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Knowledge Management Process Capabilities and Employee Performance in Iraq's Public Sector: The Moderating Role of Training Effectiveness

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Abstract. This paper investigates the influence of knowledge management (KM) process capabilities—specifically knowledge creation, sharing, application, and protection—on employee performance (EP) in Iraq's public sector, while examining the moderating role of training effectiveness (TEF). Rooted in the Knowledge-Based View (KBV), the research draws on data from 319 civil servants in Baghdad and applies Partial Least Squares Structural Equation Modeling (PLS-SEM) to assess both direct and moderating effects. The results show that all KM capabilities significantly enhance EP, with the model explaining 75.2% of the variance. TEF moderates the relationships between knowledge sharing and application with EP, but not for creation and protection, indicating that training's impact varies across KM dimensions. These findings offer strategic insights for enhancing public sector performance through KM and targeted training programs, particularly within fragile institutional contexts. The study contributes to the KM literature by extending the KBV framework to a post-conflict setting and highlighting the interplay between knowledge processes and human capital development.

Keywords: Public sector performance, knowledge management, training effectiveness, employee capability, Iraq, developing countries, governance reform

1. Introduction

Employee performance (EP) is widely recognized as a key determinant of organizational success, particularly in the public sector, where employees play a vital role in delivering essential services such as healthcare, education, infrastructure and public administration. The performance of employees reflects their ability to generate high-quality outputs, deliver work efficiently and effectively, and meet organizational objectives in a timely manner (Beil, 2025 ; Mathis & Jackson, 2010 ; Shakir et al., 2025). As the backbone of public service delivery, employees' contributions directly influence the quality of life for citizens and the broader effectiveness of governance systems. In developing countries, enhancing public sector performance has become a strategic imperative, given the growing demand for transparency, efficiency and citizen-centred service provision (AlDhaheri et al., 2023).

Despite its importance, EP in public sector organizations, particularly in developing or post-conflict contexts, remains suboptimal. In Iraq, the public sector employs more than half of the national workforce and contributes over 60% to the gross domestic product (UNDP Iraq, 2018). However, performance within this sector is widely reported to be weak, hampered by bureaucratic rigidity, outdated administrative practices, and an underdeveloped human capital base (Tull, 2018). One of the critical but underexplored factors contributing to this performance gap is the lack of effective knowledge management (KM) systems. Knowledge, as a strategic asset, plays a fundamental role in enhancing employee productivity, decision-making, innovation and service delivery outcomes (Do et. al, 2025; Kaihatu et al., 2024).

The Knowledge-Based View (KBV) of the firm posits that knowledge is a core resource that can generate sustained competitive advantage when effectively managed (Grant, 1996). In this regard, KM process capabilities, namely knowledge creation (KC), knowledge sharing (KS), knowledge application (KAP), and knowledge protection (KP) enable organizations to transform individual expertise into collective intelligence and actionable outcomes (Gold et al., 2001). These capabilities not only support organizational learning, but also enhance the employees' ability to perform tasks with greater efficiency and innovation. Empirical studies have shown that organizations with well-developed KM processes experience higher levels of performance across multiple dimensions (Khoa & Hoa, 2021). However, KM's use in developing nations' public sectors is limited and scattered, with little research concentrating on EP.

Lack of organized KM systems in the Iraqi public sector has hampered knowledge transfer, retention and institutional learning. Performance management paradigms seldom include KC, sharing, application or protection. This hinders the public institutions' ability to innovate, adapt to problems and harness human capital (Tauro, 2021). Therefore, there is a need to evaluate how KM process capabilities can improve EP in Iraq's public sector, where resources are scarce and institutions are weak. Training is another component that may affect KM effectiveness. Training is the systematic acquisition, improvement or updating of information, abilities and behaviours to improve work performance (Arutchelvi et al., 2016). Training in KM builds technical skills, reinforces information-sharing, helps apply new knowledge and promotes continual learning. Research has demonstrated that companies with strong training programs have better EP (Alfagira et al., 2017; Salau et al., 2018; Sultana et al., 2012). Training directly improves performance, but its moderating role, particularly in the link between KM procedures and EP, has generated inconsistent results. Training helps employees apply knowledge more effectively (Dome et al., 2017; Norfazlina et al., 2016), but its content, relevance or delivery may limit its moderating effect. In light of these gaps, this study investigates how KM process capabilities influence employee performance in the Iraqi public sector and examines whether TEF moderates these relationships. By applying the KBV in a fragile state context and integrating training as a conditional factor, this research provides both theoretical and practical contributions. It offers a more nuanced understanding of how knowledge processes and human capital development interact to shape public sector outcomes in resource-constrained environments.

2. Literature Review

2.1. Theoretical Framework

The KBV of the firm, proposed by Grant (1996) is an extension of the Resource-Based View (RBV), one of the most influential theories in strategic management. While the RBV emphasizes that firms achieve sustainable competitive advantage through the effective use of valuable, rare, inimitable and non-substitutable resources (Barney, 2001), the KBV refines this notion by positioning knowledge as the most strategically significant resource within an organization.

In dynamic and competitive environments, organizations must develop capabilities that are not easily replicated by competitors. According to Barney (2001), these capabilities serve as a foundation for long-term competitive advantage and organizational survival. Grant (1996) argues that knowledge is inherently more difficult to imitate than other resources due to its embedded nature - it resides in people, routines, systems, documents and organizational culture. This unique trait makes knowledge a socially complex and heterogeneous asset that, when managed well, drives superior performance. The RBV sees knowledge as a general resource, whereas the KBV distinguishes between knowledge processes and capabilities, emphasizing the strategic relevance of KC, KS, KAP, and KP in companies. Studies of KM and organizational performance have used the KBV extensively.

Tseng and Lee (2014) used the KBV to show how KM and dynamic capabilities affect Taiwanese high-tech enterprises. Wu and Chen (2014) revealed that KM skills strongly affected business process capabilities and organizational results. KBV is relevant because Aujirapongpan et al. (2010) showed that knowledge activities including sharing, invention, acquisition and application improve organizational performance. Several pieces of research validate KBV's explanatory power. Tseng (2014) stressed the importance of knowledge protection and conversion in competitive advantage, while Malik et al. (2022) examined how knowledge processes affect healthcare excellence. In line with this theoretical background, this study employs the KBV to examine how KM process capabilities influence employee performance (EP) in the Iraqi public sector. While KM–performance relationships have been extensively examined in corporate or stable institutional settings, limited research has applied the KBV in fragile state contexts. Iraq, as a post-conflict and resource-constrained environment, offers a distinct setting where KM is often hindered by bureaucratic inertia, fragmented information systems, and limited institutional memory. This study contributes theoretically by extending the KBV to such a fragile public governance context, highlighting how KM processes operate under conditions of institutional instability. By doing so, it adds a nuanced understanding of how knowledge routines contribute to employee productivity in a setting where traditional administrative reforms often struggle to take root.

