



Research article



Knowledge management infrastructure capabilities towards innovative work behavior: Employee's resilience and role of functional flexibility

Abdelmohsen A. Nassani^a, Khalid M. Al-Aiban^b, Joanna Rosak-Szyrocka^{c,*}, Zahid Yousaf^d, Nicoleta Isac^{e,f}, Waqar Badshah^g

^a Department of Management, College of Business Administration, King Saud University, P.O. Box 71115, Riyadh, 11587, Saudi Arabia

^b Department of Public Administration, College of Business Administration, King Saud University, P.O. Box 71115, Riyadh, 11587, Saudi Arabia

^c Department of Production Engineering and Safety, Faculty of Management, Czestochowa University of Technology, 42-200, Czestochowa, Poland

^d Higher Education Department, Government College of Management Sciences, Mansehra, 22300, Pakistan

^e Business Administration, Istanbul Sabahattin Zaim University, Halkali Cad. No: 281 Halkali, Kiciikçekmece, Istanbul, 34303, Turkey

^f Department of Management and Business Administration, Pitesti University Center, National University of Science and Technology POLITEHNICA, Bucharest, Romania

^g Management Information System, Istanbul University, Süleymaniye, KaptaniDerya, Ibrahim PaşaYkş. No:5, 34126, Fatih, Istanbul, Turkey

ARTICLE INFO

Keywords:

KMIC
Employee's resilience
Functional flexibility
Innovative work behavior

ABSTRACT

This study aims to identify the specific mechanisms through which knowledge management infrastructure capabilities (KMIC) can affect IWB and provide insights into how organizations can support innovation through the development of resilient employees. Therefore, current research investigates the association between Knowledge-Management Infrastructure Capability (KMIC), Employee Resilience, Function-al-Flexibility (FF), and Innovative Work-Behavior (IWB) in the workplace. The data was collected through a survey of 374 employees working in tourism firms. For data collection, random sampling method and SEM technique was used. The outcomes demonstrate that KMIC has significant link with IWB; findings also present that employee's resilience mediates and functional flexibility moderates in the association between KMIC and IWB, which in turn have a positive and significant impact on IWB. By investing in knowledge management practices, developing employee resilience, and enhancing functional flexibility, organizations can improve their competitiveness, promote growth and innovation, and enhance their employees' well-being and job satisfaction. This study just explored how KMIC affected innovative work behavior directly and indirectly. In future additional factors such as leadership style and organizational culture could be explored. Additionally, the study found that functional flexibility moderates the relationship between employee resilience and IWB. This study finding offer imperative implications for organizations that aims to improve their employees' resilience, functional flexibility, and IWB through knowledge management practices. Through inferring these dynamics, this research provides valued insights for upcoming studies on the executive origination and offer useful instructions for industries pursuing to raise employee determined invention with strong KMIC, nurturing resilience and stimulating functional flexibility.

* Corresponding author.

E-mail addresses: Nassani@ksu.edu.sa (A.A. Nassani), kalaiban@ksu.edu.sa (K.M. Al-Aiban), joanna.rosak-szyrocka@wz.pcz.pl (J. Rosak-Szyrocka), muhammadzahid.yusuf@gmail.com (Z. Yousaf), nicoleta.isac@izu.edu.tr (N. Isac), waqar.badshah@istanbul.edu.tr (W. Badshah).

<https://doi.org/10.1016/j.heliyon.2024.e38742>

Received 28 April 2024; Received in revised form 21 August 2024; Accepted 29 September 2024

Available online 4 October 2024

2405-8440/© 2024 The Author(s). Published by Elsevier Ltd. This is an open access article under the CC BY-NC license (<http://creativecommons.org/licenses/by-nc/4.0/>).

