Information Sciences Letters
An International Journal

Knowledge Management's Effect on Learning Quality in Bahrain's Private Universities

Ali Ateeq

Administrative Science Department, College of Administrative and Financial Science, Gulf University, Sanad 26489, Kingdom of Bahrain

Abstract: This study examines the impact of knowledge application, management, and sharing on learning outcomes in private Bahraini universities. Through an online survey of 220 professionals from 13 universities, the study found that knowledge management had the strongest correlation with learning outcome quality. The results support the initial hypothesis and demonstrate the importance of knowledge management for improving performance and promoting organizational innovation in higher education institutions. Knowledge Management (KM) was the most correlated with the learning outcome quality at the 0.01 level. However, all the study's variables had some kind of impact on the quality of learning outcomes variable. The researcher's initial hypothesis was well-supported with a $f2 = 0.94$, and the other hypotheses were also supported. The findings showed that there is a strong association between knowledge management and learning outcome quality in Bahraini private universities. The study also revealed that KM substantially affects the learning outcome quality in scholarly settings. This study is important not only for advancing knowledge in this area, but it is also significant from a managerial perspective, as it provides higher education institutions (HEIs) with a better understanding of how to promote organizational innovation and, ultimately, improve performance through engagement in KM activities.

Keywords: Knowledge Management, Learning Outcome Quality, Higher Education, Private Universities, Spread and Share Knowledge, Knowledge Application.

1 Introduction

The modern period is marked by quick growth and development in many fields, with the most major changes and issues perhaps confronting them. Institutions are shifting away from the traditional economy, which was built on competition for material resources. The new, strategic resource, and substantial source of excellence and supremacy is based on information and intellectual resources [1]. The Organization for Economic Cooperation and Development OECD defines a knowledge based economy as one in which the production, dissemination, and use of technology is key to the economic activity and sustainable growth of this country, and where investing in knowledge is related to the tools that generate knowledge, including research and development, software education and basic sciences, innovation, and the transfer of knowledge [2].

Knowledge management is one of the most well-liked recent innovations in both the theory and practice of management, and it is well suited to adjusting to new circumstances. In today's fast-paced, efficiency-driven global economy, the creation, development, dissemination, employment, and benefit of knowledge has become a defining characteristic and a key indicator of a society's progress.

Businesses rushed to participate in knowledge-based projects and activities as they realized the new capabilities and unique competitive advantages that knowledge management's focus is on knowledge and its relevance in value development and profit production offered. The same logic applies to the classroom, from which the business world may draw great value. Knowledge management in higher education has many potential uses as institutions strive to internationalize their curriculum and provide students with the highest quality programs possible [3].

What to anticipate universities are incubators for the development of future leaders, thinkers, visionaries, and inventors. As a consequence, it is vital in assisting individuals in bettering their destinies and becoming ready for an uncertain future. Knowledge management in this context may play a pivotal role for educational institutions, and it may also be able to maintain organizational resources via the application of organizational knowledge and the promotion of the process of creating and employing knowledge [4].

---

*Corresponding author e-mail: dr.ali.ateeq@gulfuniversity.edu.bh

The initial intention of universities has expanded to include preparing students to adapt to changes, particularly intellectual ones [5]. As a result of these changes, colleges have shifted their focus from their conventional function to that of community training and continuing education. Online education has allowed them to expand their scope and provide additional degrees in the sciences. In addition to being a strategic ally and partner, it currently provides decision-making and performs the necessary research and studies for development and point detection for financial, corporate, and industrial institutions throughout the majority of the country's states. The universities in Bahrain are able to assist other civil society and possess the specialized expertise that is required to do so [6].

It has devised a strategy to expand its impact in the march of economic and social development in order to boost both its productivity and the quality of the services it provides to an organization that is capable of producing and retaining information in a logical and organized manner [7]. Intellectual and scientific advancement is a sign of the progress and development of society's understanding in all its forms. It reflects leadership today by concentrating on the ways to improve the quality of its product (students, skills, scientific research, and volunteer work). When it is delayed, it indicates a fall in thought and the economy.

Higher education institutions recruit candidates based on their commitments and role in the growth and progress of society in order to improve through providing the society with appropriate technological frameworks so that it keeps up with the new requirements that arise through creating an environment where management may thrive via the scientific and practical education of tomorrow's leaders in a wide variety of sectors [8]. Being able to reasonably and effectively guarantee that the quality of outputs is sufficient to meet the needs of the labor market is a key part of achieving development objectives.

Within the context of these transformations, Bahraini universities work hard to fulfill their responsibilities and the accountability given to them, as the country faces several challenges that necessitate raising the quality of its scientific and research output, as well as the educational process in general [9, 10]. Knowledge management is a vital tool for ensuring that universities' social, organizational, and technical settings are optimized for knowledge production and transfer [11]. It attempts to generate, transmit, and expand knowledge as one of the organizations dealing with knowledge and people. Moreover, given that universities and other institutions with a broad variety of outputs are among them, it is argued that the educational process's outcomes extend its frameworks in response to the needs of the rapidly changing external environment, making it more diverse and thorough [12].

This study aims to determine the extent to which knowledge management contributes to the success of higher education programs offered by private universities in Bahrain. It aims to investigate the impact on the learning outcome quality of: (i) knowledge application; (ii) knowledge management; and (iii) knowledge sharing. Based on the best knowledge of research, this is the first study conducted in Bahrain. The study will extend the body of knowledge in terms of learning outcome quality. It will help policy-makers and other parties to re-evaluate the level of learning outcomes quality and, hence, strengthen the learning outcomes quality.

2 Literature Review

2.1 Knowledge Management

Blackboard Skills: Knowledge management methods, tied to a life cycle, explain many actions needed to create and maintain knowledge. One measure of an institution's knowledge management capabilities is how successfully it draws on and makes accessible its many internal and external sources of information [11]. Certain people view knowledge management strategies as a series of activities, while others consider them as a technique to organize and structure data in a manner that can change people's understanding of the world. Academics disagree on how many processes there are in knowledge management, therefore, many scholars have identified different essential features of these processes [13].

