality management systems in the Kurdistan Region as one of the advantages of ISO 9001 is helping firms record their activities and using these records in the next planning period. This should have been much better in ISO 9001 certified firms as compared to non-certified ones. In this regard, we suggest that ISO 9001 certified firms re-evaluate:

- Their documentation systems and processes to make sure that they contain required valuable knowledge to be used in the next planning period.
- Their record procedures and processes to make sure that the records are maintained appropriately and conveniently to be used in the next planning period.
- Their management evaluation and review procedures and processes to make sure that they sufficiently utilise the records to make plans in the next period.

Their strong databases and documentation systems for storing the generated and shared knowledge.

Our study also showed that knowledge generation and sharing were important dimensions of knowledge utilisation by firms. Besides, the results of a comparis on between ISO 9001 certified and non-certified firms showed that ISO 9001 certified firms did not share knowledge any better than non-certified firms. It was also observed that certified firms were utilising knowledge significantly better than non-certified firms. Hence, the type of knowledge used in the certified firms is tacit. These results show that ISO 9001 certified firms were not able convert their tacit knowledge into explicit knowledge. In this regard, we suggest that ISO 9001 certified firms should:

- Create quality circles of executives in each depar tment and unit who meet weekly or monthly to share knowledge, make suggestions for development, report their suggestions, and discuss them with the top management.
- Organise special training programs to learn how to effectively share knowledge and documents and storing what they share.

The ISO 9001 certification provides firms a chance to develop strong archiving and knowledge storage opportunities for their further utilisation. Besides, we found very few differences between ISO 9001 certified and non-certified firms in knowledge management and organisational sustainability. Hence, it is suggested that firms which want to make further improvements using ISO 9001 practices should store know
ledge and use it when needed.

11. Limitations and further research proposals

This study is limited to the Kurdistan Region of Iraq. Secondly, due to lack of awareness about knowledge management in the region, only 12 firms were selected to test the hypotheses. Thirdly, only 156 employees in these firms formed the sample. To understand the impact of ISO 9001's certification on sustainability in Iraq and the Middle East, there is a need for many more studies based on a larger number of firms and respondents in the region. Although this study has developed an appropriate model and idea about knowledge management, we need more studies to prove the relationship between knowledge management and organisational sustainability and the differences in performance of ISO 9001 certified and non-certified firms. Lastly, the study suggests that further research in the region must focus on the ways in which firms can convert their tacit knowledge into explicit knowledge.

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References

Abdullah, H. S., & Ahmad, J. (2009). The fit between organizational structure, management orientation, knowledge orientation, and the values of ISO 9000 standard: A conceptual analysis. *International Journal of Quality & Reliability Management*, *26*(8), 744–760. https://doi.org/10.1108/02656710910984147

Adams, G. L., & Lamont, B. T. (2003). Knowledge management systems and developing sustainable competitive advantage. *Journal of Knowledge Management*, *7*(2), 142–154. https://doi.org/10.1108/13673270310477342

Ahmed, M. I. (2017). The availability of ISO 9001-2015 requirements. *Qalaai Zanist Journal*, *2*(5), 720–748. https://doi.org/10.25212/lfu.qzj.2.5.30

Alashwal, A. M., Abdul-Rahman, H., & Radzi, J. (2016). Knowledge utilization process in highway construction projects. *Journal of Management in Engineering*, *32*(4), 05016006. https://doi.org/10.1061/(ASCE)ME.1943-5479.0000429

Al-Husseini, S., & Elbeltagi, I. (2018). The role of knowledge sharing in enhancing innovation: A comparative study of public and private higher education institutions in Iraq. *Innovations in Education and Teaching International*, *55* (1), 23–33. https://doi.org/10.1080/14703297.2015.1122544

Alsalim, M. S., & Mohamed, N. Y. (2013). Impact of knowledge management processes on organizational performance: An empirical study in Institute of Technical Learning–Iraq. *Information and Knowledge Management*, *3*(11), 94–104. doi: 10.1.1.887.5996&rep=rep1&type=pdf.