1. Introduction

Nowadays, individual level innovativeness performs strategic role for the success of an enterprise in the extremely competitive world [1]. Knowledge management infrastructure capabilities are the ability of an organization to effectively manage, share, and leverage its knowledge assets which is mainly depend on the procedure of the ideas generation and application of innovative ideas [2]. Now a day's speedily and frequently altering organization situation, companies are more and more accepting the significance of information administration communications potentials as necessary part to attain superior levels of inventive employment performance and preserve aggressive compensation [3]. Innovative work behavior (IWB) refers to the ability and willingness of workers to create and execute newest ideas, processes, products or services that improve their own work performance or the performance of their organization [4]. It involves the creativity, proactivity, risk-taking, and persistence of employees in seeking new solutions to work-related problems or opportunities [5]. The success of an organization depends on its ability to manage and leverage its knowledge, which is why the implementation of a robust knowledge management infrastructure is essential [6]. A strong knowledge management infrastructure is one that enables employees to efficiently access and utilize relevant information, collaborate, and innovate [7]. Accordingly, to attain a high level of the IWB, organizations are required to increase its knowledge management skills and expertise of its front-line member of staffs to play manifold diverse tasks [8]. These competences motivate front-line personnel to review new notions for handling emergent tasks relating IWB [9]. Knowledge-management infrastructure capabilities enable workers to execute various tasks simultaneously and picks up its resilience level in the terms of multiple aspects perception which increases ability of an individual to adapt changes in an enthusiastic way [10]. Resilient employees established a platform for the innovative thinking which states that workers spend appropriate time and analytically accomplish various tasks instantly and develops their IWB [11]. Resilience can be defined as the ability of employees to recover from setbacks, cope with challenges, and adapt to changes. It is a critical trait that helps employees to thrive in dynamic and unpredictable work environments [12]. KM infrastructure capabilities permuting distinctive advantages that offer attraction, improving level of the IWB of employees and recovers employees' capacity to produce new ideas and novel work approaches which provide experience to handle several tasks that improve employee's resilience for involving in IWB [13,14]. Within the present company surroundings, companies have to be capable to acclimatize to the altering marketplace situation and successfully administer their information possessions to keep on spirited [15]. Yet, practical suppleness is necessary for workers to efficiently find the way to quickly altering company surroundings [16]. While earlier investigators have inspected the association among KMI abilities and IWB, except it is indistinct whether the association among KMI abilities plus IWB is powerful for positive types of workers, such as persons by towering levels of practical suppleness, originality and knowledge. In addition, preceding studies contain paying attention on single-level elements that manipulate IWB, that is incentive and originality [17], other than contain rewarded little concentration to related elements, that is the managerial communications and worker individuality. Therefore, it is essential to investigate how these con-textual factors interact to influence IWB (see Fig. 1).

Recently, the relationship between KMI capabilities and IWB has been a topic of interest among scholars and practitioners [18]. However, there is barely a few evidence exist in literature which provide comprehensive understanding regarding individual-level invention i.e. IWB among production-line employees [19]. Therefore, this study sets prospect for management of tourism sector worries about making efforts to achieve economical edge and successfully dealt with IWB at workplace. However, the impact of knowledge management infrastructure on employee outcomes such as resilience has not been extensively studied. Additionally, it is unclear how these employee outcomes affect the dependent variable, innovative work behavior (IWB). While each of these constructs (KMI capabilities, employee resilience and IWB) has been studied independently. It has been also analyzed that research to examine the mutual relationships among them still lacks and need further exploration.

Despite the growing interest in KMIC, functional flexibility, employee resilience, and IWB links, there is lack of the experimental research that has explored these associations comprehensively. In particular, there is a lack of re-search that has been explored employee resilience mediating role and functional flexibility moderating role between KMIC and IWB links. This is a substantial research gap that needs to-be addressed to obtain a comprehensive understanding of the relationships among these variables. Thereby, this research investigates the influence of the knowledge-management infrastructure capabilities on IWB, focusing the mediation role of the employee's resilience and moderation impact of the functional flexibility. Different prior studies have been enlightened the significance of the KMIC in boosting organizational innovativeness and performance, nevertheless the mechanisms underlying these