Leidner [14] investigated many characteristics. For a variety of models, four knowledge management processes were provided: knowledge generation, knowledge storage and retrieval, knowledge transfer, and knowledge application. Knowledge acquisition, protection, interchange, and application are the four knowledge management processes. Lawson combines three KM models. He broke the knowledge management cycle into six processes: knowledge production, capture, organization, storage, sharing, and application [15].

Knowledge management processes may be characterized in four steps, which is the model given by Wiig, 1993 [16]: (i) diagnose, generate and acquire knowledge; (ii) knowledge store; (iii) spread knowledge and share it; and (iv) knowledge application. Knowledge management is defined as the process by which an organization gathers and identifies proper knowledge, converts tacit knowledge into explicit knowledge or obtains it from its sources (diagnosis, generation, and acquisition), stores the knowledge in its knowledge bases, retrieves the knowledge so that it can be shared and

disseminated throughout the organization (knowledge dissemination and sharing), and finally uses the knowledge to its fullest extent (knowledge exploitation) and (application of knowledge) [17]. The coming sections explain each step of knowledge management processes.

2.1.1. Diagnostics and Knowledge Generation

In order to maximize the utility of existing information, the diagnosing and producing knowledge process tries to disseminate knowledge in SCEI form (followed by acquisition, i.e., gained from outside the institution). Regarding the diagnostics and knowledge generation, it could happen through contrasting the organization's present knowledge assets with what is required. The diagnostic process may identify the knowledge gap and guide subsequent efforts to close it [18]. Gaining access to existing knowledge, characterizing it via the identification of knowledge environments within and outside the institution, and integrating novel, useful information from the outside world. The institution must do a knowledge diagnosis and find out what supposed to do with that information first, development of new information (or knowledge creation).

The acquisition of knowledge hence will be achieved by completing the first step of Diagnostics and knowledge generation. According to Romero and Ventura [19], gathering information from a variety of sources, such as experts, specialists, competitors, customers, and databases, is an essential component of the learning process. Romero and Ventura also state that obtaining information from these various sources should be a priority. When considered from the point of view of a firm, this procedure entails acquiring information from the outside world and putting that information to work for the benefit of the organization.

As per Komogorova, Maksymchuk [20], it is stated that "there are some difficulties associated with acquiring knowledge; Since the majority of knowledge resides in the minds of experts, this tacit knowledge does not easily document in its clear form, and these experts typically have enormous amounts of useful knowledge for the institution as a whole". The studies that were conducted on this area also reveal a connection between levels of information acquisition and levels of knowledge performance. For instance, Nooshinfard and Nemati-Anaraki [21] noted that the development of new information is intimately linked to the progression of an organization. In addition, the correct application of knowledge will result in the development of a positive connection. There is a significant gap between the acquisition of information and the performance of an organization due to the fact that knowledge is often gained via the process of organizational learning [21].

2.1.2. Knowledge Storage Process

In the context of an organization, "knowledge storage" refers to all of the procedures that, once acquired, keep knowledge intact and make it possible for it to remain inside the company. The vast majority of the actions associated with disseminating information also include those which assure the continuity of knowledge within the organization [22]. As per Sahu, Young [23] a knowledge storage system needs to contain the following characteristics: (i) an architecture that allows the system to display information quickly and correctly; (ii) classification of events, policies, or procedures (information) based on learning needsl; and (iii) the ability to present information accurately and clearly; accurate and accessible content; and on time.

According to Okudan, Budayan [24], "the amount of knowledge that is capable of generating new information is inadequate, and there will always be gaps in knowledge". From this point of view, procedural learning is the ideal choice since it gives the tools required to store newly acquired information and retrieve it when required.

2.1.3. Spreading and Sharing Knowledge

It is of the utmost significance for the organization to be successful and to be able to use it as a knowledge process that has been published and defines where transfer of knowledge occurs across the organization. The process of disseminating and sharing information is part of all this [25]. The process of information transmission may take place between individuals, or it can take place via notations, reports, pamphlets, publications, national conferences, abstracts of papers, and training for international instructors, teachers, and consultants [26].

Engaging in formal training programs allows sharing one's acquired expertise with many others. It is also possible to coordinate staff relocations and job changes to disseminate information within the firm. The amount of involuntary information sharing, whether via tales, myths, a permanent workforce, or unofficial networks, contributes to an increase in the quantity of potential knowledge lost [27].

2.1.4. Knowledge Application

The application process of knowledge is an ongoing and integrated procedure that begins with acquiring and developing knowledge and then carries on to disseminating information through various instruments. Communication on both a social and technical level is necessary to reach the stage of putting this information into action to achieve objectives by means of actions, rules, choices, and procedures [28].

For knowledge to be put into use, consistent practice is essential. The purpose of knowledge application is to provide information to knowledge in a manner that is useful to them. Furthermore, application is the only way to ensure wide dissemination of the knowledge [29]. In addition, knowledge is an application that converts information into practical resources, makes it more dynamic in its ability to provide value, and makes it available in a more organized and accessible repository. Moreover, businesses will be able to gain an edge in the marketplace if they can generate and use new information at a faster rate and at a lower cost than rivals [30].

2.2 Quality Graduates

In the educational process, the student serves as one of the critical axes because this institution was created with and for him. Numerous quality indicators are linked to this axis, including student selection, allowing the selection process to consider the student's qualifications. Besides, its quality is measured by one's ability to be creative, innovative, excel, possess a critical mind, participate in self-critical discussions and build one's character and safety [31]. Since the student is one of the components determining how well education works, the educational institution ensures quality. It must rekindle the bond between students and local organizations. In order to create job possibilities for its graduates, state institutions and labor markets work together, and efforts are made to raise the employment level of graduates as a final output by which the effectiveness of the entire educational process can be assessed [32].