In fragile and post-conflict states such as Iraq, the implementation of knowledge management (KM) practices faces unique contextual challenges that are often overlooked in traditional KM literature. The legacy of prolonged conflict, institutional breakdown, and rapid politicization of public service structures has resulted in fragmented knowledge repositories, weak inter-agency coordination, and limited incentives for knowledge sharing (Tull, 2018; Karam et al., 2020). These challenges are compounded by high turnover rates, inadequate digital infrastructure, and insufficient HR systems that inhibit the formalization and protection of institutional knowledge (Tauro, 2021).

Unlike stable environments where KM systems are typically embedded within performance management or innovation frameworks, in Iraq, knowledge often remains siloed due to hierarchical rigidity and distrust among departments (UNDP Iraq, 2018). Moreover, the lack of codification and documentation systems leads to significant knowledge loss during leadership transitions (Joshi & Subedi, 2024). As noted by AlDhaheri et al. (2023), capacity-building efforts in post-conflict governments must account for the informal, interpersonal knowledge-sharing networks that emerge in the absence of formal systems. Recent literature emphasizes the growing relevance of adaptive KM approaches in public sectors operating under uncertainty. For instance, Khoa and Hoa (2021) highlight

the role of digital transformation and soft-skills-based training in enhancing KM effectiveness in constrained environments. Similarly, Goulart et al. (2022) suggest that employee empowerment and leadership support are critical enablers of KM in volatile institutional settings. This study adds value by integrating these context-specific insights and applying the Knowledge-Based View (KBV) to a fragile governance structure. It moves beyond generic KM-performance associations and provides empirical evidence on how these relationships manifest in a state recovering from conflict and capacity erosion. By situating KM practices within Iraq's socio-political and administrative context, this research contributes to a more grounded understanding of how knowledge systems can be leveraged to reform public sector performance in developing countries facing governance instability.

2.2. Employee Performance

EP is crucial to organizational success, especially in the public sector because service delivery directly impacts citizens. EP completing duties according to norms and expectations is crucial for public sector efficiency and effectiveness (Klierova & Kutik, 2017; Lubis & Lubis, 2025). Hafeez and Akbar, (2015) defined performance as the achievement of specified tasks measured against criteria such as accuracy, completeness, cost and speed. Measuring EP offers valuable feedback to both the individual and the organization. Besides identifying strengths and weaknesses, it aids rewards, promotions and training decisions (Tinuke, 2015). The Role-Based Performance Scale (RBPS) by Welbourne & Johnson, (1998) measures performance using self-rated judgments of job roles. Several studies have used this unidimensional measurement to measure EP (Akinbobola & Dalyop, 2019; Pahos & Galanaki, 2018). Riyanto et al. (2017) presented multidimensional frameworks that include quality, quantity, responsibility, cooperation and initiative, whereas Otoo (2019) included efficiency, planning, inventiveness and effort. Although other instruments are available, this study used the RBPS for its reliability, convenience and self-evaluation alignment. It measured work production, goal attainment, innovation, teamwork and organizational objectives, making it ideal for public sector assessment.

2.3 Conceptual Framework

The research framework was developed using the knowledge-based view theory. In addition, the review of the literature was deployed to support the development of the research framework. Figure 1 shows the research framework. The study proposes that the effect of the KM process on EP is positive and significant. It also proposes that TEF moderates the effect of the KM process on EP.

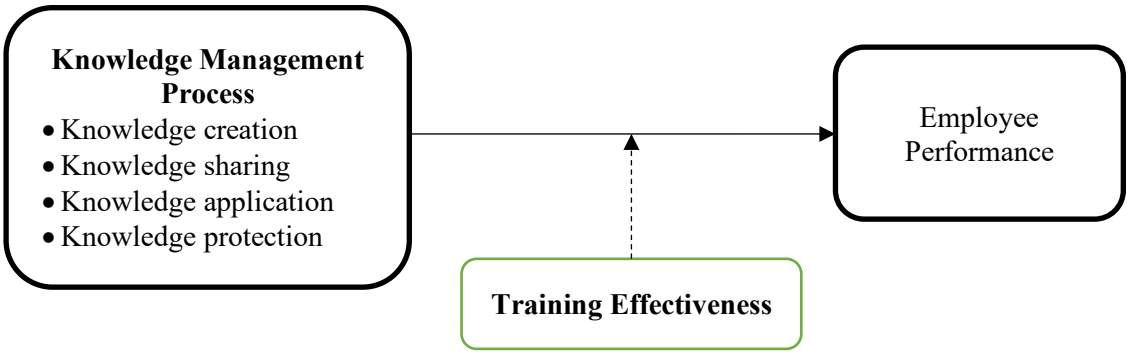

Fig. 1: Research Framework

2.3.1 Knowledge Creation

KC contains several processes that include the interaction and relationship between organizational members as well as the innovation, feedback from organizational members and benchmarking (Kao & Wu, 2016). Previous studies that have investigated the link between KC and the organizational

outcomes support the belief that KC has a significant effect on organizational performance. For instance, the study by Song (2008) indicated that the KC process is associated with the improvement of the productivity of employees and organizations. Research found that KC affected significantly the innovation capabilities of employees and organizations (Donate & Sánchez de Pablo, 2015; Forés & Camisón, 2015). KC affected the performance of employees (Masa'deh et al., 2017). Thus, the following can be hypothesized:

H1: KC has a positive effect on EP.

2.3.2 Knowledge Sharing

Cummings (2004) highlighted that KS can happen in many ways such as direct interaction between individuals or face to face. It also takes place using technology and online communication as well as via documents, experts lecturing and handbooks. Kuzu and Özilhan (2014) found that KS affected significantly the performance of employees. KS was also found to affect the EP in several previous studies. For example, Ghabban et al. (2018) in Saudi Arabia found that KS has a significant effect on EP. Usman et al., (2021) found that KS affected organizational excellence. Udin (2021) found that KS affected the EP positively. Thus, the following can be hypothesized:

H2: KS has a positive effect on EP.

