

Beyond Social Relationships: The Organisational Role of Workplace Friendship in Driving Knowledge Management Processes

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Abstract

Knowledge management (KM) has become a strategic capability for organisations seeking to enhance innovation, organisational learning, and long-term performance. However, the effectiveness of KM depends not only on technological infrastructure but also on the quality of interpersonal relationships within the workplace. This study investigates the influence of the organisational dimension of workplace friendship (WF), represented by friendship opportunity and friendship prevalence, on four KM processes: knowledge generation, knowledge storage, knowledge sharing, and knowledge application. Drawing upon Social Capital Theory and the Knowledge-Based View, a conceptual model was developed and empirically tested using data collected from 437 academic staff members employed at public universities in Nineveh Governorate, Iraq. A cross-sectional survey design and convenience sampling technique were adopted, and the proposed model was analysed using Partial Least Squares Structural Equation Modelling (PLS-SEM) with SmartPLS 3.9. The findings reveal that WF exerts positive and statistically significant effects on all four KM processes, indicating that supportive interpersonal relationships enhance the creation, preservation, dissemination, and utilisation of organisational knowledge. The study contributes to the organisational behaviour and KM literature by demonstrating that WF constitutes a strategic organisational capability rather than merely a social phenomenon. The findings also provide practical guidance for university administrators seeking to cultivate collaborative organisational environments that strengthen KM capabilities, promote innovation, and improve institutional performance.



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1. Introduction

In today's knowledge-driven economy, knowledge has become one of the most valuable strategic resources enabling organisations to achieve sustainable competitive advantage, organisational resilience, and long-term performance. Unlike traditional production factors, knowledge is inherently dynamic, continuously evolving through learning, interaction, and organisational experience. Consequently, organisational success is no longer determined solely by the availability of financial, physical, or technological resources but increasingly depends on an organisation's ability to generate, preserve, disseminate, and effectively apply knowledge across all organisational functions (Abdulmuhsin, Valeri, et al., 2025). This shift has transformed knowledge management (KM) from a supportive managerial practice into a strategic organisational capability that underpins innovation, informed decision-making, organisational learning, and institutional sustainability (Dbesan et al., 2023). Nevertheless, despite significant investments in information technologies and KM systems, many organisations continue to struggle to leverage their knowledge assets effectively, suggesting that successful KM extends beyond technological infrastructure and formal organisational processes.

Recent advances in organisational behaviour and KM research increasingly recognise that knowledge is fundamentally social in nature. Although digital technologies facilitate the storage and transmission of explicit knowledge, they remain considerably less effective in transferring tacit knowledge, which is deeply embedded in individuals' experiences, skills, beliefs, and social interactions. The successful management of tacit knowledge therefore depends largely upon the quality of interpersonal relationships within organisations, particularly those characterised by trust, reciprocity, openness, and collaborative interaction. As organisations become increasingly knowledge-intensive, scholars have argued that social relationships should be regarded as strategic organisational resources that facilitate knowledge exchange, collective learning, and innovation rather than merely desirable aspects of workplace culture (Chen et al., 2025).

Among the various forms of interpersonal relationships, workplace friendship (WF) has emerged as one of the most influential yet relatively underexplored organisational phenomena. WF refers to voluntary, informal relationships that develop among organisational members beyond formal work requirements and are characterised by mutual trust, emotional support, shared values, and reciprocal assistance (Nielsen et al., 2000). Unlike purely professional interactions, WF create psychologically safe environments in which employees feel comfortable exchanging ideas, discussing challenges, and sharing both explicit and tacit knowledge without fear of criticism or opportunistic behaviour. Such relationships strengthen social cohesion, increase organisational commitment, enhance job satisfaction, stimulate creativity, and improve employee well-being, while simultaneously contributing to organisational innovation and performance (Chen et al., 2025; Mirando et al., 2026).

The organisational perspective of WF is generally conceptualised through two complementary dimensions: friendship opportunity and friendship prevalence. Friendship opportunity refers to the extent to which organisational structures, policies, and work environments provide employees with opportunities to interact socially and establish interpersonal relationships. Friendship prevalence, by contrast, reflects the degree to which genuine friendships are widespread throughout the organisation (Nielsen et al., 2000). Together, these dimensions represent the organisational conditions through which social capital develops and knowledge-intensive interactions become more likely. Contemporary research continues to adopt these two dimensions as the principal framework for examining WF and its organisational consequences (Wang et al., 2025).

From a theoretical perspective, WF can be viewed as an important mechanism through which organisations develop and leverage social capital. Social Capital Theory argues that trust, shared norms, reciprocity, and interpersonal networks facilitate the exchange of valuable resources, including knowledge, information, and expertise. Likewise, the Knowledge-Based View (KBV) conceptualises knowledge as the most strategically valuable organisational resource and argues that competitive advantage depends upon an organisation's ability to create, integrate, transfer, and apply knowledge effectively. Integrating these two theoretical perspectives suggests that WF represents an important organisational capability through which social relationships enhance KM processes. Employees who interact within trusting social networks are more willing to exchange experiences, transform tacit knowledge into explicit organisational knowledge, collaborate in solving complex problems, and collectively develop innovative solutions.

KM itself encompasses four interrelated processes: knowledge generation (KG), knowledge storage (KSt), knowledge sharing (KSh), and knowledge application (KA). These processes collectively enable organisations to create new knowledge, preserve valuable organisational expertise, disseminate information among employees, and translate knowledge into improved organisational practices and strategic decision-making. Considerable empirical evidence has demonstrated that effective KM improves innovation capability, organisational agility, learning capacity, and long-term performance (Dbesan et al., 2023). However, while previous studies have extensively investigated technological, leadership, and organisational antecedents of KM, comparatively little attention has been devoted to understanding how interpersonal relationships—and WF in particular—influence the effectiveness of these four core KM processes.

Although previous research has consistently linked WF with positive organisational outcomes such as employee satisfaction, organisational commitment, work engagement, innovation, and performance, its influence on KM remains insufficiently explored. Existing studies have often focused on isolated knowledge behaviours, particularly KSh, while overlooking the broader and more

comprehensive framework of KM processes. Furthermore, much of the available empirical evidence originates from Western or East Asian organisational contexts, limiting our understanding of how WF operates within developing countries and post-conflict environments. Higher education institutions, despite being quintessential knowledge-intensive organisations whose core mission depends upon creating, preserving, disseminating, and applying knowledge, remain particularly underrepresented in this area of research. Consequently, there remains limited empirical evidence explaining whether organisational friendship contributes equally to KG, KSt, KSh, and KA within university settings.