One of the most crucial outcomes that higher education institutions work to improve is the quality of learning outcomes. The output type is dependent on the fundamental knowledge and information that serve as the foundation for the caliber of graduates, and they are dependent on knowledge has two dimensions: professional knowledge pertaining to operations and empowerment and comprehension of the realities of business institutions' activity [33].

The level of quality of graduates is related to the students' abilities to adhere to and comprehend professional foundations and principles as well as how to apply them in their fields of work. This is in line with the expansion of the comprehensive perspective and the diversity of roles as well as the graduate's thought to become a leader with a strategic perspective and a comprehensive interest in the management processes and practices [1].

Higher education has received more attention than ever in the last ten years of the twentieth century, and many individuals now believe that it is the key to maintaining national economies' expansion [34]. The majority of those involved in higher education institutions believe that the use of knowledge management in these institutions may positively affect all aspects of the educational system (objectives, inputs, processes, and outputs), and it can be said that this effect may have an indirect impact on graduates [35]. If this is approached from the perspective that higher graduation levels are a result of bettering and developing faculty members' performance, and development of curricula, improving administrative and student services. On the other hand, if knowledge management is considered from the perspective of giving students the knowledge, information, and services they need as fast as possible, with the least amount of work possible, and wherever they are, it can be claimed that it directly impacts students [36].

The faculty members are given the most responsibility for these responsibilities because they are the ones that represent mainly the foundations of the university building. Knowledge management contributes to achieving the quality of graduate services through: (i) Enhancing the quality of services offered to students, such as library services and knowledge system information technology for students that supports internal and external electronic services provided by the college for students supplied through the college's website; (ii) increasing the quality of services given to educational institution graduates and other parties, such as independent organizations, that assess the effectiveness of colleges and universities; and (iii) Improving the quality of services for individuals working in the educational institution, raising the quality of college and university graduates and giving them more opportunity to participate in the labor market will result automatically from raising the level of student services and developing the performance of professors and administrative staff.

3 Research Methodology

The study seeks to explore the impact of: (i) knowledge application; (ii) knowledge management; and (iii) knowledge sharing on the quality of learning outcomes of higher education outcomes at Bahraini private universities (see Figure 1).
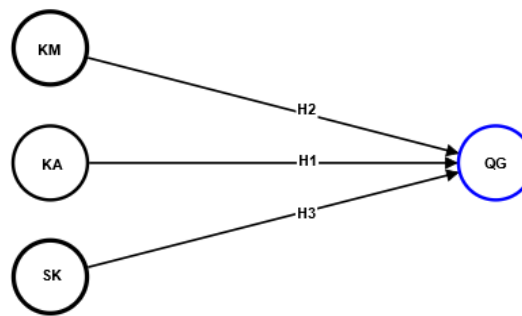
Fig. 1: Conceptual framework and hypotheses model

KM: Knowledge Management, SK: Spread the knowledge and share it, KA: Knowledge application, QG: Quality graduates.

H1: Knowledge application has a relationship with learning outcome quality (KA -> QG).

H2: Knowledge Management has a relationship with learning outcome Quality (KM -> QG).

H3: Spreading and sharing knowledge has a relationship with learning outcome quality (SK-> QG).

The research design is a framework that describes how data is collected, analyzed, and presented. This may assist the researcher in ensuring that the data gathered and evaluated allows them to meet their study objectives and provide the most unequivocal answers to their research questions. The quantitative technique was chosen for collecting and analyzing the data of the current study. Data was collected via the use of a structured online questionnaire [37-41]. To offer an exact and trustworthy account of the factors relevant to the research topic, a descriptive study will be done. A correlational research approach was also used to analyze the statistical connection between the variables specified for this investigation [42]. In terms of participants, they were selected from the academic staff of private universities in Bahrain. Academics at different levels of education were asked to participate in the current study; the sample of the study was selected through the convenient sample technique. According to Cochran's calculations, for a population of 1200, a sample size of roughly 250 is necessary to provide a margin of error of 0.05 and a critical value of 1.96. Regarding the data analysis, the data of the study were examined using SPSS version 28 software and descriptive analysis. Partial least squares SEM (PLS-SEM) was used to estimate complex cause-and-effect link models using latent variables. The internal consistency (Cronbach's alpha) of the exogenous and endogenous variables was 0.938, suggesting the validity of the questionnaires. The four dimensions are listed in Table 2 presented in the literature review of this study.

4 Results and Discussion

4.1 Reliability and composite reliability

Reliability measurement gives variable measurement internal consistency. The reliability must be above 0.60 to be accepted. Cronbach's alpha and composite reliability were tested using SPSS 28. According to the study findings, composite reliability (CR) ranged from 0.923 to 0.767 and Cronbach's alpha from 0.920 to 0.671. The square root of AVE is shown to be between 0.647 and 0.551, which was more than 0.50, demon-strating discriminant validity. Therefore, the model had no redundant components. Due to this, Cronbach's alpha, AVE, and composite reliability all met the criteria for acceptance. Table 1 shows the 4 constructions features. Cronbach's alphas are above 0.7 and composite reliability estimates are above 0.8134. This is very reliable. Due to fit and consistency, the result was valid. *Reliability and composite reliability are represented in* Table 1.