Arab Human Development Report 2003 | Human Development Reports. (n.d.). Hdr.Undp.org. http://hdr.undp.org/en/content/arabhuman-development-report–2003

Barclay, D., Higgins, C., & Thompson, R. (1995). The partial least squares (PLS) approach to casual modeling: Personal computer adoption and use as an Illustration. *Technology Studies*, *1995*(2/2). Walter de Gruyter, 284–324.

Bratianu, C., & Orzea, I. (2010). Organizational knowledge creation. *Management, Marketing Challenges for Knowledge Society*, *5*(3), 41–62. http://www.managementmarketing.ro/pdf/articole/193.pdf

Brito, E., Pais, L., Dos Santos, N. R., & Figueiredo, C. (2020). Knowledge management, customer satisfaction and organizational image discriminating certified from non-certified (ISO 9001) municipalities. *International Journal of Quality & Reliability Management*, *37*(3), 451–469. https://doi.org/10.1108/IJQRM-10-2018-0281

Bryant, S. E. (2003). The role of transformational and transactional leadership in creating, sharing and exploiting organizational knowledge. *Journal of Leadership and Organizational Studies*, *9*(4), 32–44. https://doi.org/10.1177/107179190300900403

Buckley, P. J., & Carter, M. J. (2002). Process and structure in knowledge management practices of British and US multinational enterprises. *Journal of International Management*, *8*(1), 29–48. https://doi.org/10.1016/S1075-4253(01)00051-5

Budur, T. (2018). The impact of Al-Ghazali's virtues on organizational commitment and performance: A case Study at private education institutions in Kurdistan Region of Iraq. *ICABEP, Erbil-Iraq*, *2*(1), 21.

Carayannis, E. G., Sindakis, S., & Walter, C. (2015). Business model innovation as lever of organizational sustainability. *The Journal of Technology Transfer*, *40*(1), 85–104. https://doi.org/10.1007/s10961-013-9330-y

Celik, B., & Ölçer, Ö. H. (2018). What is the contribution of ISO 9001 quality management system to educational institutions? *International Journal of Academic Research in Business and Social Sciences*, *8*(6), 445–462. https://doi.org/10.6007/IJARBSS/v8-i6/4250

Cepeda-Carrion, I., Martelo-Landroguez, S., Leal-Rodríguez, A. L., & Leal-Millán, A. (2017). Critical processes of knowledge management: An approach toward the creation of customer value. *European Research on Management and Business Economics*, *23*(1), 1–7. https://doi.org/10.1016/j.iedeen.2016.03.001

Chiabrishvili, M., & Zaim, H. (2018). The role of knowledge management for long-term sustainability in Kuwait companies. *Middle East Journal of Management*, *5*(4), 340–355. https://doi.org/10.1504/MEJM.2018.095586

Chin, W. W., & Newsted, P. R. (1999). Structural equation modeling analysis with small samples using partial least squares. *Statistical Strategies for Small Sample Research*, *1* (1), 307–341.

Choi, B., Poon, S. K., & Davis, J. G. (2008). Effects of knowledge management strategy on organizational performance: A complementarity theory-based approach. *Omega*, *36*(2), 235–251. https://doi.org/10.1016/j.omega.2006.06.007

Chou, S. W. (2005). Knowledge creation: Absorptive capacity, organizational mechanisms, and knowledge storage/retrieval capabilities. *Journal of Information Science*, *31* (6), 453–465. https://doi.org/10.1177/0165551505057005

Coakes, E. (2006). Storing and sharing knowledge: Supporting the management of knowledge made explicit in transnational organisations. *The Learning Organization*, *13*(6), 579–593. https://doi.org/10.1108/09696470610705460

Darroch, J. (2005). Knowledge management, innovation and firm performance. *Journal of Knowledge Management*, *9* (3), 101–115. https://doi.org/10.1108/13673270510602809