This gap is especially evident within Iraqi higher education institutions. Following years of institutional reconstruction and organisational transformation, universities in Iraq increasingly rely upon collaborative academic activities, interdisciplinary research, and organisational learning to improve educational quality and institutional performance. Nevertheless, empirical investigations examining the social determinants of KM within Iraqi universities remain scarce. Most previous studies conducted in the region have concentrated on technological infrastructure, leadership practices, organisational culture, or digital transformation while largely overlooking the role of WF as a strategic organisational resource capable of strengthening KM capabilities (Abdulmuhsin, Al-Taie, et al., 2025). Consequently, there remains a clear theoretical and empirical need to investigate how organisational friendship contributes to KM within knowledge-intensive higher education institutions operating in emerging and post-conflict contexts.

Against this background, the present study addresses this important research gap by examining the influence of the organisational dimension of WF, represented by friendship opportunity and friendship prevalence, on the four core KM processes: KG, KSt, KSh, and KA. Drawing upon Social Capital Theory and the Knowledge-Based View, this study proposes that WF constitutes a strategic organisational capability that facilitates trust, collaboration, and interpersonal interaction, thereby strengthening organisational knowledge processes. Accordingly, the primary objective of this research is to develop and empirically validate a conceptual framework explaining how WF enhances KM within public universities in Nineveh Governorate, Iraq.

This study contributes to the literature in several important ways. First, it extends WF research beyond its traditionally examined behavioural outcomes by positioning WF as a fundamental antecedent of comprehensive KM processes. Second, it integrates Social Capital Theory and the Knowledge-Based View to provide a stronger theoretical explanation of the mechanisms through which interpersonal relationships contribute to organisational knowledge capabilities. Third, it provides novel empirical evidence from Iraqi public universities—a context that has received limited scholarly attention despite its strategic importance as a knowledge-intensive sector undergoing institutional reconstruction. Finally, the findings offer practical guidance for university leaders and

policymakers seeking to develop organisational environments characterised by trust, collaboration, and knowledge exchange in order to enhance institutional innovation and long-term organisational performance.

The remainder of this paper is organised as follows. Section 2 reviews the relevant literature on WF and KM processes. Section 3 develops the research hypotheses and presents the conceptual framework. Section 4 describes the research methodology, including the measurement instrument, sampling procedure, and data analysis techniques. Section 5 presents the empirical findings from the measurement and structural model assessments. Section 6 discusses the findings in relation to the existing literature and theoretical perspectives. Finally, Section 7 concludes the paper by outlining its theoretical and practical contributions, acknowledging its limitations, and proposing directions for future research.

2. Theoretical Background

2.1 Workplace Friendship

Friendship has long played a fundamental and influential role in human life. The ancient Greek philosophers extensively discussed the nature and significance of friendship, recognising it as a vital social relationship that develops among friends and colleagues within the workplace. WF extends beyond formal professional relationships by incorporating emotional attachment, the exchange of personal information, emotional support, and social interactions outside working hours (Yavuzkurt & Kırıl, 2020). Establishing such friendships has become particularly important within contemporary electronic workplaces, where digitally mediated work environments often provide highly interactive social settings that encourage collaboration and create opportunities for innovation and career development. Employees frequently engage in informal discussions unrelated to work, including conversations about the weather, economic conditions, and current political events, thereby strengthening the social and emotional bonds among colleagues (Biçer & Büyükyılmaz, 2017).

The formation of WF also reflects individuals' inherent psychological and social need to establish meaningful interpersonal relationships with their colleagues. Consequently, employees cultivate friendships characterised primarily by mutual trust, open communication, and continuous interaction both within and beyond the workplace (Potgieter et al., 2018). WF may emerge across different organisational relationships, including those between supervisors and subordinates, among co-workers, and between employees and the organisation itself (Xiao et al., 2020). Such relationships generate a wide range of positive outcomes, not only by enhancing employees' well-being, motivation, and job performance, but also by fostering a healthier organisational climate and improving overall organisational effectiveness (Balaban & Özsoy, 2016).

The outbreak of the COVID-19 pandemic substantially transformed WF, particularly within virtual working environments. As many employees shifted to remote working arrangements under unprecedented conditions, the nature of interpersonal interaction changed considerably. One of the greatest challenges was the loss of face-to-face communication, which had traditionally facilitated informal conversations and spontaneous social interactions among colleagues. Consequently, maintaining interpersonal relationships through electronic communication became increasingly difficult (Ojo et al., 2021). Furthermore, the pandemic generated widespread stress and uncertainty, affecting employees' ability to sustain strong WF. Individuals were simultaneously confronted with health concerns, financial pressures, and increased social responsibilities, all of which complicated the maintenance of meaningful interpersonal relationships at work (Alnazly et al., 2021).

Despite these challenges, many organisations successfully adapted by implementing initiatives designed to preserve WF during the pandemic. Numerous organisations introduced virtual social gatherings, online team-building activities, and informal digital events to encourage social interaction among employees. Likewise, many workplaces promoted regular virtual check-ins and one-to-one meetings to maintain interpersonal connections, strengthen mutual support, and preserve employees' sense of belonging despite prolonged physical separation (Schuster & Cotten, 2022).

From an organisational perspective, WF represents an important contextual factor that facilitates knowledge creation, KSh, and knowledge flows by providing a supportive social environment that encourages collaboration and interpersonal interaction. The organisational dimension of WF comprises two principal components: friendship opportunity and friendship prevalence. Friendship opportunity refers to the extent to which the work environment provides employees with opportunities to interact and develop social relationships, whereas friendship prevalence reflects the degree to which actual friendships are widespread within the organisation (Nielsen et al., 2000). Recent studies continue to recognise these two dimensions as the principal theoretical and measurement framework for investigating WF in contemporary organisational settings (Wang et al., 2025).