Table 1: Reliability and composite reliability

Construct	Cronbach's alpha	Composite reliability	Average variance extracted (AVE)
KA	0.798	0.805	0.597
KM	0.780	0.816	0.551
QG	0.920	0.923	0.647
SK	0.671	0.767	0.599

"Cronbach's alpha: average measure of internal consistency and item reliability and preferred when EFA is used for factor extraction. <0.7 accepted. * CR: measure scale reliability overall and preferred with CFA.* AVE: measures the level of variance captured by a construct 0.5 accepted". AVE: Average Variance Extracted. CR: Composite Reliability" [43].
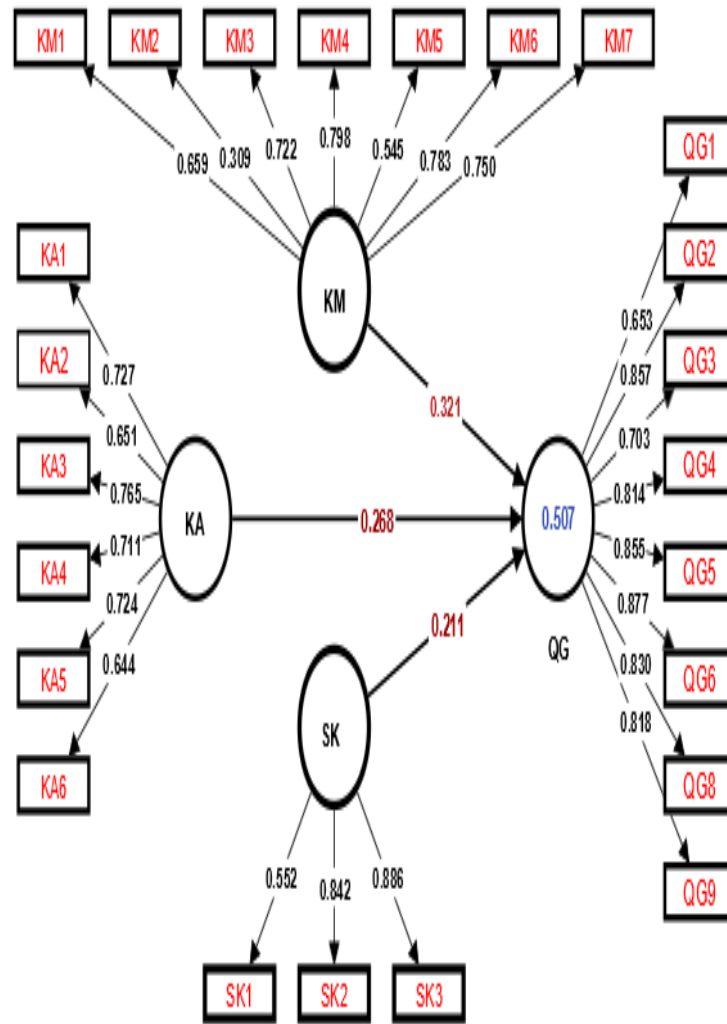
4.2 Assessment of Measurement Model

Fig. 2: The assessment of measurement Model (Author's own Conceptual Framework and Hypotheses Model)

Note: KM: Knowledge Managements: Spread the knowledge and share it, KA: Knowledge application,QG: Quality graduates.

4.3   Convergent validity

Convergent validity refers to how well a collection of variables agrees with one another as a measure of the same concept [44]. Diverse standards must be satisfied to prove and verify convergent validity. Factor loadings, composite reliability, and average variance extracted were all calculated according to the guidelines provided to meet these prerequisites [45]. Therefore, item loadings were examined. All goods were found to have loadings of more than 0.50, which is considered to be a satisfactory level [46]. All factor loadings were found to be at 0.01 (see Table 2). Composite reliability measures how consistently a combination of items reveals the underlying concept. The CR values presented in Table 2 i.e. 0.994 to 0.974 are above the required 0.7. These results show model convergence validity. AVE values were analyzed to validate model fit convergence. AVE shows the average measurement error variance across a group of items. The more accurate AVE compares indicator variance to measurement error variation. Table 2 lists the obtained AVE values. The model's convergent validity was fair since all constructs had AVE values over 0.5, i.e. from 0.974 to 0.852.

Table 2: Convergent Validity Analysis

Construct	Code	Number of items	Factor loading	CR	(AVE)
Knowledge application	**KA**	6	0.704	0.805	0.597
Knowledge Management	**KM**	7	0.652	0.816	0.551
Quality graduates	**QG**	9	0.801	0.923	0.647
Spread and share knowledge	**SK**	3	0.760	0.767	0.599

Key. * "FACTOR LOADING: variance explained by the variable on that particular factor <0.7 or higher to be accepted (Hair, Black, Babin, & Anderson, 2010). * CR: measure scale reliability overall and preferred with CFA.* AVE: measures the level of variance captured by a construct 0.5 accepted" [47]

4.4 Discriminant validity for latent variables

Discriminant validity measures a construct's statistical difference from others [45]. It shows that different structures do not overlap. Constructions measure various concepts, although being connected. If the discriminant validity of the measures is demonstrated, the variance between concepts and measures should be bigger than between constructs [43, 48].

This investigation confirmed the measures' discriminant validity using Fornell and Larcker's proposed methodology (1981). The discriminant validity of the measures was validated in the present study, as stated by Furnell and Larcker (1981) and Afthanorhan, Ghazali [49]. In other words, it ensures that things with dissimilar structures do not conflict with one another. This means that the AVE in this study is greater than the correlation between variables since all of the variables have sufficient discriminant validity (see Table 3). The AVE findings for each variable are more closely related.

Table 3: Discriminant Validity Analysis.

Variables	KA	KM	QG	SK
	KA	KM	QG	SK
KA	**0.736**			
KM	0.696	**0.672**		
QG	0.646	0.654	**0.804**	
SK	0.705	0.696	0.632	**0.774**

Note: "The square root of the average variance extracted is represented by a diagonal, while the other elements reflect the correlation estimate"[50]

4.5 The Prediction Relevance of the Model

The R-square of an endogenous variable gives the variance of a variable specified by predictor variables [43, 51]. A higher R2 increases a model's predictive ability [52]. R2 must be above 0.75 to be significant, with a precision above 0.25. Table 4 shows that the dependent variables in this study's model matched the data well (QG R2 = 0.507). For learning outcome quality, one latent variable of independents (IV) explained most of the variation (DV). Depending on dependent factors, the impact of knowledge management on higher education outcomes at Bahraini private institutions varies by 52%.

$$R^2 = 1 - \frac{Rss}{TSS}$$

Table 4: R²

	R-square	R-square adjusted
QG	0.516	0.507

* "Higher value is preferred: 0.67 substantial, 0.33 average, 0.19 weak" [53]