2.3.3 Knowledge Application

Knowledge has a limited impact on organizations unless it is applied effectively (Alaarj et al., 2016). Therefore, knowledge is only useful and has value when organizations apply the created knowledge and transfer it from potential to realized and dynamic capabilities that it affects organizational performance (Zahra & George, 2002). Several studies found a positive link between the KAP and the performance of organizations (Phayaphrom et al., 2022; Qasrawi et al., 2017). In regards to the employees' performance level, the study by Masa'deh et al. (2017) found that KAP has a significant effect on the EP. Therefore, the following is hypothesized:

H3: KAP has a positive effect on EP.

2.3.4 Knowledge Protection

KP is one of the components of the KM process according to Gold et al., (2001), and it is expected to affect organizational effectiveness. KP is essential to prevent the unwanted disclosure of organizational and individual knowledge (Thalmann & Ilvonen, 2020). Few studies examined the effect of KP at the organizational and individual level, indeed KP has been shown to positively influence business performance in Taiwanese firms (Tseng & Lee, 2014). Liu and Deng (2015) found that KP affected positively the business process of outsourcing. In this study, the effect of KP on EP is expected to be positive and significant. Therefore, the following is hypothesized:

H4: KP has a positive effect on EP.

2.3.5 Training as a moderator

Training is the process by which individuals modify their abilities, knowledge, attitudes and behaviour (Arutchelvi et al., 2016). This definition states that training supports employee learning to attain targeted performance (Irshad & Afridi, 2011). Researchers see training as an educational process in which employees learn and apply new information and practices, apply their knowledge and skills, and consider more efficient and effective ways to do the work to improve performance and achieve

organizational goals. Previous research has shown that training improves EP. Alizadeh Majd et al. (2024) noted that employees and organizations benefit from training. Improved skills, knowledge, competency and performance make the employee happier. Better EP benefits organizations. Sultana et al., (2012) advised companies to invest in human capital by training and developing people to improve their skills. Training helps staff adopt new technologies and adapt to market changes.

Dome et al. (2017) discovered that training moderates commitment and performance. Norfazlina et al. (2016) discovered that training moderates the influence of satisfaction on productivity. Ismail et al. (2017) suggested that training moderates teacher efficiency and effectiveness in Malaysia. Srivastava and Dhar (2016)studied how training moderates leadership and employee optimism. Training mitigated leadership's influence on employee optimism. However, some researchers observed no moderating influence of training. In a meta-analysis by Dubois et al. (2002), training did not reduce mentoring program impact size. Knotter (2019) discovered that staff training substance and aim did not moderate performance. Thus, the following is hypothesized:

H5: Training moderates the effect of the KC on EP.
H6: Training moderates the effect of the KS on EP.
H7: Training moderates the effect of the KAP on EP.
H8: Training moderates the effect of the KP on EP.

3. Research Methodology

This study investigated the influence of KM process capabilities on EP in the Iraqi public sector, with a particular focus on the moderating role of TEF. The population of the study consists of public sector employees working in civil service departments in Baghdad, Iraq. In Baghdad, there are approximately 50,000 civil servants, which represents the accessible population (Ministry of Planning, 2021). The study employed random sampling among civil servants in Baghdad, which is home to Iraq's largest concentration of public administration agencies and ministries. The sample of 319 valid responses reflects a cross-section of departments, ranks, and tenure levels. While Baghdad is a central administrative hub, it may not fully capture the geographic and institutional diversity of Iraq's entire public sector, particularly in provinces with different governance capacities or conflict exposure. This presents a potential limitation in terms of generalizability. To reduce selection bias, the sampling process was randomized using departmental staff lists, and demographic balance (e.g., age, gender, education, experience) was reviewed to ensure variation and representation within the sample frame. However, as participation was voluntary and self-administered, some degree of non-response bias may still exist. This study acknowledge that public servants who are more digitally literate or engaged may have been more inclined to participate, and this should be considered when interpreting the findings. Data was collected using a structured questionnaire. Participants were informed about the study's purpose, and their participation was voluntary. Informed consent was obtained, and all responses were kept anonymous and confidential. KM process capabilities were assessed using validated items adopted from previous studies: KC and application items were adapted from Wu & Chen, (2014), KS from Cockrell & Stone, (2010), and KP from Gold et al., (2001) and Lin, (2013). EP was measured using a 20-item scale developed by Pahos & Galanaki, (2018), covering dimensions such as quality and quantity of work, innovation, teamwork and organizational commitment. TEF was measured using 12 items adapted from Goulart et al., (2022), which evaluated the application of learned skills, motivation and behavioural changes post-training.

To ensure the validity of the instrument, the questionnaire was translated from English to Arabic and subjected to a back-to-back translation process. Content and face validity were assessed by four academic experts fluent in both languages and knowledgeable in the field. Feedback was collected

regarding the clarity, relevance and appropriateness of the items, leading to revisions in language and structure. This expert validation process ensured that the measurement items were culturally appropriate and aligned with the study objectives. Following expert validation, a pilot study was conducted with 38 participants (approximately 10% of the total sample size) to assess the reliability of the measurement scales. The reliability of each construct was evaluated using Cronbach's Alpha, with values ranging from 0.734 to 0.918, all exceeding the acceptable threshold of 0.70 (Sekaran & Bougie, 2019).

The final data collection was conducted electronically using Google Forms. A total of 349 valid responses were received following multiple waves of follow-ups and reminders to improve response rates. After a thorough data screening, the dataset was ready for statistical analysis. The initial stage in data cleansing was identifying missing data. Participants initially provided 349 replies. SPSS frequency analysis showed 14 replies had more than 15% missing data, thus compromising case completeness and reliability. This approach yielded 335 valid replies for analysis. Checking for outliers, Pallant (2020) recommends a box plot technique for identifying outliers. Sixteen replies were notable outliers because they were distant from the central tendency and outside the interquartile range. Therefore 14 missing values and 16 outliers were removed making the valid responses 319. The data is normally distributed because values of skewness and kurtosis in Table 1 are less than absolute 1 and there is no multicollinearity issues because the values of tolerance is above 0.20 and the variation inflation factor is less than 5 as shown in Table 1.