2.2 Knowledge Management Processes

The COVID-19 pandemic, which emerged globally in 2019, created unprecedented challenges across all sectors and significantly disrupted organisational business environments. In response to these challenges, organisations sought to develop capabilities that would enable them to mitigate emerging threats while simultaneously capitalising on new opportunities through continuous improvement of their activities and operational processes. Among the most critical of these capabilities are KM processes, which must operate with both speed and precision. The pandemic compelled organisations to acquire knowledge rapidly from external sources in order to remain informed about rapidly evolving

market conditions, transform existing knowledge into organisational value, and distinguish reliable information from the large volume of misinformation that typically accompanies periods of crisis (Zieba & Bongiovanni, 2022). Accordingly, KM processes provide the mechanisms through which individuals, teams, and organisational subsystems acquire, create, store, share, retain, and effectively utilise knowledge to achieve competitive advantage, maximise organisational knowledge assets, promote positive organisational behaviours, improve decision-making quality, and ultimately enhance organisational performance (Dei, 2018).

KM consists of four fundamental processes. The first is KG, which is widely regarded as one of the most influential determinants of successful KM implementation (Demir et al., 2021). KG focuses on developing new knowledge while ensuring its effective dissemination throughout the organisation, thereby serving as the cornerstone of an effective organisational strategy. Consequently, organisations must continuously invest in generating new knowledge. This dynamic process incorporates both tacit and explicit knowledge and contributes to developing new organisational knowledge or replacing obsolete knowledge with more valuable alternatives that support organisational development and innovation (Ceptureanu et al., 2018).

The second process is KSt, which constitutes one of the core components of KM. Through this process, organisations establish knowledge repositories and organisational memory systems that preserve valuable knowledge and facilitate its retrieval whenever required (Karageorgou, 2022). Organisations constantly face the risk of unintentionally losing accumulated knowledge; therefore, effective KSt is essential for preserving organisational memory. Organisational memory may be defined as a repository of knowledge, skills, experiences, and organisational insights that retains information beyond the time of its initial creation, allowing it to be retrieved and reused whenever necessary (Paliszkiewicz et al., 2017). It encompasses the organisation's accumulated experiences, distinctive expertise, and specialised competencies, while integrating organisational processes and structures to ensure that critical knowledge is retained even when experienced employees leave the organisation (Archer-Brown & Kietzmann, 2018).

The third process is KSh, which refers to the exchange of knowledge, ideas, expertise, and skills among individuals, departments, or organisations. KSh may occur internally between employees and organisational units or externally with partner organisations, research centres, and other institutions (Franco & Mariano, 2007). It represents a fundamental enabler of effective KM. KSh comprises two complementary dimensions: knowledge donation (supply) and knowledge collection (demand). The donation dimension encourages employees to contribute their knowledge for the benefit of colleagues and organisational stakeholders, whereas the collection dimension focuses on employees' willingness to acquire knowledge from others, thereby strengthening the organisation's

collective knowledge base (Abu-Shanab et al., 2014). Through these mechanisms, KSh facilitates innovation, collaboration, organisational learning, problem-solving capabilities, improved organisational performance, and sustainable competitive advantage (Sohal, 2019).

The final process is KA, which refers to the effective utilisation of knowledge that has been created, acquired, or stored to solve organisational problems, improve operational efficiency, enhance decision-making, and strengthen organisational performance. KA represents one of the most critical stages of the KM cycle because it enables organisations to transform available knowledge into practical organisational value (Chhim et al., 2017). It is therefore essential to ensure that knowledge generated, collected, organised, and transferred throughout the organisation is effectively applied in practice. Knowledge creates value only when it is translated into actions and informed decisions that enable organisations to achieve their strategic objectives and long-term goals (Gürlek, 2020).

3. Hypotheses Development

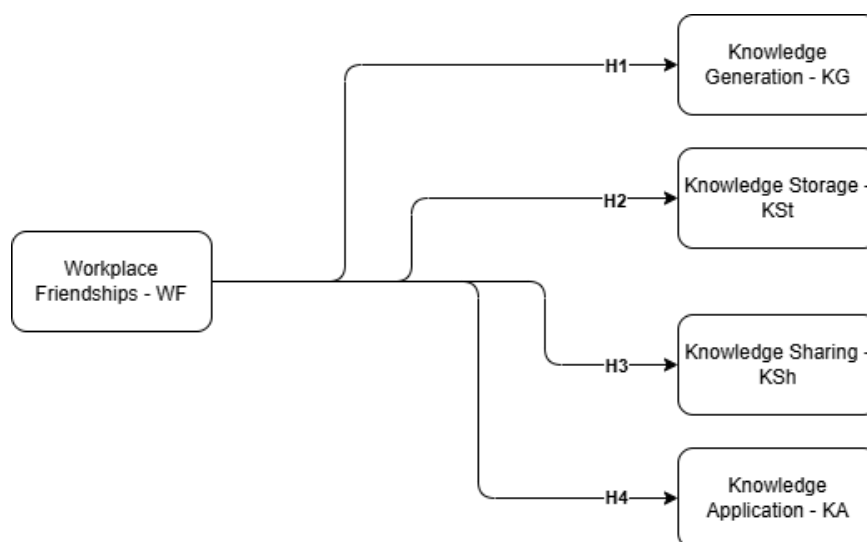
The organisational dimension of WF is widely recognised as playing a pivotal role in organisational processes and overall organisational effectiveness. It provides employees with social support while fostering the interpersonal influence, collaboration, and trust required for professional success, career advancement, and enhanced job performance. Owing to the trust and commitment inherent in WF, previous research has consistently demonstrated that WF generates positive outcomes for both employees and organisations at the individual and organisational levels (Omuris, 2019). Specifically, WF promotes positive work behaviours, including enhanced job significance (Mao et al., 2015), higher-quality team-member exchange (Tse et al., 2008), greater workplace well-being, and increased innovation (Lu et al., 2017). Consequently, organisations characterised by stronger WF often experience higher employee productivity and performance, greater job satisfaction, reduced turnover intentions, lower employee attrition, and stronger acceptance of organisational values.

The organisational dimension of WF consists of two principal components: friendship opportunity and friendship prevalence. Friendship opportunity refers to the extent to which employees are provided with opportunities to become acquainted with colleagues, communicate with them, and establish informal interpersonal relationships within the organisation (Biçer & Büyükyılmaz, 2017). Friendship prevalence, by contrast, reflects the extent to which organisations facilitate the formation of friendships by bringing together like-minded individuals and encouraging collaborative teams characterised by strong interpersonal relationships and mutual support (Nielsen et al., 2000).

Conversely, KM processes—including KG, KSt, KSh, and KA—represent the mechanisms through which individuals, teams, and organisational subsystems acquire, generate, store, share, retain,

and effectively utilise knowledge to achieve organisational objectives (Dei, 2018). Based on these theoretical arguments, the conceptual framework illustrated in Figure 1 is proposed.