4.6 Effect Size f2

Effect size is mainly used in this study to examine the influence and relationship of factors. The ideal effect size, according to Cohen [54], is less than 0.02 (0.02 = tiny, 0.15 = medium, and 0.35 = high). In Table 5, SK has the lowest effect size on QG, whereas KM has the strongest effect size impact among other variables on QG followed by KA on QG, as also shown in Figure 3.
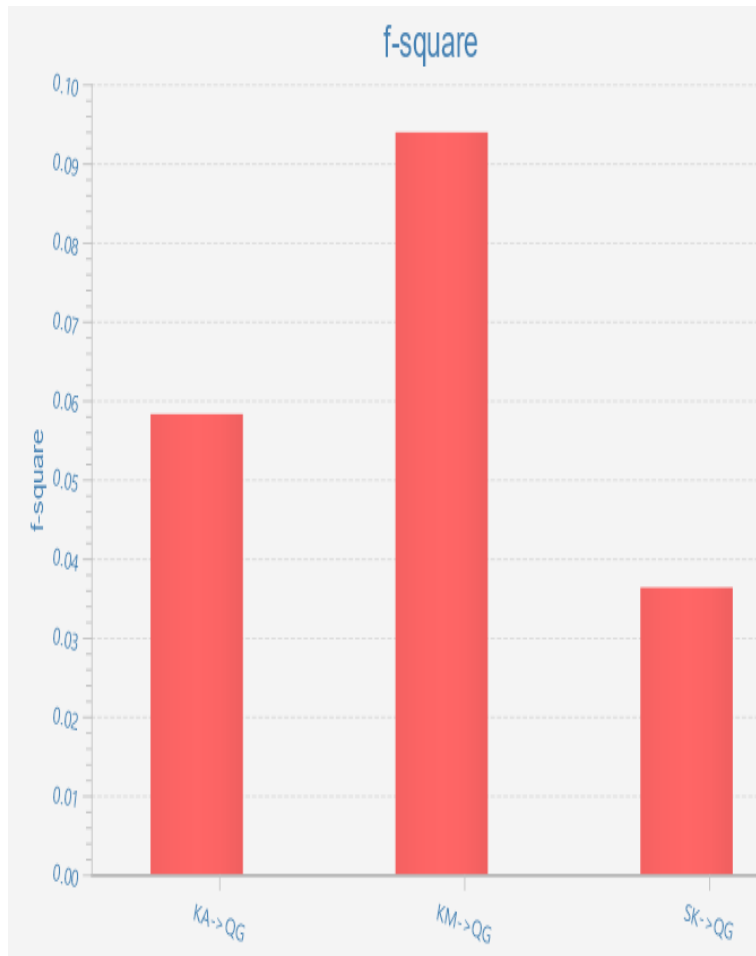
Fig. 3: Effect size f²

Table 5 and Figure 3 show that out of all the independent variables, KM → QG had the highest effect size (0.094). Impact size for the SK → QG was the lowest, but as any value above 0.36 was considered substantial by Cohen (2013) and this was still considered to be acceptable. The study's second variable for impact magnitude, KA → QG, was shown to provide the best outcomes.

Table 5: f²

Variables	KA	KM	QG	SK
KA			0.058	
KM			0.094	
QG				
SK			0.036	

Note: "f²= (R² included - R² excluded) / (1- R² included)"

Key:" f^2 0.02 weak, 0.15 moderate, 0.35 strong effects" [55, 56].

4.7 Assessment of the Inner Model and Hypotheses Testing Procedures

In this study, the bootstrapping approach was used with Smart PLS4 to guarantee statistical significance of the path coefficients (see Figure 4). As a natural follow-up, the researcher also calculated the p-values for the hypotheses, which can be seen in Table 6. The t-values for the various path coefficients were typically obtained by bootstrapping. Table 6 demonstrates that the quality of graduates, the dependent variable, has been significantly influenced by knowledge application (KA → QG), at the significant level of 0.01 (β = 0.268, = 0.254, SD=0.086, t=3.102, p=0.001), indicating that the p-values for the hypotheses were also obtained. To the same extent, QG served as the dependent variable and KA as the independent variable. Important results led the researcher to regard the null hypotheses as plausible. Moreover, the smaller SD (0.086) and the higher t-value (+1.96+) P 0.001 demonstrated that the result supported the hypothesis. Nonetheless, at 0.01, 0.05, and 0.03, the relationship between Knowledge Management and learning outcome quality was sustained (β = 0.321, = 0.339, SD=0.117, t=2.747, p=0.003). Meanwhile, at the 0.05 level (β =0.211, =0.205, SD=0.106,

t=2.01, p=0.0023), there was evidence for a relationship between the spread of information and sharing and producing graduates with high quality.

Table 6: Mean, STDEV, T values, P values, Decision.

NO	Hypothesis	β	μ	SD	T. Value	P values	status
H1	KA -> QG	0.268	0.267	0.086	3.102	0.001	Sig
H2	KM -> QG	0.321	0.339	0.117	2.747	0.003	Sig
H3	SK -> QG	0.211	0.205	0.106	2.001	0.023	Sig