Demir, A., & Guven, S. (2017). The influence of ISO certificate on quality evaluation of students: A case study at Ishik University. *Advances in Social Sciences Research Journal*, *4* (3), 171–180. https://doi.org/10.14738/assrj.43.2715

Duncan, W. J. (1972). The knowledge utilization process in management and organization. *Academy of Management Journal*, *15*(3), 273–287. https://doi.org/10.5465/254853

Dzenopoljac, V., Alasadi, R., Zaim, H., & Bontis, N. (2018). Impact of knowledge management processes on business performance: Evidence from Kuwait. *Knowledge and Process Management*, *25*(2), 77–87. https://doi.org/10.1002/kpm.1562

Fidock, J., & Carroll, J. (2009). Combining variance and process research approaches to understand system use. In *Justin Fidock and Jennie Carroll School of Property, Construction & Project Management* (235–245). RMIT University Melbourne.

Fonseca, L., & Domingues, J. P. (2017). ISO 9001: 2015 edition-management, quality and value. *International Journal of Quality Research*, *1*(11), 149–158. doi: 10.18421/IJQR11.01-09

Fornell, C., & Larcker, D. F. (1981). Evaluating structural equation models with unobservable variables and measurement error. *Journal of Marketing Research*, *18*(1), 39–50. https://doi.org/10.1177/002224378101800104

Gloet, M. (2006). Knowledge management and the links to HRM: Developing leadership and management capabilities to support sustainability. *Management Research News*, *29*(7), 402–413. https://doi.org/10.1108/01409170610690862

Halawi, L. A., Aronson, J. E., & McCarthy, R. V. (2005). Resource-based view of knowledge management for competitive advantage. *The Electronic Journal of Knowledge Management*, *3*(2), 75–86. https://commons.erau.edu/publication/319

Heisig, P. (2009). Harmonisation of knowledge management–comparing 160 KM frameworks around the globe. *Journal of Knowledge Management*, *13*(4), 4–31. https://doi.org/10.1108/13673270910971798

Hussi, T. (2004). Reconfiguring knowledge management–combining intellectual capital, intangible assets and knowledge creation. *Journal of Knowledge Management*, *8*(2), 36–52. https://doi.org/10.1108/13673270410529091

Igbaria, M., Guimaraes, T., & Davis, G. B. (1995). Testing the determinants of microcomputer usage via a structural

equation model. *Journal of Management Information Systems*, *11*(4), 87–114. https://doi.org/10.1080/07421222.1995.11518061

Inkinen, H. T., Kianto, A., & Vanhala, M. (2015). Knowledge management practices and innovation performance in Finland. *Baltic Journal of Management*, *10*(4), 432–455. https://doi.org/10.1108/BJM-10-2014-0178

Ionașcu, M., Ionașcu, I., Săcărin, M., & Minu, M. (2017). Exploring the impact of ISO 9001, ISO 14001 and OHSAS 18001 certification on financial performance: The case of companies listed on the Bucharest Stock Exchange. *Amfiteatru Economic Journal*, *19*(44), 166–180. https://www.ceeol.com/search/article-detail?id=521985

Ismail Al-Alawi, A., Yousif Al-Marzooqi, N., & Fraidoon Mohammed, Y. (2007). Organizational culture and knowledge sharing: Critical success factors. *Journal of Knowledge Management*, *11*(2), 22–42. https://doi.org/10.1108/13673270710738898

Ismail, I. R., Tajuddin, N., & Yunus, N. K. M. (2019). Trust and intention to share as predictors of online knowledge-sharing behavior. Proceedings of the Regional Conference on Science, Technology and Social Sciences (RCSTSS 2016) (pp. 57–67). Singapore: Springer.

ISO. (2015). *ISO 9001: 2015 quality management systems – requirements*.