Figure 1. Study's conceptual model



Source: Authors' own work

3.1 Workplace Friendship and Knowledge Generation

One of the most significant organisational outcomes of WF is its contribution to KG. The organisational dimension of WF, represented by friendship opportunity and friendship prevalence, facilitates KG by fostering trust and emotional support among colleagues. Interpersonal trust encourages open communication, constructive dialogue, and the free exchange of ideas. Friendship prevalence is typically associated with higher levels of trust, greater willingness to interact, and stronger social relationships extending beyond the workplace. As employees spend more time together and develop trusting relationships, organisations benefit from increased job satisfaction, greater KSh, stronger organisational commitment, enhanced employee loyalty, improved social support, more effective communication and coordination, and the accumulation of valuable experience (Biçer & Büyükyılmaz, 2017). Furthermore, when employees are provided with greater opportunities to establish WF, they communicate more effectively and become more willing to collaborate in solving problems and developing innovative solutions. Organisations that encourage interpersonal relationships create an environment in which employees voluntarily exchange knowledge and ideas, thereby facilitating knowledge creation (Helmy et al., 2020). Accordingly, the following hypothesis is proposed:

H1: The organisational dimension of workplace friendship positively influences knowledge generation within universities.

3.2 Workplace Friendship and Knowledge Storage

Friendship opportunity and friendship prevalence also contribute positively, albeit indirectly, to KSt. Opportunities to establish friendships within and beyond the workplace, together with informal communication among colleagues, facilitate the preservation of valuable organisational knowledge within organisational repositories. Such interactions improve organisational performance and enhance productivity by encouraging employees to exchange experiences, provide mutual assistance, and collaboratively solve work-related problems. Consequently, WF reduces job stress, alleviates workplace tension, improves work quality, enhances productivity, strengthens organisational commitment, and increases job satisfaction (Hsu et al., 2020). Similarly, WF has been shown to strengthen research collaboration among academics (Sahibzada, Jianfeng, Latif, Shah, & Sahibzada, 2020). Although organisations cannot compel employees to become friends, they can create organisational conditions that encourage friendship formation. Team-based work, for example, provides an effective mechanism for fostering interpersonal relationships by encouraging employees to collaborate closely and exchange knowledge and expertise (Ibrahim & Fayyad, 2022). Therefore, the following hypothesis is proposed:

H2: The organisational dimension of workplace friendship positively influences knowledge storage within universities.

3.3 Workplace Friendship and Knowledge Sharing

WF also makes a substantial contribution to KSh by encouraging colleagues to support one another, exchange expertise, and strengthen organisational learning, thereby facilitating both individual and organisational goal attainment (Nguyen et al., 2021). Employees who are willing to communicate with colleagues, provide support, and learn from one another are generally more inclined to share their knowledge (Lam & Lambermont-Ford, 2010). They are also more willing to collaborate, exchange reports, documents, teaching materials, and other organisational resources, while participating in seminars, conferences, and regular training programmes that facilitate knowledge dissemination (Al Yami et al., 2021). Moreover, effective KSh depends upon the integration of organisational and technological factors that support collaborative interaction and strengthen WF within electronic work environments (Shakir et al., 2022). Accordingly, the following hypothesis is proposed:

H3: The organisational dimension of workplace friendship positively influences knowledge sharing within universities.

3.4 Workplace Friendship and Knowledge Application

Friendship opportunity and friendship prevalence also positively influence KA by shaping the extent to which employees utilise their knowledge and skills within the workplace. One of the primary mechanisms underlying this relationship is the exchange of information and expertise. Employees who maintain strong friendships with their colleagues are more likely to exchange valuable knowledge, thereby enhancing collaboration and improving organisational performance (Shalley et al., 2004). This occurs because friendship is built upon mutual trust, which fosters an organisational culture characterised by openness, cooperation, and psychological safety. Employees are consequently more willing to seek advice, provide assistance, and exchange new perspectives that enhance both individual and organisational performance (Kuo et al., 2014). Furthermore, WF facilitates KA through the development of social capital. Social capital refers to the valuable resources embedded within social networks, including access to information, expertise, and organisational support. Employees who maintain strong WF generally possess higher levels of social capital (Burt, 2003). Such relationships provide access to broader organisational networks, enabling employees to obtain the information, resources, and assistance necessary for effectively applying their knowledge and competencies in the workplace. Therefore, the following hypothesis is proposed:

H4: The organisational dimension of workplace friendship positively and significantly influences knowledge application within universities.

4. Methodology

4.1 Questionnaire Development

To empirically examine the proposed conceptual model, a structured questionnaire was developed and administered to a sample of academic staff employed at public universities in Nineveh Governorate, northern Iraq. Nineveh represents a particularly relevant research context, as the province has undergone extensive post-conflict reconstruction following the destruction caused by the war against the Islamic State of Iraq and Syria (ISIS) in 2016 (Abdulmuhsin, Al-Taie, et al., 2025). This context provides a unique organisational environment in which workplace relationships and KM practices are particularly important for institutional rebuilding and sustainable development .

The organisational dimension of WF was specified as the independent construct and measured using six items adapted from the WF scale developed by Nielsen et al. (2000). The dependent constructs comprised the four KM processes: KG, KSt, KSh, and KA. These constructs were measured

using twelve items adapted from established KM literature (Abdulmuhsin, Valeri, et al., 2025; Al Yami et al., 2021; Raudeliuniene et al., 2020).

The questionnaire consisted of six sections. Section A collected respondents' demographic information, whereas Sections B–F measured the study constructs: (B) Workplace Friendship (WF); (C) Knowledge Generation (KG); (D) Knowledge Storage (KSt); (E) Knowledge Sharing (KSh); and (F) Knowledge Application (KA). Collectively, these sections comprised eighteen measurement items used to operationalise the study variables – see the Appendix A. All measurement items were adapted and refined following an extensive review of the relevant literature and were subsequently evaluated by academic experts to ensure their content validity and suitability for the objectives of the present study. Responses were recorded using a five-point Likert scale ranging from 1 (strongly disagree) to 5 (strongly agree). To minimise response bias, the wording and formatting of the questionnaire items were standardised across all constructs.