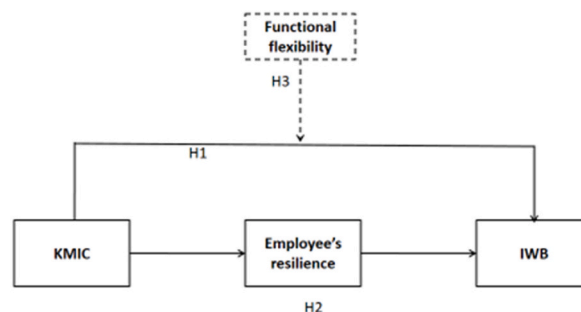


Fig. 1. Theoretical framework.

associations remain underexplored. Specially, the roles of the employee tractability-an employee's capability to adjust and succeed in adversity and FF the competence to execute different tasks are not well-understood. Through addressing this gap, this research purposes to response three significant research questions;

- To what extent KMIC predicts IWB after controlling ER and FF?
- How ER mediates between KMIC and IWB links?
- To what extent functional flexibility strengthens the link between KMIC and IWB?

By doing so, this research gives insights into the factors that promote IWB and how organizations can develop a knowledge management infrastructure that fosters resilience and functional flexibility in employees. The study offers noteworthy theoretic and practical contributions through illuminating the links. The outcomes advance the understandings of the knowledge-management infrastructure-capabilities in raising innovation and provide practical perceptions for enterprises directing to leverage KMIC's efficiently. This paper set up in following manner, in section 2 literature review is included; subsequently in next sections research methodology, findings, results and discussion is added, concluding with summary of the significant contributions and implications. This arrangement improves the manuscript's impact with incorporating up-to-date literature and disclosing persistent research requisites, thus proposing actionable approaches for boosting innovative behavior within workplace. Accordingly, this study would help organizations to understand the underlying mechanisms through which KMIC and functional flexibility can promote IWB, and the role of employee resilience in facilitating this process. Ultimately, this under-standing would help organizations to design more effective strategies for knowledge management, functional flexibility, and employee development, leading to improved innovative performance and sustained competitive advantage.

2. Literature review

2.1. KMIC and IWB

KMI abilities submit to the managerial aptitude to expand and use information administration communications efficiently [20]. This comprises the ability to generate, detain, stock up, divide, and relate information to hold novelty actions [2,21,22]. IWB, resting on the further pass, comprise to the practical performance of workers meant at creating and applying new thoughts, processes, or goods that can progress managerial presentation [4]. a variety of studies shows that towering stage of KMI abilities can make easy IWB through given that workers with the essential capital, tools, and maintain to connect in inventive actions [7,8]. Modernism work performance is the person's practical performance intended at generating, upgrading, and implementing inventive thoughts, goods, and procedures that can get better managerial presentation [23]. While, KMI abilities can assist to promote traditions of information distribution and teamwork, allow admission to pertinent knowledge and skill, encourage testing and knowledge, and make easy the recognition in addition to utilization of novel chance [24]. Companies that employ in raising a vigorous KMI are additional probable to give confidence and allow IWB amongst their workers. Conversely, organizations that neglect and underutilize their KMI may face barriers to innovation, such as information overload, siloes knowledge, and lack of learning opportunities [25]. Nevertheless, KMI can provide employees with easy access to relevant information and expertise, organizational practices, tools, and systems designed to create, store, transfer, and apply knowledge effectively, and foster a culture of knowledge sharing and collaboration, support experimentation and learning, and help to identify new opportunities and challenges which could support in the attainment of IWB [26]. Thus, we can hypothesize that.

H1. The KMIC is positively associated with IWB.