"Beta (β); Values from −1 to +1. Assess significance and confidence intervals. p-values; Significance value is based on the degrees of freedom p < 0.05" [46].
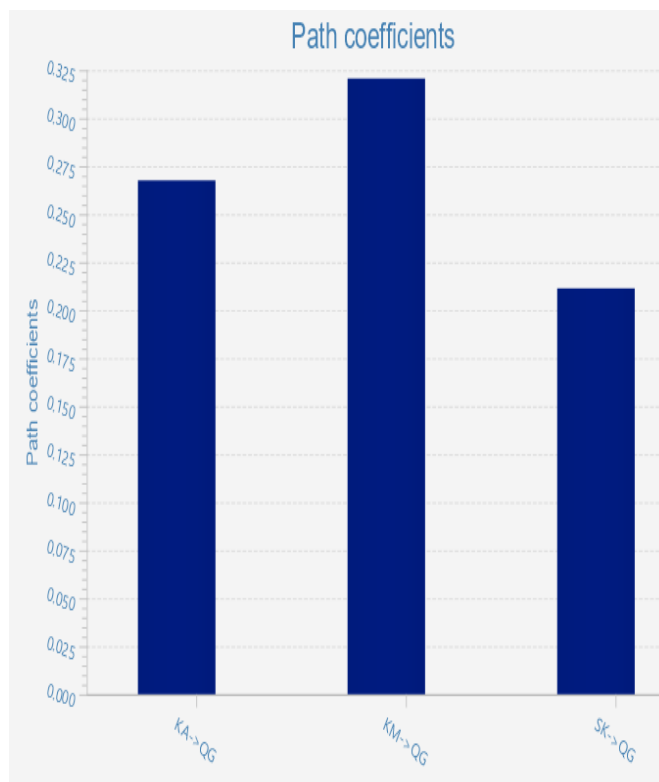

Fig. 4: Path Coefficients

Table 5: Cronbach's Alpha

Domains	Retesting	Cronbach's Alpha
Sign in the system	0.81	0.71

5 Discussion

Utilizing a web-based structured questionnaire, this study assessed knowledge management and its influencing factors at Bahraini private universities. According to studies, knowledge management has a substantial effect on the learning outcome quality. Knowledge Management (KM) was identified as the most influential variable on the quality of higher education outcomes in Bahraini private universities, with a total effect of $f^2$96%, and had a positive impact on the quality of higher education outcomes in Bahraini private universities. KM was seen as having the most statistically significant effect on the participants due to the highest mean and path coefficient among the rest variables as well as the strongest correlation with outcome among independent variables at the significance level of 0.01 01(β= 0.321, = 0.339, SD=0.117, t=2.747, p=0.003). Due to the highest mean and path coefficient among the other variables as well as the strongest correlation with outcome among independent variables at the significance level of 0.01 01, KM has deemed to have the most statistically significant effect on the participants (= 0.321, = 0.339, SD=0.117, t=2.747, p=0.003). This finding suggested that Knowledge Management (KM) is one of the most significant and influential variables of the participants at private universities in Bahrain. This result was similar to the findings of Ngoc-Tan and Gregar [57] who claimed that using knowledge management (KM) facilitates a better understanding of the activities and practices that have the potential

to enhance the performance of academic institutions and inspire innovation. Consequently, the managers of these institutions may use these projects and practices as recommendations.

The relevance of knowledge application in terms of the influence of knowledge application aspects on quality graduates is brought to light by the findings of the present study. According to the statistics, the Knowledge application had the highest t-value and the smallest SD, which suggested that it had the most significant beneficial influence on learning outcome quality at the significant level of 0.01 (= 0.268, = 0.254, SD=0.086, t=3.102, p=0.001). This conclusion is consistent with the body of research that backs up results indicating that the application of knowledge may be able to predict the quality of learning outcomes [58]. Because of this, the researcher acknowledges the possibility of other hypotheses owing to the mathematical proof. In addition, it is observed that a number of the influencing elements have a considerable favorable impact on the graduates of higher education. These findings are in line with the findings of a number of recently published research, including [16], and others [59]. In comparison to earlier studies, the present study shows that higher education outcomes in private colleges in Bahrain are much more effective than they were.

Unsurprisingly, the spread and sharing of information demonstrated the lowest correlation with the learning outcome quality among independent variables at the significance level of 0.01 (= 0.211, = 0.205, SD=0.106, t=2.001, p=0.0023). This was the case when the significance level was set at 0.01. This study suggested that spreading the knowledge and sharing it (also known as SK) is one of the most important factors which affect the quality of graduates produced by private universities in Bahrain. In light of this, the empirical conclusion reveals that SK has a positive and all-encompassing influence on the quality of learning outcomes of the private universities in Bahrain. In addition, the findings of the study indicate that SK raises an academic institution's awareness of the significance of its role and encourages knowledge sharing, knowledge exchange, communication, and interaction among its stakeholders (students, staff, and industry) for the purpose of producing graduates of higher quality, improving university performance, and enhancing the institution's ability to compete. The finding related to spreading and sharing information had a modest influence among other aspects of knowledge management that were researched in different studies such as [60].

6 Conclusion

Knowledge management can have a significant impact on the quality of higher education in universities. By Spread the knowledge and share, knowledge application universities can ensure that their students receive the highest quality education. Through knowledge sharing, universities can provide their students with up-to-date information, allowing them to stay ahead of the curve and remain competitive in the job market. Additionally, knowledge sharing can help universities maintain a high level of quality in their teaching and research. By sharing best practices and strategies, universities can ensure that their students receive the best education possible. Furthermore, knowledge sharing can also help universities collaborate more effectively with other universities, allowing them to share resources and ideas. In conclusion, knowledge management Spread the knowledge and share, knowledge application is an invaluable tool for universities to ensure the highest quality of higher education in Bahraini Private Universities.

This research reaches certain conclusions regarding Higher Education in Bahraini Private Universities by analyzing the relationships between Knowledge Managements, Spreading and Sharing Knowledge, Knowledge Application, and Quality Graduates. This study was not entirely representative of Bahraini Private Universities due to the small sample size. More study with a larger sample size is thus necessary to produce more generalizable conclusions.

Conflict of interest

The authors declare that there is no conflict regarding the publication of this paper.

References

[1] Jamoliddinovich, U.B., *Fundamentals of education quality in higher education.* INTERNATIONAL JOURNAL OF SOCIAL SCIENCE & INTERDISCIPLINARY RESEARCH ISSN: 2277-3630 Impact factor: 7.429, 2022. **11**(01): p. 149-151.

[2] Penuel, W.R., et al., *Principles of collaborative education research with stakeholders: Toward requirements for a new research and development infrastructure.* Review of Educational Research, 2020. **90**(5): p. 627-674.

[3] Serenko, A., *The Great Resignation: the great knowledge exodus or the onset of the Great Knowledge Revolution?* Journal of Knowledge Management, 2022(ahead-of-print).