The questionnaire was prepared in both English and Arabic. To ensure linguistic equivalence, the Arabic version was produced using the back-translation technique. An independent bilingual translator, whose native language was Arabic, translated the questionnaire back into English. The original and back-translated versions were then carefully compared by professional academics and the bilingual translator until complete conceptual equivalence was achieved. The use of back translation follows internationally recognised procedures for cross-language survey research (Alkhwaldi & Abdulmuhsin, 2021).

Using a convenience sampling approach within a cross-sectional research design, 440 questionnaires were distributed to academic staff. A total of 439 questionnaires were returned, representing an exceptionally high response rate. Following data screening, two questionnaires were excluded because they were incomplete or unsuitable for statistical analysis. Consequently, 437 valid responses were retained for subsequent analyses. The data were analysed using SmartPLS version 3.9 and IBM SPSS Statistics version 26.

4.2 Population and Sampling

The target population comprised academic staff employed at public universities located in Nineveh Governorate, Iraq. Academic institutions provide an appropriate context for investigating WF because they are characterised by extensive professional and social interactions that facilitate the development of interpersonal relationships among colleagues. Furthermore, universities are recognised as knowledge-intensive organisations in which educational, research, and administrative activities rely heavily on the creation, exchange, and application of knowledge. Consequently, they

provide an ideal setting for examining the relationship between the organisational dimension of WF and KM processes.

Given the large size of the target population and its distribution across several public universities within Nineveh Governorate, convenience sampling was employed to collect the research data. Although this non-probability sampling technique limits the generalisability of the findings, it enabled efficient access to a broad cross-section of academic staff and provided an appropriate sample for testing the proposed conceptual model. The final sample consisted of 437 respondents, which exceeds the minimum sample size recommended for structural equation modelling and provides sufficient statistical power to test the proposed hypotheses with a high degree of reliability and precision.

Questionnaires were distributed across multiple public universities in Nineveh Governorate to ensure adequate representation of academic staff with diverse demographic and professional characteristics. This diversity enhanced the study's ability to investigate the relationship between the organisational dimension of WF—represented by friendship opportunity and friendship prevalence—and the four KM processes. Prior to data analysis, incomplete and invalid questionnaires were removed, and only fully completed responses were retained for hypothesis testing and structural model evaluation. The demographic characteristics of the respondents are presented in Table 1.

5. Results

5.1 Measurement Model Assessment

The measurement model was evaluated using SmartPLS version 3.9 to establish its reliability and validity. Specifically, the assessment focused on convergent validity, discriminant validity, and internal consistency reliability, following the recommended procedures for Partial Least Squares Structural Equation Modelling (PLS-SEM).

Convergent validity was assessed using four widely accepted criteria: Cronbach's alpha (α), composite reliability (CR), and the average variance extracted (AVE). Consistent with the recommendations of Hair et al. (2019), indicator loadings, Cronbach's alpha, and composite reliability should exceed 0.70, while AVE should be greater than 0.50. The results presented in Table 2 demonstrate that all measurement items satisfied these recommended thresholds. Specifically, all indicator loadings – see Figure 2 - for the five constructs—WF, KG, KSt, KSh, and KA—exceeded the minimum acceptable values, indicating that each indicator adequately measured its intended latent construct. Consequently, none of the measurement items required removal from the model.

Table 1. Respondents' demographics.

Categories	Details	#	%
Gender	<i>Male</i>	269	61.569
	<i>Female</i>	168	38.44
Academic Title	<i>Professor</i>	55	12.59
	<i>Assistant Professor</i>	101	23.11
	<i>Lecturer</i>	132	30.21
	<i>Assistant Lecturer</i>	149	34.10
Age (#years)	<i>Less than 25</i>	63	14.42
	<i>25 – 33</i>	94	21.51
	<i>34 – 42</i>	161	36.84
	<i>53 – 61</i>	85	19.45
	<i>More than 61</i>	34	7.78
Job Experience (#years)	<i>Less than 1</i>	45	10.30
	<i>1 – 9</i>	72	16.48
	<i>10 – 18</i>	139	31.81
	<i>19 – 27</i>	124	28.38
	<i>More than 27</i>	57	13.04

Notes: N=437

Source: Authors' own work

Table 2. Convergent validity

Constructs	Cronbach's Alpha	rho_A	Composite Reliability	Average Variance Extracted (AVE)
KA	0.876	0.876	0.924	0.801
KG	0.950	0.951	0.968	0.909
KSh	0.936	0.939	0.959	0.887
KSt	0.906	0.913	0.941	0.842
WF	0.945	0.948	0.957	0.786

Source: Authors' own work

Discriminant validity was subsequently examined to determine the extent to which each latent construct was empirically distinct from the remaining constructs within the measurement model (Rönkkö & Cho, 2020). In variance-based structural equation modelling, particularly PLS-SEM, discriminant validity is commonly evaluated using multicollinearity diagnostics, the Fornell–Larcker criterion, and the Heterotrait–Monotrait ratio (HTMT) (Henseler et al., 2014).

Multicollinearity refers to the existence of excessively high correlations among the independent constructs within a structural model, which may adversely affect the accuracy and stability of parameter estimates and lead to biased interpretations of the regression coefficients (Shrestha, 2020). To assess this issue, the Variance Inflation Factor (VIF) was employed, as it represents one of the most widely accepted diagnostic measures of multicollinearity. VIF values below 5.0 indicate that multicollinearity is not a significant concern. As reported in Table 3, all VIF values remained well

below the recommended threshold, confirming the absence of problematic multicollinearity and supporting the robustness of the structural model. The Fornell–Larcker criterion was then applied to assess discriminant validity by comparing the square root of each construct’s AVE with its correlations with the remaining constructs. According to Fornell and Larcker (1981), discriminant validity is established when the square root of the AVE for each construct exceeds its correlations with all other constructs in the model.

Table 3. Variance Inflation Factors

Items	Outer VIF	Items	Outer VIF	Items	Outer VIF
WF_item1	4.520	KG_item1	4.909	KSh_item1	4.560
WF_item2	1.980	KG_item2	4.885	KSh_item2	3.633
WF_item3	3.637	KG_item3	4.264	KSh_item3	4.212
WF_item4	4.107	KSt_item1	3.132	KA_item1	2.277
WF_item5	3.667	KSt_item2	3.234	KA_item2	2.439
WF_item6	4.086	KSt_item3	2.651	KA_item3	2.420

Source: Authors’ own work

In addition, discriminant validity was evaluated using the Heterotrait–Monotrait ratio (HTMT), which has been recognised as one of the most rigorous methods for assessing construct distinctiveness. Although some researchers recommend a threshold of 0.85, others suggest a more liberal cut-off value of 0.90. HTMT values exceeding these thresholds indicate inadequate discriminant validity (Henseler et al., 2014). As shown in Table 4, all constructs demonstrated satisfactory discriminant validity. The square root of the AVE for each construct exceeded its corresponding inter-construct correlations, thereby satisfying the Fornell–Larcker criterion. Furthermore, all HTMT values were below the conservative threshold of 0.85, providing additional evidence that the study constructs are empirically distinct and free from substantial conceptual overlap (Fornell & Larcker, 1981).