Jasimuddin, S. M., & Zhang, J. (2011). The symbiosis mechanism for effective knowledge transfer. *Journal of the Operational Research Society*, *60*(5), 706–716. https://doi.org/10.1057/palgrave.jors.2602613

Jorna, R. J., Hadders, H., & Faber, N. (2009). *Sustainability, learning, adaptation and knowledge processing. In Knowledge management and organizational learning* (pp. 369–384). Springer.

Kamal, T., & Shawkat, S. (2020). The impact of dynamic capabilities on knowledge management in Kurdistan Region of Iraq. *Black Sea Journal of Management and Marketing*, *1*(1), 41–48. https://doi.org/10.47299/bsjmm.v1i1.30

Kamasak, R. (2017). The contribution of tangible and intangible resources, and capabilities to a firm's profitability and market performance. *European Journal of Management and Business Economics*, *26*(2), 252–275. https://doi.org/10.1108/EJMBE-07-2017-015

Karamustafa, K., & Ülker, P. (2020). Impact of tangible and intangible restaurant attributes on overall experience: A consumer-oriented approach. *Journal of Hospitality Marketing & Management*, *29*(4), 404–427. https://doi.org/10.1080/19368623.2019.1653806

Kaya, T., & Erkut, B. (2018). The Tacit knowledge capacity of lecturers: A cross-country comparison. *Electronic Journal of Knowledge Management*, *16*(2), 131–142. http://www.ejkm.com/volume16/issue2/p131

Khalifa, M., & Liu, V. (2003). Determinants of successful knowledge management programs. *Electronic Journal on Knowledge Management*, *1*(2), 103–112. http://www.ejkm.com/volume1/issue2/p101

Kianto, A., Hussinki, H., & Vanhala, M. (2018). The impact of knowledge management on the market performance of companies. In Vătămănescu EM., Pînzaru F. (Eds.), *Knowledge Management in the Sharing Economy*. Knowledge Managementand Organizational Learning, vol 6. Springer, Cham. https://doi.org/10.1007/978-3-319-66890-1_10

Latan, H., Jabbour, C. J. C., de Sousa Jabbour, A. B. L., de Camargo Fiorini, P., & Foropon, C. (2020). Innovative efforts of ISO 9001-certified manufacturing firms: Evidence of links between determinants of innovation, continuous innovation and firm performance. *International Journal of Production Economics*, *223*(c), 107526. https://doi.org/10.1016/j.ijpe.2019.107526

Liebowitz, J. (2001). Knowledge management and its link to artificial intelligence. *Expert Systems with Applications*, *20*(1), 1–6. https://doi.org/10.1016/S0957-4174(00)00044-0

Lueg, C. (2001). Information, knowledge and networked minds. *Journal of Knowledge Management*, *5*(2), 151–159. https://doi.org/10.1108/13673270110393194

Malhotra, Y. (2000). Knowledge management for e-business performance: Advancing information strategy to 'internet time'. *Information Strategy: The Executive's Journal*, *16*(4), 5–16. https://doi.org/10.1080/07438613.2000.10744620

Martelo-Landroguez, S., & Cegarra-Navarro, J. G. (2014). Linking knowledge corridors to customer value through knowledge processes. *Journal of Knowledge Management*, *18*(2), 342–365. https://doi.org/10.1108/JKM-07-2013-0284

Martelo-Landroguez, S., & Cepeda-Carrión, G. (2016). How knowledge management processes can create and capture value for firms? *Knowledge Management Research & Practice*, *14*(4), 423–433. https://doi.org/10.1057/kmrp.2015.26

Menon, A., & Menon, A. (1997). Enviropreneurial marketing strategy: The emergence of corporate environmentalism as market strategy. *Journal of Marketing*, *61*(1), 51–67. https://doi.org/10.1177/002224299706100105

Mills, A. M., & Smith, T. A. (2011). Knowledge management and organizational performance: A decomposed view. *Journal of Knowledge Management*, *15*(1), 156–171. https://doi.org/10.1108/13673271111108756

Molina, L. M., Lloréns Montes, F. J., & Del Mar Fuentes, M. (2004). TQM and ISO 9000 effects on knowledge transferability and knowledge transfers. *Total Quality Management & Business Excellence*, *15*(7), 1001–1015. https://doi.org/10.1080/14783360410001681872

Nazim, M., & Mukherjee, B. (2016). *Knowledge management in libraries: Concepts, tools and approaches*. Chandos Publishing.