[4] Quarchioni, S., S. Paternostro, and F. Trovarelli, *Knowledge management in higher education: a literature review and further research avenues.* Knowledge Management Research & Practice, 2022. **20**(2): p. 304-319.

[5] Benavides, L.M.C., et al., *Digital transformation in higher education institutions: A systematic literature review.* Sensors, 2020. **20**(11): p. 3291.

[6] Al-Shammari, M. and R. Waleed, *Entrepreneurial intentions of private university students in the kingdom of Bahrain.* International Journal of Innovation Science, 2018. **10**(1): p. 43-57.

[7] Alam, M. and F.-R. Lin, *Internalizing Sustainability into Research Practices of Higher Education Institutions: Case of a Research University in Taiwan.* Sustainability, 2022. **14**(15): p. 9793.

[8] Javed, A.R., et al., *Future smart cities requirements, emerging technologies, applications, challenges, and future aspects.* Cities, 2022. **129**: p. 103794.

[9] Aldabbus, S., *Project-based learning: Implementation & challenges.* International Journal of Education, Learning and Development, 2018. **6**(3): p. 71-79.

[10] Rasheed, M.I., et al., *Factors affecting teachers' motivation: An HRM challenge for public sector higher educational institutions of Pakistan (HEIs).* International Journal of Educational Management, 2016. **30**(1): p. 101-114.

[11] Shahzad, M., et al., *Does the interaction between the knowledge management process and sustainable development practices boost corporate green innovation?* Business Strategy and the Environment, 2021. **30**(8): p. 4206-4222.

[12] Iqbal, A., *Innovation speed and quality in higher education institutions: the role of knowledge management enablers and knowledge sharing process.* Journal of Knowledge Management, 2021. **25**(9): p. 2334-2360.

[13] Koloniari, M. and K. Fassoulis, *Knowledge management perceptions in academic libraries.* The journal of academic librarianship, 2017. **43**(2): p. 135-142.

[14] Leidner, D.E., *A Theory of Organizational Information Culture*, in *Digitalization Across Organizational Levels: New Frontiers for Information Systems Research*. 2022, Springer. p. 81-107.

[15] Jones, E.O., et al., *Perceived effect of knowledge management capacity on performance of cocoa health and extension division in Ghana.* International Journal of Agricultural Extension, 2022. **10**(1): p. 61-77.

[16] Shehabat, I.M. and M. Berrish, *Integration between knowledge management and total quality management in Jordanian Universities: Empirical study*, in *Research Anthology on Preparing School Administrators to Lead Quality Education Programs*. 2021, IGI Global. p. 1405-1436.

[17] Abeysekera, I., *Intellectual capital and knowledge management research towards value creation. From the past to the future.* Journal of Risk and Financial Management, 2021. **14**(6): p. 238.

[18] Qi, L., et al., *Research on knowledge gap identification method in innovative organizations under the "Internet+" environment.* Information, 2020. **11**(12): p. 572.

[19] Romero, C. and S. Ventura, *Educational data mining and learning analytics: An updated survey.* Wiley Interdisciplinary Reviews: Data Mining and Knowledge Discovery, 2020. **10**(3): p. e1355.

[20] Komogorova, M., et al., *Pedagogical Consolidation of Pupil-Athletes' Knowledge of Humanities.* Revista Romaneasca Pentru Educatie Multidimensionala, 2021. **13**(1): p. 168-187.

[21] Nooshinfard, F. and L. Nemati-Anaraki, *Success factors of inter-organizational knowledge sharing: a proposed framework.* The Electronic Library, 2014.

[22] Abualoush, S., K. Bataineh, and A.a. Alrowwad, *The role of knowledge management process and intellectual capital as intermediary variables between knowledge management infrastructure and organization performance.* Interdisciplinary Journal of Information, Knowledge, and Management, 2018. **13**: p. 279-309.

[23] Sahu, C.K., C. Young, and R. Rai, *Artificial intelligence (AI) in augmented reality (AR)-assisted manufacturing applications: a review.* International Journal of Production Research, 2021. **59**(16): p. 4903-4959.

[24] Okudan, O., C. Budayan, and I. Dikmen, *A knowledge-based risk management tool for construction projects using case-based reasoning.* Expert Systems with Applications, 2021. **173**: p. 114776.

[25] Ipe, M., *Knowledge sharing in organizations: A conceptual framework.* Human resource development review, 2003. **2**(4): p. 337-359.

[26] Busch, I.M., et al., *A Practical Framework for Academics to Implement Public Engagement Interventions and Measure Their Impact.* International Journal of Environmental Research and Public Health, 2022. **19**(20): p. 13357.

[27] Bednář, P., L. Danko, and L. Smékalová, *Coworking spaces and creative communities: Making resilient coworking spaces through knowledge sharing and collective learning.* European Planning Studies, 2021: p. 1-18.

[28] Tajpour, M., et al., *The effect of knowledge management on the sustainability of technology-driven businesses in emerging markets: The mediating role of social media.* Sustainability, 2022. **14**(14): p. 8602.

[29] Bock, G.-W., et al., *The impact of information overload and contribution overload on continued usage of electronic knowledge repositories.* Journal of Organizational Computing and Electronic Commerce, 2010. **20**(3): p. 257-278.

[30] Omotayo, F.O., *Knowledge Management as an important tool in Organisational Management: A Review of Literature.* Library Philosophy and Practice, 2015. **1**(2015): p. 1-23.

[31] Baraka, Y.E., *The importance of using total quality management methods in ensuring the quality of educational outputs Higher, a case study.* Algerian Journal of Economic Development, 2014. **1**.

[32] Brooks, D. and E.L. Boyer, *Campus life: In search of community*. 2019: InterVarsity Press.

[33] Alwan, A.-T.F., *Strategies for knowledge management and the optimal strategy for knowledge management in Iraqi University Libraries.* Journal of Economic Sciences, 2014. **36**(9).