Finally, the internal consistency reliability of the measurement instrument was assessed using Cronbach’s alpha and composite reliability (CR). As reported in Table 2, all Cronbach’s alpha and composite reliability coefficients exceeded the recommended minimum value of 0.70, indicating a high degree of internal consistency and measurement reliability. These findings confirm that the measurement model possesses strong psychometric properties and that the questionnaire items consistently measure their intended constructs. Consequently, the measurement model was considered both reliable and valid, providing an appropriate basis for subsequent structural model evaluation and hypothesis testing.

Table 4. Discriminant validity

Constructs	KA	KG	KSh	KSt	WF
KA	0.895	<i>0.246</i>	<i>0.278</i>	<i>0.273</i>	<i>0.454</i>
KG	0.224	0.953	<i>0.245</i>	<i>0.190</i>	<i>0.443</i>
KSh	0.252	0.231	0.942	<i>0.136</i>	<i>0.472</i>
KSt	0.244	0.177	0.126	0.918	<i>0.397</i>
WF	0.414	0.420	0.446	0.369	0.887

Notes: Bold number= $\sqrt{AVE}$, *Italic numbers*=HTMT

Source: Authors' own work

5.2 Structural Model Assessment

The assessment of the structural model constitutes a fundamental stage in PLS-SEM, as it evaluates the validity of the proposed conceptual framework and its ability to explain the hypothesised relationships among the study constructs. This evaluation determines the extent to which the empirical data support the theoretical assumptions underpinning the model while simultaneously assessing the strength and significance of the causal relationships among the latent variables. Structural model assessment typically involves several key statistical indicators, including the coefficient of determination (R^2), effect size (f^2), path coefficients (β), and the associated t-values and p-values used to evaluate the significance of the proposed hypotheses. Collectively, these indicators provide a comprehensive evaluation of the explanatory capability and predictive performance of the structural model (Garomssa et al., 2022).

To further assess the overall model fit, two widely recommended goodness-of-fit indices were examined: the Standardised Root Mean Square Residual (SRMR) and the Normed Fit Index (NFI). The NFI ranges from 0 to 1, with higher values indicating a better model fit. Meanwhile, the coefficient of determination (R^2) represents the proportion of variance in each endogenous construct explained by its predictor variables and is commonly used to evaluate the explanatory power of the structural model. Higher R^2 values indicate greater explanatory capability, while values exceeding 0.10 are generally considered acceptable in behavioural and management research (Hair et al., 2019). Furthermore, the contribution of each exogenous construct to the prediction of an endogenous construct was assessed using Cohen's effect size (f^2). According to Cohen (2013), f^2 values of 0.02, 0.15, and 0.35 indicate small, medium, and large effect sizes, respectively. The proposed hypotheses were tested using SmartPLS version 3.9, and the results of the structural model evaluation are presented in Table 5, while Figure 2 provides a graphical representation of the structural model and the hypothesised relationships.

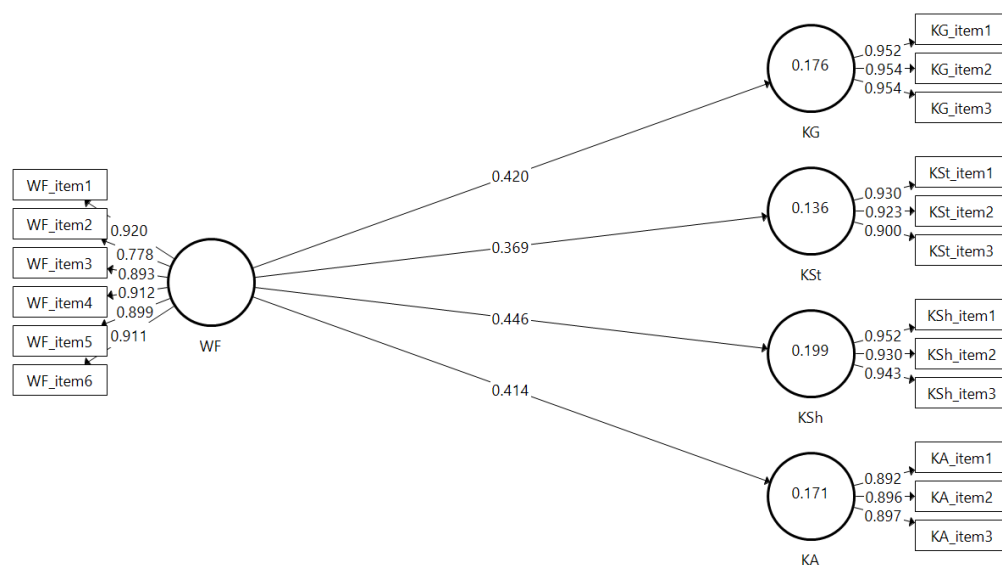
Table 5. The path analysis of study model

Relationships	β	SD	T Statistics	P Values	f^2	R^2	Results?
WF $\rightarrow$ KG	0.420	0.038	10.963	0.000	0.214	0.176	Accept
WF $\rightarrow$ KSt	0.369	0.041	9.067	0.000	0.157	0.136	Accept
WF $\rightarrow$ KSh	0.446	0.043	10.413	0.000	0.248	0.199	Accept
WF $\rightarrow$ KA	0.414	0.043	9.644	0.000	0.207	0.171	Accept

Note: β = Standard regression, SD = Standard Deviation.