Nemati, H. (2002). Global knowledge management: Exploring a framework for research. *Journal of Global Information Technology Management*, *5*(3), 1–11. https://doi.org/10.1080/1097198X.2002.10856328

Nidumolu, R., Prahalad, C. K., & Rangaswami, M. R. (2009). Why sustainability is now the key driver of innovation. *Harvard Business Review*, *87*(9), 56–64. doi: 10.1109/EMR.2015.7123233

Nonaka, I. (1994). A dynamic theory of organizational knowledge creation. *Organization Science*, *5*(1), 14–37. https://doi.org/10.1287/orsc.5.1.14

Nonaka, I., & Konno, N. (1998). The concept of "Ba": Building a foundation for knowledge creation. *California Management Review*, *40*(3), 40–54. https://doi.org/10.2307/41165942

Oh, S. Y. (2019). Effects of organizational learning on performance: The moderating roles of trust in leaders and organizational justice. *Journal of Knowledge Management*, *23*(2), 313–331. https://doi.org/10.1108/JKM-02-2018-0087

Ouakouak, M. L., & Ouedraogo, N. (2019). Fostering knowledge sharing and knowledge utilization. *Business Process Management Journal*, *25*(4), 757–779. https://doi.org/10.1108/BPMJ-05-2017-0107

Öztaş, A., Özdemir, M., & Mart, Ç. T. (2017). Perspectives on quality assurance in higher education in Iraq: A case study at Ishik University. *International Journal of*

Academic Research in Business and Social Sciences, *7*(9), 268–272. https://doi.org/10.6007/IJARBSS/v7-i9/3323

Oztekin, A., Delen, D., Zaim, H., Turkyilmaz, A., & Zaim, S. (2015). The influence of knowledge management on financial and non-financial performance. *Journal of Information and Knowledge Management*, *14*(2), 1550013, 1–14. https://doi.org/10.1142/S0219649215500136

Pearlson, K., Saunders, C., & Galletta, D. F. (2015). *Managing and using information systems: A strategic approach* (6th ed.). Wiley.

Pereira, V., Mellahi, K., Temouri, Y., Patnaik, S., & Roohanifar, M. (2019). Investigating dynamic capabilities, agility and knowledge management within EMNEs-longitudinal evidence from Europe. *Journal of Knowledge Management*, *23*(9), 1706–1728. https://doi.org/10.1108/JKM-06-2018-0391

Purwanto, A., Putri, R. S., Ahmad, A. H., Asbari, M., Bernarto, I., Santoso, P. B., & Sihite, O. B. (2020). The effect of implementation integrated management system ISO 9001, ISO 14001, ISO 22000 and ISO 45001 on Indonesian food industries performance. *TEST Engineering & Management*, *82*, 14054–14068. http://testmagzine.biz/index.php/testmagzine/article/view/3078

Robinson, H. S., Anumba, C. J., Carrillo, P. M., & Al-Ghassani, A. M. (2006). STEPS: A knowledge management maturity roadmap for corporate sustainability. *Business Process Management Journal*, *12*(6), 793–808. https://doi.org/10.1108/14637150610710936

Ruggles, R. (1997). *Knowledge tools: Using technology to manage knowledge better. Earns and Young Business Innovation, April*. Butterworth-Heinemann.