[34] De Wit, H., *Internationalization in Higher Education: a Western Paradigm or a global, intentional and inclusive concept.* International Journal of African Higher Education, 2020. **7**(2): p. 31-37.

[35] Ahmed, F., et al., *High commitment work system and innovative work behavior: The mediating role of knowledge sharing.* Pakistan Journal of Commerce and Social Sciences (PJCSS), 2018. **12**(1): p. 29-51.

[36] Al-Husseini, S., I. El Beltagi, and J. Moizer, *Transformational leadership and innovation: the mediating role of knowledge sharing amongst higher education faculty.* International Journal of Leadership in Education, 2021. **24**(5): p. 670-693.

[37] Ali, A.A.A. and N. Habtoor, *Islamic Work Ethics and its Impact on Enhancing Organizational Commitment in Bahraini Private Educational Universities.* International Journal of Intellectual Human Resource Management (IJIHRM), 2022. **3**(02): p. 33-42.

[38] Ali, A.A.A., *THE RELATIONSHIP BETWEEN ISLAMIC WORK ETHICS AND EMPLOYEE PERFORMANCE AMONG MEDICAL STAFF IN THE PUBLIC HEALTH SECTOR IN BAHRAIN: EMPLOYEE COMMITMENT AS MEDIATING VARIABLE*. 2022, Universiti Sains Islam Malaysia.

[39] Almeer, M.S. and Q.A. Almaamari, *The Influence of Green Human Resource Management on Organizational Performance in Retail Sector in Bahrain.* Baltic Journal of Law & Politics, 2022. **15**(1): p. 362-376.

[40] Alzoraiki, M., O.b.A. Rahman, and M.A. Mutalib, *The effect of the dimensions of transformational leadership on the teachers' performance in the Yemeni public schools.* European Scientific Journal, 2018.

[41] Dawwas, M.I., *The Relationship Between HR Practices, Personality, and perceived organizational support.* Baltic Journal of Law & Politics, 2022. **15**(1): p. 305-330.

[42] Ali, A.A.A., et al., *Enhancing Contextual Performance through Islamic Work Ethics with Mediating role of Normative Commitment.* International Journal of Intellectual Human Resource Management (IJIHRM), 2022. **3**(02): p. 52-59.

[43] Ateeq, A., S. Ebrahim, and R. Al-Ghatam, *The impact of stress and its influencing factors among dentists during the COVID-19 pandemic in Kingdom of Bahrain.* F1000Research, 2022. **11**(930): p. 930.

[44] Bangwal, D., P. Tiwari, and P. Chamola, *Workplace design features, job satisfaction, and organization commitment.* Sage Open, 2017. **7**(3): p. 2158244017716708.

[45] Hair, J., et al., *An updated and expanded assessment of PLS-SEM in information systems research.* Industrial management & data systems, 2017.

[46] Cheah, J.-H., et al., *Multigroup analysis using SmartPLS: Step-by-step guidelines for business research.* Asian Journal of Business Research, 2020. **10**(3): p. I-XIX.

[47] Al Balushi, F.S.M., A.A.A. Ali, and M. Alzoraiki, *The Impact of Forecasting Strategy and Training and Development Strategy on Preparing Leadership Competencies Administrative Support in the Sultanate of Oman.* International Journal of Intellectual Human Resource Management (IJIHRM), 2022. **3**(01): p. 34-41.

[48] Schimmack, U., *The Implicit Association Test: A method in search of a construct.* Perspectives on Psychological

Science, 2021. **16**(2): p. 396-414.

[49] Afthanorhan, A., P.L. Ghazali, and N. Rashid. *Discriminant validity: A comparison of CBSEM and consistent PLS using Fornell & Larcker and HTMT approaches*. in *Journal of Physics: Conference Series*. 2021. IOP Publishing.

[50] Al-refaei, A.A.-A., et al., *An Integrated Mediating and Moderating Model to Improve Service Quality through Job Involvement, Job Satisfaction, and Organizational Commitment.* Sustainability, 2023. **15**(10): p. 7978.

[51] Ali, A.A.A., M. Alzoraiki, and N.S.M. Al Aghbas, *Working remotely, social isolation and access to support and communication during Covid-19 its influence on job performance.* International Journal of Intellectual Human Resource Management (IJIHRM), 2022. **3**(01): p. 23-33.

[52] Plonsky, L. and H. Ghanbar, *Multiple regression in L2 research: A methodological synthesis and guide to interpreting R2 values.* The Modern Language Journal, 2018. **102**(4): p. 713-731.

[53] Ateeq, A., et al., *IMPACT OF EMPLOYEE LOYALTY ON JOB PERFORMANCE: MEDIATING ROLE OF JOB SATISFACTION ON THE ExAMPLE OF ZAIN COMPANY, BAHRAIN.* Management, 2023. **21**(2): p. 470-481.

[54] Cohen, J., *Set correlation and contingency tables.* Applied psychological measurement, 1988. **12**(4): p. 425-434.

[55] Cohen, J., *Statistical power analysis for the behavioral sciences*. 2013: Routledge.

[56] Ali, A.A.A., et al., *Association between Islamic Work Ethics and Employee Commitment Among Medical Staff in the Public Health Sector in Bahrain.* International Journal of Intellectual Human Resource Management (IJIHRM), 2023.

[57] Ngoc-Tan, N. and A. Gregar, *Impacts of knowledge management on innovations in higher education institutions: An empirical evidence from Vietnam.* Economics and Sociology, 2018.

[58] Eliyana, A.W.A., *Systematic Literature Review of Knowledge Management Strategy for Optimization Budgeting Function on Indonesian Local Legislative Council.* management, 2019. **9**(4).

[59] Elkhder, E.E., et al., *Application of Knowledge Management in The Sudanese Universities: An Analytical Study.* Indonesian Journal of Education and Social Studies (IJESS), 2022. **1**(1): p. 12-27.

[60] Fathallah, k., *The impact of knowledge management on the quality of higher learning outcomes.* 2021.