2.2. Employee's resilience as a mediator

Employee resilience is the ability of individuals to adapt and recover from challenging situations, such as change, uncertainty, or setbacks [12]. KMIC is the organizational ability to develop and utilize knowledge effectively, including the capacity to create, capture, store, share, and apply knowledge to support innovation activities [3]. Pliant workers have the ability to become accustomed and manage through hardship and indecision in the place of work. Organizations that spend in rising KMIC be probable to promote better worker pliability, which, in twist, can guide to senior stages of IWB [2]. Pliability can arbitrate the association among KMIC plus IWB in numerous ways. For example, pliant workers might be improved operational to manage by the challenges linked with novelty and alter, such as stoppage, indecision, and vagueness [27]. They might as well be additional eager to get risks and persevere in the countenance of hurdles, foremost to additional inventive results [28]. Specially, we suggest that companies with towering KMIC resolve promotes superior levels of worker pliability, which in revolve will guide to senior stages of IWB. previous studies refer that KMIC be able to absolutely sway worker pliability by giving them by means of the essential capital, tackle, and hold to find the way in addition to manage with managerial hurdle's [29]. At the similar instance, worker pliability can absolutely collision IWB through enabling persons to conquer hurdles to modernism [30]. Thus, we can hypothesize that employee resilience mediates the relationship between KMIC and IWB in organizations. In other words, KMIC can indirectly influence IWB by enhancing employee resilience as a mediating variable.

H2. The relationship between KMIC and IWB is mediated through employee's resilience.

2.3. Functional flexibility as a moderator

Employees with high levels of functional flexibility may be more adept at utilizing the knowledge management infrastructure to support their innovative activities [31]. However, functional flexibility is an individual's ability to adapt to changing work requirements and to perform a variety of tasks and roles within an organization [32]. They may also be more willing to take on diverse roles and responsibilities within the organization, leading to a broader range of innovative outcomes [33]. High levels of FF allow workers to access and utilize wide variety of the knowledge and expertise within the organization [31]. This can be particularly important for innovation, where combining different ideas and perspectives can lead to new and creative solutions [14]. Workers with practical elasticity are improved talented to value added to the information organization communications obtainable in their association, which can assist to hold up their inventive actions [34]. Therefore, we suggest that associations with elevated KMIC with personnel with elevated levels of practical flexibility will show a stronger association among KMIC plus IWB than associations with short usefulness elasticity. Practical elasticity enables workers to get on varied roles and tasks inside the association. This can amplify the capacity of their labor and give them with chances to expand novel skills and information [35]. Workers with usefulness suppleness are additional likely to connect inside IWB because they contain a wide variety of skills plus experiences to represent upon [16]. In general, practical suppleness can make stronger the association flanked by KMIC plus IWB by giving workers with the possessions and capabilities essential to connect in inventive action efficiently. By providing admission to varied information, the capability to obtain on varied roles, and suppleness in managing to modify, practical suppleness can assist to exploit the collision of KMIC resting on IWB [36]. Thus, we can hypothesize that;

H3. Functional flexibility moderates the relationship between KMIC and IWB.

2.4. Theoretical model

The theoretical model shows the presentation of all hypothesis such as KMIC is independent variable; employee resilience is mediating construct, functional flexibility is moderating and finally IWB is dependent variable.

3. Methodology

The research design is quantitative, and data was collected through a survey. The sample size was 374, and data was collected by five research associates who were trained to ensure the consistency of the data collection process. We examined our hypothesis through focusing on tourism industry in Saudi Arabia.