NFI = 0.928, SRMR = 0.030

Source: Authors' own work

Figure 2. Study's structural model

Source: Authors' own work

The empirical findings reveal that WF exerts a positive and statistically significant direct effect on KG ($\beta = 0.420$, $t = 10.963$, $p < 0.001$), thereby supporting H1. This finding is consistent with the results reported by Biçer and Büyükyılmaz (2017) and Abdulmuhsin, Al-Taie, et al. (2025). Similarly, WF demonstrates a positive and significant direct effect on KSt ($\beta = 0.369$, $t = 9.067$, $p < 0.001$), providing empirical support for H2 and corroborating the findings of Hsu et al. (2020) and Abdulmuhsin, Valeri, et al. (2025). The results further indicate that WF has a positive and significant direct influence on KSh ($\beta = 0.446$, $t = 10.413$, $p < 0.001$). Accordingly, H3 is supported, and the findings are consistent with those reported by Shakir et al. (2022) and Abdulmuhsin, Al-Taie, et al. (2025). Finally, WF exhibits a positive and statistically significant direct effect on KA ($\beta = 0.414$, $t = 9.644$, $p < 0.001$). Therefore, H4 is supported, confirming that stronger WF facilitate employees'

ability to apply organisational knowledge effectively. This result is consistent with the findings of Kuo et al. (2014) and Abdulmuhsin, Valeri, et al. (2025).

The structural model also demonstrated satisfactory explanatory power and model fit. The values of R^2 and f^2 indicate that the proposed model possesses adequate explanatory capability for the endogenous constructs. Furthermore, the model fit indices satisfy the recommended thresholds, with an SRMR value of 0.030 and an NFI value of 0.928, indicating that the proposed structural model exhibits an acceptable level of fit to the observed data and provides robust support for the hypothesised relationships.

6. Discussion

The present study sought to investigate the influence of the organisational dimension of WF on KM processes within public universities in Nineveh Governorate, Iraq. The study was founded on the central premise that positive interpersonal relationships among employees represent not merely a social phenomenon but also a valuable organisational resource capable of enhancing KM processes by fostering a work environment characterised by trust, collaboration, and openness. Accordingly, the study examined the effects of WF on the four core KM processes: KG, KSt, KSh, and KA.

The empirical findings provide strong support for the proposed conceptual model by demonstrating that the organisational dimension of WF exerts a positive and statistically significant influence on all four KM processes (Abdulmuhsin, Al-Taie, et al., 2025). These findings suggest that providing employees with opportunities to establish WF and promoting the prevalence of positive interpersonal relationships contribute to creating an organisational climate that encourages continuous learning, knowledge exchange, and organisational knowledge development. This finding is consistent with contemporary KM literature, which argues that the success of knowledge-intensive organisations depends not only on technological infrastructure and formal organisational systems but also on supportive social environments that facilitate knowledge creation, transfer, and utilisation. The following discussion interprets each hypothesis in light of the relevant theoretical perspectives and previous empirical research.

The results indicate that WF has a positive and significant influence on KG. This finding suggests that providing opportunities for employees to establish friendly interpersonal relationships creates an organisational environment that stimulates creativity, encourages innovative thinking, and facilitates the development of new ideas. KG is inherently dependent upon social interaction, the exchange of experiences, and exposure to diverse perspectives—all of which are strengthened through friendships characterised by mutual trust and emotional support (Abdulmuhsin, Valeri, et al., 2025). Employees who feel psychologically comfortable communicating with their colleagues are more

willing to express novel ideas, discuss alternative viewpoints, and collaboratively refine innovative solutions, thereby contributing to organisational knowledge creation. These findings are consistent with Social Capital Theory, which proposes that positive social relationships constitute valuable organisational resources that facilitate collective learning and innovation. They also support the Knowledge-Based View (KBV) of the firm, which conceptualises knowledge as a strategic organisational resource created through continuous interaction among organisational members.

The study further demonstrates that WF positively influences KSt, highlighting the important role that interpersonal relationships play in preserving organisational knowledge and preventing knowledge loss. Friendly workplace relationships encourage employees to document their expertise, share valuable experiences, and record successful practices more consistently because they develop a stronger sense of organisational commitment and collective responsibility. Furthermore, mutual trust reduces employees' tendency to hoard knowledge and encourages them to transform tacit knowledge into explicit organisational knowledge that can be systematically stored and retrieved for future use (Abdulmuhsin, Valeri, et al., 2025). This finding is consistent with Social Capital Theory, which emphasises that trust, shared norms, and social cohesion strengthen knowledge preservation within organisational networks. Likewise, the result aligns with the Knowledge-Based View, which argues that sustainable competitive advantage depends not only on creating knowledge but also on an organisation's ability to retain, organise, and preserve its strategic knowledge assets over time.

Similarly, the findings provide empirical support for the positive relationship between WF and KSh. This relationship can be explained by the fact that WF creates an organisational climate characterised by trust, cooperation, and openness, thereby reducing the psychological and organisational barriers that frequently inhibit knowledge exchange among employees. As friendly relationships become more widespread, both formal and informal communication increase, encouraging employees to share their expertise, experiences, and professional knowledge without fear of losing their individual competitive advantage (Abdulmuhsin, Al-Taie, et al., 2025). This finding strongly supports Social Exchange Theory, which suggests that relationships built upon trust and reciprocity motivate individuals to share valuable resources, including knowledge, with the expectation of receiving future support from colleagues. The findings also reinforce Social Capital Theory, which views strong interpersonal networks as effective channels through which knowledge flows across the organisation, thereby enhancing organisational learning and improving overall organisational performance.

Finally, the results demonstrate that WF exerts a positive and statistically significant influence on KA, indicating that the benefits of WF extend beyond knowledge creation and sharing to the effective utilisation of organisational knowledge in daily work activities. A workplace characterised

by trust and collaboration enables employees to benefit from the expertise of their colleagues while providing the psychological support required to confidently implement new ideas, adopt innovative practices, solve complex organisational problems, and make more effective decisions. Moreover, WF encourage employees to learn from previous experiences and transform accumulated knowledge into practical actions that generate organisational value (Abdulmuhsin, Valeri, et al., 2025). This finding is consistent with the Knowledge-Based View, which argues that knowledge creates value only when it is effectively applied to improve organisational performance and achieve strategic objectives. It also supports Social Capital Theory, which proposes that strong interpersonal relationships enhance the effective utilisation of organisational knowledge by facilitating collaboration, coordination, and resource exchange among employees, thereby strengthening an organisation's ability to leverage its knowledge assets for sustainable organisational success.

Thus, the findings of this study demonstrate that WF should be regarded as a strategic organisational capability rather than merely a desirable social outcome. By cultivating an organisational environment characterised by trust, openness, and collaborative interpersonal relationships, organisations can significantly strengthen all stages of the KM process, thereby enhancing organisational learning, innovation, and long-term performance. These findings contribute to the growing body of KM literature by providing empirical evidence that the social dimension of organisational life represents a critical antecedent of effective KM in higher education institutions operating within post-conflict and knowledge-intensive environments.