Sadq, Z., Othman, B., & Mohammed, H. (2020). Attitudes of managers in the Iraqi Kurdistan region private banks towards the impact of knowledge management on organizational effectiveness. *Management Science Letters*, *10*(8), 1835–1842. https://doi.org/10.5267/j.msl.2019.12.035

Senge, P.M. (1990), The Fifth Discipline: The Art and Practice of the Learning Organization, Doubleday/Currency, New York, NY

Shujahat, M., Sousa, M. J., Hussain, S., Nawaz, F., Wang, M., & Umer, M. (2019). Translating the impact of knowledge management processes into knowledge-based innovation: The neglected and mediating role of knowledge-worker productivity. *Journal of Business Research*, *94*(20), 442–450. https://doi.org/10.1016/j.jbusres.2017.11.001

Smith, P. A. (2012). The importance of organizational learning for organizational sustainability. *The Learning Organization*, *19*(1), 4–10. https://doi.org/10.1108/09696471211199285

Soto-Acosta, P., Popa, S., & Martinez-Conesa, I. (2018). Information technology, knowledge management and environmental dynamism as drivers of innovation ambidexterity: A study in SMEs. *Journal of Knowledge Management*, *22*(4), 931–946. https://doi.org/10.1108/JKM-10-2017-0448

Torlak, N. G., Demir, A., & Budur, T. (2019). Impact of operations management strategies on customer satisfaction and behavioral intentions at café-restaurants. *International Journal of Productivity and Performance Management*, *69*(9), 1903–1924. https://doi.org/10.1108/IJPPM-01-2019-0001

Torlak, N. G., Kuzey, C., & Ragom, M. (2018). Human resource management, commitment and performance links in Iran and Turkey. *International Journal of Productivity and Performance Management*, *67*(9), 1994–2017. https://doi.org/10.1108/IJPPM-11-2017-0298

Uriarte, J., & Filemon, A. (2008). *Introduction to knowledge management*. ASEAN Foundation.

Van de Ven, A. H., & Poole, M. S. (2005). Alternative approaches for studying organizational change. *Organization Studies*, *26*(9), 1377–1404. https://doi.org/10.1177/0170840605056907

Vera, D., & Crossan, M. (2003). Strategic leadership and organizational learning. *Academy of Management Review*, *29*(2), 222–240. https://doi.org/10.5465/amr.2004.12736080

Wilson, J. P., & Campbell, L. (2016). Developing a knowledge management policy for ISO 9001: 2015. *Journal of Knowledge Management*, *20*(4), 829–844. https://doi.org/10.1108/JKM-11-2015-0472

Zaim, H. (2006). Knowledge management implementation in IZGAZ. *Journal of Economic and Social Research*, *8*(2), 1–25. doi: 10.1.1.564.4946&rep=rep1&type=pdf

Zaim, H., Muhammed, S., & Tarim, M. (2018). Relationship between knowledge management processes and performance: Critical role of knowledge utilization in organizations. *Knowledge Management Research and Practice*, *17*(1), 24–38.

Zaim, H., Muhammed, S., & Tarim, M. (2019). Relationship between knowledge management processes and performance: Critical role of knowledge utilization in organizations. *Knowledge Management Research & Practice*, *17*(1), 24–38.

Zaim, H., Tatoglu, E., & Zaim, S. (2007). Performance of knowledge management practices: A causal analysis. *Journal of Knowledge Management*, *11*(6), 54–67. https://doi.org/10.1108/13673270710832163

Zaim, S., Bayyurt, N., Tarim, M., Zaim, H., & Guc, Y. (2013). System dynamics modeling of a knowledge management process: A case study in Turkish Airlines. *Procedia-Social and Behavioral Sciences*, *99*, 545–552. https://doi.org/10.1016/j.sbspro.2013.10.524

Zhang, F., & Zhu, L. (2019). Enhancing corporate sustainable development: Stakeholder pressures, organizational learning, and green innovation. *Business Strategy and the Environment*, *28*(6), 1012–1026. https://doi.org/10.1002/bse.2298