Table 1: Normality Analysis

Construct	Skewness	Kurtosis	Tolerance	VIF
KC	-.287	-.327	.681	1.469
KAP	-.280	-.392	.685	1.461
KS	-.175	-.681	.741	1.350
KP	-.579	-.291	.926	1.079
TEF	-.230	-.889	.721	1.386
EP	-.159	-.494	-	-

4. Findings

4.1. Descriptive Information

This study's demographic profile of public sector survey respondents is extensive. Civil servants in Baghdad, Iraq, provided 319 valid replies. With both men and women participating, the sample was gender balanced. The bulk of responders were mid-career workers aged 30–45. Most participants had bachelor's degrees, followed by postgraduates, suggesting a well-educated public sector workforce. Work experience varied among respondents, with several spending more than 10 years with their organizations. These demographic characteristics indicate that the sample includes skilled and experienced public servants who can analyse KM processes, TEF and EP in the Iraqi public sector. As shown in the Table 2, the mean score of EP is 3.75 which indicates that the respondents have agreed with the statement related to the EP. The corresponding mean scores of KC are 3.88, the mean of KAP is 3.85, the mean of KS is 3.89, and mean of KP is 3.57. In this study, mean scores greater than 3.5 were considered to reflect a high level of agreement with the corresponding items or measures. Hence, most respondents demonstrated agreement levels with all the KM capabilities investigated in this study. The level of TEF is shown in Table 2. It shows that the mean score of TEF is 3.85. This indicates that the level is high, and the respondent agreed on the statement of TEF.

4.2. Measurement Model

Hair et al. (2023) advised removing factor loadings below 0.70. The measurement model showed a low factor loading < 0.70 for various items. Based on the measurement model assessment items, KS5,

TEF9 and EP17, were removed because they have loading less than 0.70. After deleting the items with a low factor loading, the Cronbach's Alpha (CA) and the Composite Reliability (CR) were examined. Table 2 depicts that the value of CA and CR are greater than 0.70, thus indicating that the variables have acceptable reliability. The convergent validity is assessed by checking the average variance extracted (AVE). The accepted value is above 0.50 which indicates that more than 50% of the variation in the variable can be explained by the items. As shown in Table 2, the AVE is greater than 0.50, reflecting that the items could explain more than half of the variation in the variable being measured. The discriminant validity was checked using the HTMT's correlations. The correlation among the variables using HTMT should not be larger than 0.85. Table 2 shows that the correlation among the variables is less than 0.85 indicating that discriminant validity is achieved.

Table 2: Assessment of the Measurement

Construct	Mean	CA	CR	AVE	EP	KAP	CK	KP	KS	TEF
EP	3.75	0.919	0.919	0.724	-					
KAP	3.88	0.91	0.914	0.809	0.679					
KC	3.85	0.923	0.924	0.765	0.622	0.669				
KP	3.80	0.908	0.91	0.784	0.738	0.745	0.692			
KS	3.57	0.917	0.918	0.791	0.560	0.729	0.630	0.683		
TE	3.85	0.85	0.856	0.867	0.467	0.442	0.453	0.359	0.437	-

4.3. Structural Model

The assessment of the structural model involved three criteria: R-square, F-square, and the path coefficient. As shown in Figure 2, the R-square of EP is 0.752 indicating that 75.2% of EP can be explained by KM processes and TEF. The effect size showed acceptable levels except for two path moderating effects which were found to be not statistically significant. For the path coefficient, Figure 2 shows the structural model.

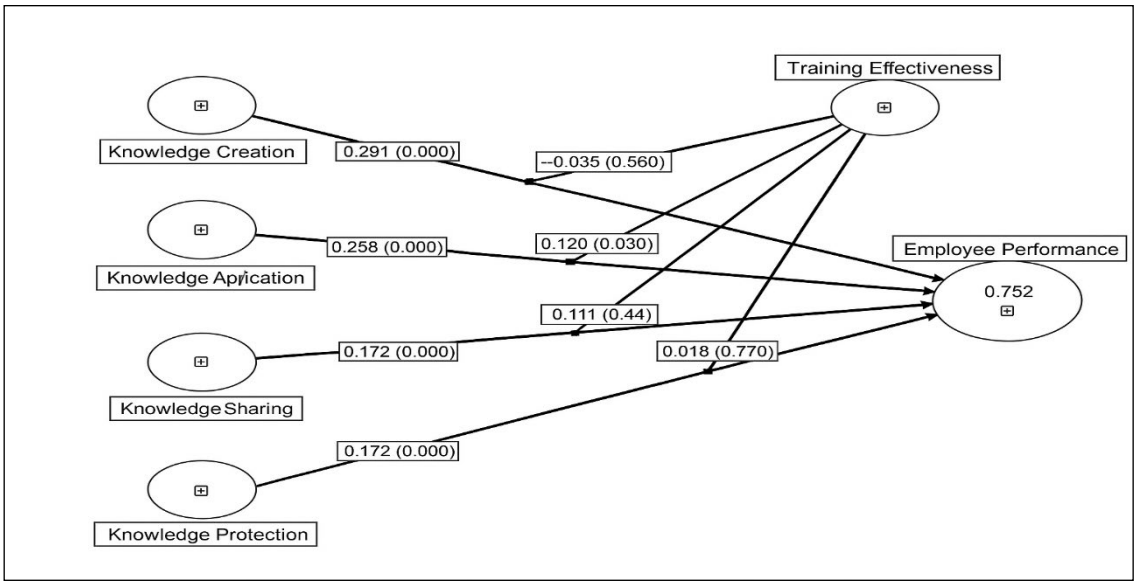

Fig. 2: Structural Model

For testing the hypotheses, Table 3 shows the results of the direct and moderating effect. Using Smart PLS 4.0, the interactions between TEF and KM processes were created. The number of hypothesis, path, path coefficient (β), standard deviation (Std), T-value (T) and P-values are given in Table 3.