7. Conclusion

The findings of this study demonstrate that the organisational dimension of WF, represented by friendship opportunity and friendship prevalence, plays a pivotal role in strengthening KM processes within higher education institutions. Specifically, the results reveal that creating an organisational environment that encourages the development of positive interpersonal relationships among employees, together with fostering the widespread presence of such relationships, significantly enhances the organisation's ability to generate, store, share, and apply knowledge. These findings suggest that workplace relationships should no longer be viewed merely as a behavioural or social phenomenon; rather, they constitute a valuable organisational resource that enhances knowledge capability and improves overall organisational performance.

The study further indicates that effective KM depends not only on technological infrastructure and formal organisational systems but also on the existence of a workplace environment characterised by trust, collaboration, and openness. Organisational friendships reduce both psychological and organisational barriers to knowledge exchange, encourage employees to share their expertise and

experiences, and facilitate the effective utilisation of organisational knowledge. Consequently, investing in the development of positive interpersonal relationships within universities represents a strategic approach to strengthening intellectual capital, fostering innovation, and achieving sustained organisational excellence.

7.1 Theoretical Contributions

This study makes several important contributions to the organisational behaviour and KM literature. First, it extends the WF literature by shifting the focus beyond its traditionally examined outcomes—such as job satisfaction, organisational commitment, and job performance—to investigate its influence on KM processes. Despite the growing importance of knowledge-intensive organisations, this relationship has received relatively limited empirical attention, particularly within higher education institutions. Second, the study provides a stronger theoretical explanation of the relationship between WF and KM by integrating Social Capital Theory with the Knowledge-Based View (KBV) of the firm. This integrated perspective demonstrates how interpersonal relationships founded upon trust, collaboration, and reciprocity evolve into strategic organisational resources that facilitate KG, storage, sharing, and application. Finally, this study enriches the relatively limited body of Arabic and Middle Eastern research on KM by empirically examining these relationships within Iraqi public universities. In doing so, it provides new empirical evidence that broadens the applicability of existing theoretical frameworks to post-conflict, knowledge-intensive organisational settings and establishes a valuable foundation for future comparative and cross-cultural research.

7.2 Practical Implications

The findings of this study offer several important practical implications for university administrators and higher education policymakers. University management should adopt organisational policies and practices that actively encourage the development of positive interpersonal relationships among employees. This may be achieved by promoting teamwork, establishing interdisciplinary work groups, and organising both professional and social activities that increase opportunities for interaction and collaboration among academic and administrative staff. Furthermore, universities should cultivate an organisational culture based on trust, mutual respect, and openness, thereby encouraging employees to exchange knowledge and expertise freely while reducing knowledge-hoarding behaviours. KM initiatives should also be integrated with programmes designed to strengthen interpersonal relationships, including academic mentoring schemes, communities of practice, collaborative research groups, and informal scholarly forums. Such initiatives are likely to

improve decision-making quality, stimulate innovation, preserve organisational knowledge, and enhance long-term institutional performance.

7.3 Limitations and Future Research Directions

Despite the valuable contributions of this study, several limitations should be acknowledged when interpreting the findings. First, the study was conducted exclusively within public universities located in Nineveh Governorate, Iraq. Consequently, caution should be exercised when generalising the findings to other organisational sectors or geographical regions. Second, the research adopted a cross-sectional design, which prevents the examination of causal relationships and changes in WF and KM processes over time. Third, the study relied on self-reported questionnaire data, which may be subject to common method bias and respondents' perceptual or social desirability biases. Building upon these limitations, several avenues for future research are recommended. Future studies should replicate the proposed model across different organisational contexts, including hospitals, banking institutions, telecommunications companies, and other knowledge-intensive sectors, to evaluate the robustness and generalisability of the findings. Longitudinal research designs would also provide valuable insights into how WF evolve over time and how their influence on KM processes changes throughout organisational development. In addition, future research should investigate the mediating and moderating roles of organisational trust, organisational culture, psychological safety, transformational leadership, servant leadership, and emotional intelligence to develop a deeper understanding of the mechanisms through which WF influences KM. Finally, the proposed model may be extended by incorporating additional organisational outcomes, such as organisational innovation, research productivity, organisational agility, absorptive capacity, and organisational resilience. Such extensions would contribute to the development of a more comprehensive theoretical framework explaining how workplace social relationships influence knowledge-based capabilities and long-term organisational performance.

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Conflict of Interest

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

Authors' contributions

All authors contributed equally to the conception and design of the study. All authors have read and agreed to the published this version of the manuscript.

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Data availability

The datasets analysed during the current study are available from the corresponding author on reasonable request.

Appendix A. Measurement Instrument

Workplace Friendship (WF): Adapted from Nielsen et al. (2000).

WF1: I have sufficient opportunities to develop friendships with my colleagues. WF2: My workplace provides an environment that encourages informal interaction among colleagues. WF3: Many of my colleagues have developed genuine friendships with one another. WF4: Employees in my workplace maintain friendly relationships beyond formal work requirements. WF5: There is a high level of friendship among employees in my workplace. WF6: My workplace encourages positive social relationships among employees.

Knowledge Management Processes: Adapted from Abdulmuhsin, Al-Taie, et al. (2025), Al Al Yami et al. (2021), and Raudeliuniene et al. (2020).

Knowledge Generation (KG)

KG1: Our university continuously encourages the generation of new ideas and knowledge. KG2: Employees frequently develop new knowledge through collaboration and discussion. KG3: The university actively supports creating new knowledge to improve its activities.

Knowledge Storage (KSt)

KSt1: The university systematically stores important knowledge for future use. KSt2: Employees' knowledge and experiences are effectively documented and preserved. KSt3: Knowledge stored by the university is easily retrieved whenever required.

Knowledge Sharing (KSh)

KSh1: Employees willingly share their knowledge and expertise with colleagues. KSh2: Knowledge is exchanged freely among employees across different departments. KSh3: The university encourages employees to exchange knowledge and experiences regularly.

Knowledge Application (KA)

KA1: Knowledge gained by employees is effectively applied to solve work-related problems.

KA2: Employees use organisational knowledge to improve their work performance. KA3: The university effectively utilises available knowledge in decision-making and daily operations.

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