Table 3: Results of Hypotheses Testing

H	Path	β	Std.	T	P values
H1	KC ->EP	0.291	0.062	4.706	0.000
H2	KS ->EP	0.172	0.044	3.864	0.000
H3	KAP ->EP	0.258	0.058	4.438	0.000
H4	KP ->EP	0.172	0.046	3.773	0.000
H5	TEF x KC ->EP	-0.035	0.059	0.583	0.560
H6	TEF x KS ->EP	0.111	0.055	2.016	0.044
H7	TEF x KAP ->EP	0.120	0.055	2.164	0.030
H8	TEF x KP ->EP	0.018	0.062	0.292	0.770

For H1, A substantial path coefficient ($\beta = 0.291$, $t = 4.706$, $p < 0.001$) supported the hypothesis that KC positively correlates with EP. This shows the importance of fresh ideas, insights, and innovations in boosting performance. H2 confirms that KS affects EP ($\beta = 0.172$, $t = 3.864$, $p < 0.001$). The third hypothesis (H3), linking KAP to EP, was significant ($\beta = 0.258$, $t = 4.438$, $p < 0.001$). The effective utilization of knowledge in normal tasks and decision-making increases performance. H4 supported the influence of KP on EP ($\beta = 0.172$, $t = 3.773$, $p < 0.001$). However, TEF moderated these direct effects, resulting in mixed results. TEF did not moderate the link between KC and EP, as hypothesized in H5 ($\beta = –0.035$, $t = 0.583$, $p = 0.560$). Similarly, H8 did not significantly moderate the relationship between KP and performance ($\beta = 0.018$, $t = 0.292$, $p = 0.770$). However, TEF dramatically moderated two associations. The study confirmed H6 which found that TEF moderates the link between KS and EP ($\beta = 0.111$, $t = 2.016$, $p = 0.044$). Excellent training enhances KS by improving staff communication and cooperation. Training moderates the relationship between KAP and performance, supporting H7 ($\beta = 0.120$, $t = 2.164$, $p = 0.030$). This shows that successful training helps employees use knowledge more efficiently, thereby improving performance.

In addition to statistical significance, the practical significance of the model's relationships was evaluated using Cohen's f^2 effect size criteria. According to Cohen (1988), f^2 values of 0.02, 0.15, and 0.35 represent small, medium, and large effects, respectively. The analysis revealed that the relationship between knowledge creation (KC) and employee performance (EP) had a medium effect ($f^2 = 0.091$), while knowledge application (KAP) also showed a medium effect ($f^2 = 0.078$). The remaining paths (KS → EP and KP → EP) exhibited smaller effect sizes, indicating a relatively modest but statistically meaningful contribution. These interpretations underscore that even modest effects in a public sector setting may hold substantial practical implications for managerial policy and training interventions. Furthermore, additional model fit indices were assessed. The Standardized Root Mean Square Residual (SRMR) was 0.057, indicating a good model fit (SRMR < 0.08). The Normed Fit Index (NFI) was 0.912, exceeding the recommended threshold of 0.90, suggesting an acceptable level of model fit based on the structural equation modeling criteria. These results support the adequacy of the measurement and structural models used in this study.

5. Discussion

This study set out to examine the effect of the KM process on EP within the Iraqi public sector, with particular focus on the four key dimensions of KM: KC, KS, KAP, and KP. The first component of the KM process examined was KC, which emerged as a significant and positive predictor of EP. In the context of the Iraqi public sector, this suggests that fostering a work environment that encourages the generation of new ideas, insights and solutions leads to enhanced employee effectiveness. The findings indicate that mechanisms such as leveraging internal expertise, formalizing procedures for

knowledge acquisition, and promoting research contribute to a culture of innovation. This aligns with previous studies (Donate & Sánchez de Pablo, 2015; Song, 2008) which underscore the value of KC in improving both organizational innovation and employee productivity. Similarly, KS was found to have a positive and significant impact on EP. This result underscores the importance of fostering a culture of collaboration and openness, where employees feel encouraged to exchange insights, best practices and lessons learned. The presence of organizational support mechanisms that promote trust, teamwork and mutual recognition were cited as critical enablers of effective KS. These findings are consistent with the literature that highlights the strategic value of KS in enhancing individual and collective capabilities (Ghabban et al., 2018; Kuzu & Özilhan, 2014). By facilitating the flow of information within and across teams, public sector institutions in Iraq can boost their internal knowledge base and improve overall EP.

The third dimension, KAP, also showed a positive and statistically significant relationship with EP. This finding suggests that when employees are able to apply the knowledge they acquire to real-world tasks and decision-making processes, their efficiency and effectiveness improve. KAP was associated with the ability to develop new services, solve problems and adapt to competitive pressures, all of which are crucial for public sector innovation and responsiveness. The results are in line with earlier studies (Alaarj et al., 2016; Gold et al., 2001; Masa'deh et al., 2017), who demonstrated that the practical use of knowledge is instrumental in achieving both individual and organizational performance goals. Within the Iraqi public sector, this points to the need for systems that support the integration of acquired knowledge into routine operations, thereby facilitating continuous learning and improvement. The study also found that KP has a significant effect on EP. The protection of knowledge assets is essential for maintaining organizational integrity and preventing misuse. Previous studies have found KP to be beneficial in private sector contexts (Liu, S., & Deng, 2015; Tseng & Lee, 2014), particularly where intellectual property and competitive advantage are at stake.

TEF moderates the relationship between KS and EP, suggesting that successful training programs might improve employees' communication and collaboration. Training may help employees improve their interpersonal and communication skills, appreciate collective knowledge, and use collaborative technologies which are essential to KS. This supports Dome et al. (2017), who showed that training moderated the connection between employee commitment and performance, and Norfazlina et al. (2016), who found that training moderated employee satisfaction and productivity. These research pieces suggest that training increases performance by reinforcing information sharing behaviours.

The positive moderating impact of TEF on the link between KAP and EP suggests that well-designed training programs improve employees' job execution, problem-solving and decision-making. Training helps with understanding practical tools, methods and processes that apply information. Srivastava and Dhar (2016) discovered that training moderated the connection between leadership and employee optimism, suggesting that training improves performance-related cognitive and behavioural outcomes. The congruence between training and KAP is crucial in performance-driven contexts because task execution demands current abilities and adaptable thinking.

The intrinsic nature of knowledge creation (KC), which is deeply embedded in organizational culture, intrinsic motivation, and informal learning mechanisms, may explain why training effectiveness did not significantly moderate its relationship with EP. Traditional training programs typically focus on tangible skills or procedural tasks, and may not be designed to stimulate creativity, ideation, or collaborative innovation—core elements required for effective KC. Similarly, knowledge protection (KP) is a compliance-oriented function, involving codified procedures, data security protocols, and legal safeguards, which are primarily enforced through policies rather than behavioral training. Consequently, the null findings for training's moderating effect on KC and KP are theoretically coherent with the nature of these constructs.

In contrast, the positive moderating effects of training on knowledge sharing (KS) and knowledge application (KAP) align with theoretical expectations. These KM processes are largely behavioral and

task-execution-oriented. KS involves communication, collaboration, and interpersonal interaction—all of which can be improved through structured training that emphasizes soft skills, knowledge-sharing platforms, and inter-departmental collaboration. Similarly, KAP reflects employees' ability to translate acquired knowledge into work outputs and problem-solving, a competency that can be significantly enhanced through scenario-based learning, simulation, and feedback-driven instruction. Thus, the differential moderating effects are theoretically justified by the varying dependence of KM dimensions on behavioral versus structural reinforcement mechanisms. This nuanced understanding highlights the importance of designing tailored training strategies based on the functional nature of each KM capability. These findings support Dubois et al. (2002), who found that training did not significantly moderate mentoring program effectiveness, and Knotter (2019), who found that training content and goal alignment did not moderate staff training and performance. KM-performance links may not improve with generic, misaligned or poorly personalized training.

5.1 Implications

This study offers important contributions to both theory and practice by investigating the relationship between KM process capabilities and EP in the Iraqi public sector, while also exploring the roles of TEF. The theoretical contributions lie in extending the KBV to a developing country context, where limited research has been conducted. The study adopts a multidimensional perspective on KM by analysing KC, KS, KAP and KP, providing an understanding of how these processes influence EP. It further contributes by testing the moderating role of TEF which is an area previously underexplored. While the results support the positive influence of KM processes on EP, the moderating role of TEF was found to be mixed. This insight refines the understanding of the contextual effectiveness of training programs in developing public sectors and highlights the need for more targeted and impactful training interventions.

From a practical perspective, this study provide insight that to enhance public sector performance through KM, especially in fragile-state contexts like Iraq, a more strategic and phased implementation approach is recommended. First, diagnostic KM assessments should be conducted to identify gaps in knowledge creation, sharing, application, and protection across departments. These assessments can be used to prioritize resource allocation. Second, KM strategy development must be linked explicitly with HR and training plans. Training programs should be tailored to target behavioral KM components (e.g., knowledge sharing, application) and embed soft skills such as collaboration, communication, and technology use.

Third, low-cost digital tools (e.g., intranet platforms, shared repositories, mobile knowledge apps) should be deployed to capture and disseminate institutional knowledge, especially in settings where budget constraints limit the use of high-end KM systems. Fourth, informal knowledge-sharing practices—such as mentorship, storytelling, and peer learning—should be institutionalized through communities of practice and cross-functional task forces. Fifth, leadership alignment and accountability mechanisms must be built into the KM system, ensuring that department heads champion and monitor knowledge behaviors as part of performance evaluations.

Finally, public sector institutions should adopt an iterative approach to KM implementation, with continuous monitoring, stakeholder feedback, and adaptive learning built into the process. These steps form a context-sensitive, actionable framework that aligns KM systems with the operational realities of post-conflict governance and contributes to a more responsive, efficient public administration.

6. Conclusion

This study advances the understanding of how KM processes influence EP within a developing country’s public sector. The findings affirm that fostering environments supportive of KC, KS, KAP and KP significantly enhances employee outcomes. TEF moderated the impact of KS and KAP on EP

while it showed no moderating effect between KC and KP with EP. Collectively, the findings underscore the importance of a comprehensive, context-sensitive approach to organizational improvement that integrates KM, TEF and employee development strategies. This research adds meaningful value to the literature on KM and organizational behaviour, particularly within the underexplored landscape of developing public sectors.

Despite the valuable insights generated, this study is subject to several methodological limitations. First, all measures were collected through self-reported questionnaires from a single group of respondents, which may introduce common method variance (CMV). Although procedural safeguards were employed—such as respondent anonymity, careful item design, and the use of varied scale formats—the risk of CMV cannot be fully ruled out. Future research is encouraged to utilize multi-source data collection strategies, such as combining supervisor assessments or archival performance records, to strengthen construct validity. Second, the use of a cross-sectional design restricts the ability to infer causal relationships between knowledge management capabilities, training effectiveness, and employee performance. While Partial Least Squares Structural Equation Modeling (PLS-SEM) offers a robust means of assessing structural relationships, the results should be interpreted as correlational. Longitudinal or experimental research designs are recommended to validate the directionality and causality of the relationships observed. Third, the study's geographic focus on civil servants in Baghdad limits the generalizability of the findings to other provinces in Iraq or broader post-conflict settings. Institutional, cultural, or administrative variations across regions may influence the dynamics of knowledge management and training effectiveness. Future studies should consider a broader national sample or comparative regional analyses to enhance external validity.

References

Akinbobola, I. O., & Dalyop, D. D. (2019). Transformational Leadership Style and Employee Engagement on Role-Based Performance among Selected Civil Servants in Jos. *Asian Research Journal of Arts & Social Sciences*, 1–7.

Alaarj, S., Abidin-Mohamed, Z., & Bustamam, U. S. B. A. (2016). Mediating Role of Trust on the Effects of Knowledge Management Capabilities on Organizational Performance. *Procedia - Social and Behavioral Sciences*, *235*, 729–738. https://doi.org/10.1016/j.sbspro.2016.11.074

AlDhaheri, H., Hilmi, M. F., Abudaqa, A., Alzahmi, R. A., & Ahmed, G. (2023). The relationship between HRM practices, innovation, and employee productivity in UAE public sector: a structural equation modelling approach. *International Journal of Process Management and Benchmarking*, *13*(2), 157–176.

Alfagira, S. A., Rahim, A., Zumrah, B., Bin, K., Noor, M., Bin, O., & Rahman, A. (2017). Investigating the Factors Influencing Academic Staff Performance : A Conceptual Approach. *Scholars Journal of Economics, Business and Management*, *4*(11), 842–848. https://doi.org/10.21276/sjebm.2017.4.11.13

Alizadeh Majd, A., Bell, R., Ali, S., Davoodi, A., & Nasirifar, A. (2024). The effect of job rotation on employee performance: the mediating role of HR strategy and training in the petrochemical industry. *Industrial and Commercial Training*, *56*(2), 93–105. https://doi.org/10.1108/ICT-10-2023-0074

Arutchelvi, G., Tripati, D. K., Logaprabhu, A., & Sharma, M. K. (2016). An Analysis of Factors that Influence Training and Development among Employees in Retail Industries. *International Journal of Engineering and Management Research (IJEMR)*, *6*(4), 141–147.

Barney, J. B. (2001). Resource-based theories of competitive advantage: A ten-year retrospective on the resource-based view. *Journal of Management*, *27*(6), 643–650. https://doi.org/10.1016/S0149-2063(01)00115-5

Beil, A. (2025). Improving the quality management process of specialists' consultations in the

healthcare sector. Journal of Management Changes in the Digital Era, 1(1), 183–195. https://www.aasmr.org/jmcde/Vol.1/No.1/Vol.1.No.1.14.pdf

Cockrell, R. C., & Stone, D. N. (2010). Industry culture influences pseudo-knowledge sharing: a multiple mediation analysis. *Journal of Knowledge Management*.

Cummings, J. N. (2004). Work Groups, Structural Diversity, and Knowledge Sharing in a Global Organization. *Management Science*, *50*(3), 352–364. https://doi.org/10.1287/mnsc.1030.0134

Do, B. X. C., Tran, K., Bui, T. K., & Le, D. N. T. (2025). Digital transformation and sustainable tourism: An integrated model for heritage destination revisitation in the service innovation era. Journal of Service, Innovation and Sustainable Development, 6(1), 14–28. https://www.aasmr.org/sisd/Vol.6/No.1/Vol.6.No.1.02.pdf

Dome, R., Kemboi, A., & Kapkiai, M. K. (2017). Moderating Effect of Employee Training on the Relationship between Organizational Commitment and Employee Performance among Insurance Firms in Eldoret , Kenya. *Journal of Humanities And Social Science (IOSR-JHSS)*, *22*(11), 53–59. https://doi.org/10.9790/0837-2211065359

Donate, M. J., & Sánchez de Pablo, J. D. (2015). The role of knowledge-oriented leadership in knowledge management practices and innovation. *Journal of Business Research*, *68*(2), 360–370. https://doi.org/10.1016/j.jbusres.2014.06.022

Dubois, D. L., Holloway, B. E., Valentine, J. C., & Cooper, H. (2002). Effectiveness of Mentoring Programs for Youth: A Meta-Analytic Review. *American Journal of Community Psychology*. https://doi.org/10.1023/A:1014628810714

Forés, B., & Camisón, C. (2015). Does incremental and radical innovation performance depend on different types of knowledge accumulation capabilities and organizational size? *Journal of Business Research*. https://doi.org/10.1016/j.jbusres.2015.07.006

Ghabban, F., Selamat, A., & Ibrahim, R. (2018). New model for encouraging academic staff in Saudi universities to use IT for knowledge sharing to improve scholarly publication performance. *Technology in Society*. https://doi.org/10.1016/j.techsoc.2018.07.001

Gold, A. H., Malhotra, A., & Segars, A. H. (2001). Knowledge management: an organizational capabilities perspective. *J. of Management Information Systems*, *18*(1), 185–214. https://doi.org/10.2307/40398521

Goulart, E. L., Goulart, E. L., Weymer, A. S. Q., Moreira, V. R., & Moreira, V. R. (2022). The influence of self-efficacy on training effectiveness in cooperative organizations. *Revista de Administração Da UFSM*, *15*(2), 331–353. https://doi.org/10.5902/1983465967213

Grant, R. (1996). Toward a knoweldge-based theory of the firm. *Strategic Management Journal*, *17*(S2), 109–122. https://doi.org/10.1002/smj.4250171110

Hafeez, U., & Akbar, W. (2015). "Impact of Training on Employees Performance" (Evidence from Pharmaceutical Companies in Karachi, Pakistan). *Business Management and Strategy*. https://doi.org/10.5296/bms.v6i1.7804

Hair, J., Hair Jr, J. F., Sarstedt, M., Ringle, C. M., & Gudergan, S. P. (2023). *Advanced issues in partial least squares structural equation modeling*. saGe publications.

Irshad, M., & Afridi, F. (2011). Factors Affecting Employees Retention: evidence from literature. *Abasyn Journal of Social Sciences*, *4*(2), 307–339. https://doi.org/10.1061/(ASCE)9742-597X(1991)7:2(187)

Ismail, R. A. M., Arshad, R., & Abas, Z. (2017). Teacher efficacy: Are they effective in implementing

HOTS. *Medwell Journals*, *12*(7), 1136–1142.

Joshi, S. P., & Subedi, S. (2024). Mindfulness practices of leaders and its impact on the strategic choices. Journal of Management Changes in the Digital Era, 1(1), 128–140. https://www.aasmr.org/jmcde/Vol.1/No.1/Vol.1.No.1.09.pdf

Kao, S. C., & Wu, C. H. (2016). The role of creation mode and social networking mode in knowledge creation performance: Mediation effect of creation process. *Information and Management*, *53*(6), 803–816. https://doi.org/10.1016/j.im.2016.03.002

Kaihatu, T. S., Gde Satrya, I. D., Haryono, C. G., Herdono, I. I., Karya, D. F., & Rusadi, N. W. P. (2024). Enhancing the Business Sustainability of Women-Owned Tourism SMEs in Indonesia: Investigating the Effects of Product Innovation, Digital Platform Adoption, Entrepreneurial Spirit, Knowledge Utilization, and Government Support. Journal of Logistics, Informatics and ServiceScience, 11(6), 55–76.https://doi.org/10.33168/jliss.2024.0604

Khoa, B., & Hoa, L. (2021). The effect of knowledge management process on the employee commitment: Evidence from digital marketing industry. *Management Science Letters*, *11*(5), 1557–1564.

Klierova, M., & Kutik, J. (2017). One Stop Government-Strategy of Public Services for Citizens and Businesses in Slovakia. *Administration & Public Management Review*, *28*.

Knotter, M. H. (2019). *The Whole is More*. University of Amsterdam.

Kuzu, Ö. H., & Özilhan, D. (2014). The Effect of Employee Relationships and Knowledge Sharing on Employees' Performance: An Empirical Research on Service Industry. *Procedia - Social and Behavioral Sciences*, *109*(July 2016), 1370–1374. https://doi.org/10.1016/j.sbspro.2013.12.639

Lin, H.-F. (2013). The effects of knowledge management capabilities and partnership attributes on the stage-based e-business diffusion. *Internet Research*, *23*(4), 439–464. https://doi.org/http://dx.doi.org/10.1108/IntR-11-2012-0233

Liu, S., & Deng, Z. (2015). Understanding knowledge management capability in business process outsourcing: A cluster analysis. *Management Decision*, *53*(1), 124–138.

Lubis, Y., & Lubis, F. R. A. (2025). The effect of work life quality on job satisfaction mediated by performance in employees of the Agricultural Service of Simalungun Regency. Journal of Service, Innovation and Sustainable Development, 6(1), 122–135. https://www.aasmr.org/sisd/Vol.6/No.1/Vol.6.No.1.08.pdf

Masa'deh, R., Shannak, R., Maqableh, M., & Tarhini, A. (2017). The impact of knowledge management on job performance in higher education: The case of the University of Jordan. *Journal of Enterprise Information Management*, *30*(2), 244–262. https://doi.org/10.1108/JEIM-09-2015-0087

Mathis, R. L., & Jackson, J. H. (2010). *Personnel/human resource management* (12th ed.). West Publishing Company St. Paul, MN.

Ministry of Planning. (2021). *https://mop.gov.iq/news/view/details?id=796#*. Ministry of Planning in Iraq. https://mop.gov.iq/news/view/details?id=796#

Norfazlina, G., Akma, A. S. S., Adrina, S. N., & Noorizan, M. M. (2016). Customer Information System Satisfaction and Task Productivity: The Moderating Effect of Training. *Procedia Economics and Finance*. https://doi.org/10.1016/S2212-5671(16)30085-5

Otoo, F. N. K. (2019). Human resource development (HRD) practices and banking industry effectiveness: The mediating role of employee competencies. *European Journal of Training and Development*.

Pahos, N., & Galanaki, E. (2018). Staffing practices and employee performance: the role of age. *Evidence-Based HRM*. https://doi.org/10.1108/EBHRM-01-2018-0007

Pallant, J. (2020). *SPSS survival manual: A step by step guide to data analysis using IBM SPSS*. Routledge.

Phayaphrom, B., Siripipatthanakul, S., & Limna, P. (2022). *Modelling Knowledge Management on Business Performance Through Mediating Role of Organisational Innovation Among IT Staff in Bangkok , Thailand*. *March*.

Qasrawi, B. T., Almahamid, S. M., & Qasrawi, S. T. (2017). The impact of TQM practices and KM processes on organisational performance. *International Journal of Quality & Reliability Management*, *34*(7), 1034–1055. https://doi.org/10.1108/IJQRM-11-2015-0160

Riyanto, S., Sutrisno, A., & Ali, H. (2017). The Impact of Working Motivation and Working Environment on Employees Performance in Indonesia Stock Exchange. *International Review of Management and Marketing*, *7*(3), 342–348.

Salau, O., Osibanjo, A., Adeniji, A., Oludayo, O., Falola, H., Igbinoba, E., & Ogueyungbo, O. (2018). Data regarding talent management practices and innovation performance of academic staff in a technology-driven private university. *Data in Brief*, *19*, 1040–1045. https://doi.org/10.1016/j.dib.2018.05.081

Sekaran, U., & Bougie, R. (2019). *Research methods for business: A skill building approach*. john wiley & sons.

Shakir, Mohanaad, Salah Shiekh Deeb, Saad Osman Ahmed Almhlawi, Ayman Al Shehab, et Ahmed

Abo Eisheh. (2025). The Impact of Information Systems on Enhancing Employee Human Resource

Performance Skills. Journal of Logistics, Informatics and Service Science, mars. https://doi.org/10.33168/JLISS.2025.0106.

Song, J. H. (2008). The effects of learning organization culture on the practices of human knowledge-creation: An empirical research study in Korea. *International Journal of Training and Development*, *12*(4), 265–281. https://doi.org/10.1111/j.1468-2419.2008.00311.x

Srivastava, A. P., & Dhar, R. L. (2016). Authentic leadership for teacher's academic optimism: Moderating effect of training comprehensiveness. *European Journal of Training and Development*. https://doi.org/10.1108/EJTD-12-2015-0096

Sultana, A., Irum, S., Ahmed, K., & Mehmood, N. (2012). Impact of training on employee performance: A study of telecommunication sector in Pakistan. *Interdisciplinary Journal of Contemporary Research in Business*, *4*(6), 646–661.

Tauro, D. A. (2021). *Strategies for Retaining Organizational Knowledge from Retiring Employees*. Walden University.

Thalmann, S., & Ilvonen, I. (2020). Why should we investigate knowledge risks incidents?-Lessons from four cases. *Proceedings of the 53rd Hawaii International Conference on System Sciences*.

Tinuke, F. M. (2015). Dimensions of university academic staff Performance appraisal in selected public Universities in Nigeria. *Journal of Global Economics, Management and Business Research*, *3*(3), 139–147.

Tseng, S.-M., & Lee, P.-S. (2014). The effect of knowledge management capability and dynamic capability on organizational performance. *Journal of Enterprise Information Management*, *27*(2), 158–179. https://doi.org/10.1108/jeim-05-2012-0025

Tull, K. (2018). *Human Capital in Iraq*. *K4D Helpdesk Report.May*, 1–19. https://assets.publishing.service.gov.uk/media/5bae3ff840f0b62dd732c4bd/Human_Capital_in_Iraq.pdf

Udin, U. (2021). *a Theoretical Model of Leadership Styles (Transformational and Transactional) Influence on Innovative Work Behavior and Employee Performance: Testing the Role of Knowledge Sharing and Organizational Learning As Mediation Variables*. 313–321. www.ijmsssr.org

UNDP Iraq. (2018). *Inclusive and sustained growth in Iraq*. http://hdr.undp.org/sites/default/files/Country-Profiles/IRQ.pdf

Welbourne, T. M., & Johnson, D. E. (1998). The Role-Based Performance Scale : Validity Analysis of a Theory-Based Measure W ORKING P APER S ERIES The Role-Based Performance Scale : Validity Analysis of a Theory-Based Measure. *Academy of Management Journal*, *41*(5), 540–555. http://www.jstor.org/stable/256941

Wu, I.-L., & Chen, J.-L. (2014). Knowledge management driven firm performance: the roles of business process capabilities and organizational learning. *Journal of Knowledge Management*, *18*(6), 1141–1164. https://doi.org/10.1108/JKM-05-2014-0192

Zahra, S. S. a., & George, G. (2002). Absorptive Capacity: A Review, Reconceptualization, and Extension. *The Academy of Management Review*, *27*(2), 185. https://doi.org/10.2307/4134351