3.1. Data collection and sampling

Data was collected from top ranked level of Saudi Arabia i.e. 4-star and 5-star hotels. Highly ranked hotels were chosen priority because most of the foreign tourists stay in 4 star and 5 star hotels. All these cities are reflects a clear picture of tourism purposes. These hotels manage big crowd and different events like social and cultural events, national and international conferences and business demonstrations. However, for data collection, 370 participants were selected who are working in four- and five-star hotels in the Saudi Arabia during the course of the completion of 2023 and start of the 2024. The study participants were sensibly chosen based upon their proficiencies, role and experiences in the enterprise, certifying that they were eligible to give informed responses concerning KMIC, employee-resilience, FF and innovative work-behavior. Additionally, data admittance was stringently controlled to keep confidentiality, and overt consents was attained from all-participants earlier they took part within survey. The survey intended to capture detail understandings in to study constructs and permit for additional justification of the research findings. The cross-sectional validated scale was distributed mutually virtual and in-hard, certifying a varied and descriptive sample. The respondent's privacy and informed consensus was prioritized. Five research assistants were appointed to gather the data form different cities. These research-assistant were proper proficient and trained before the data collection started. Top level employee (managerial-level) of the selected hotels who were involved both directly and indirectly in decision making of developmental sector were asked to provide that data. Initially some hurdles and problems were faced to contact and gathered that data form respondents, some respondent were timid to give their time and knowledge. Therefore, 370 managerial positions were communicated for data collection; however, research assistants collected 280 useable responses. The response rate was satisfactory. The demographic info comprising gender, educational level, age, income and job role was obtained from respondents. The questionnaire contains of three sections. The first segment includes demographic information about respondents, such as age, gender, education, and income. The second section assess tourists' satisfaction with their experiences in the tourism sector, including service quality, attractions, and infrastructure. The third section evaluate tourists' loyalty, including their willingness to return and recommend the destination.

3.2. Scale measurements

The five-point Likert scale designed to measure study's component range between one for strongly disagreeing to 5 for strongly agreeing.

3.2.1. Knowledge management infrastructure capabilities

To measure KMIC 12 items scale was used which is adapted from the studies of [37]. This construct measures the set of tools, technologies, processes, and systems that an organization uses to create, capture, store, share, and manage its knowledge assets. This scale has three sub-dimensions; organizational culture, IT infrastructure and organizational culture.

3.2.2. Employees Resilience

To measure employee resilience six Items scale were used which is adapted from Al-Omar et al. (2019); [38]. This construct measures a worker's capacity to deal with difficult circumstances or failures and to recover from them. The question example is "After tough times, I generally recover swiftly."

3.2.3. Functional flexibility

FF was measured with 13-item scales developed by Molleman and van den Beukel (2007) [39]; and Wojtczuk-Turek and Turek (2015); [40]. This variable evaluates an organization's ability to adapt to changes in its environment by adjusting its functions and processes. The question item is "I can quickly adapt to new situations in the organization".

3.2.4. Innovative work behavior

To measure IWB 6 items scale was used which is adopted from Kang and Lee (2016); [40]. This construct measures an employee's propensity to engage in innovative activities in the workplace. The example question is "I look for innovative technology, procedures, approaches, and product concepts."

4. Data analysis

This study conducts descriptive statistics, structural equation modeling approach (SEM) and correction results. Furthermore, the discriminant validity was tested through applying AMOS 7.0 with support of CFA. Preacher and Hayes analysis (2008); [42], approach were used to examine the mediating effect of employee resilience between knowledge management infrastructure capabilities and innovative work behavior and moderating effect of functional flexibility, we used hierarchical regression analysis were used.

Table 1 presents the results of discriminant and convergent validity. Fornell and Lacker (1981); [43], technique was conducted to examine the discriminant validity. We conduct all the reliability and validity tests and results proved it, as we have used pre-tested constructs and firstly face validity and content validity were ensured. For this purpose questionnaire was shown to 4 experts i.e. 2 from tourism industry and 2 from academia. They incorporated minor language and content changes and makes questionnaire more understandable and easy to solve.

Table 1 show discriminant validity and results were satisfactory as the value of AVE and shared-variance among variables and model-constructs are less than the AVE-value of the observing variables showing constructs differentiations. Moreover square-root of AVE values is on the diagonal and correlation between variables is also shown in table below Table 2. Furthermore, the corresponding values are smaller than diagonal values columns and rows, which approves that discriminant validity certainly exists in this study.

Reliability was confirmed, as each item CR value ranges from 0.92 to 0.98, indicating the construct was reliable. According to Fornell and Larcker's approach [43], average variance extract (AVE) > 0.72, Factor loading (FL) > 0.72, Composite Reliability (CR) > 0.92, and Cronbach's alpha value is higher than 0.72 (See Table-2).

Table 3 presents the outcomes of Confirmatory-factor-analysis (CFA). This study connects 4-Factor model with other alternative models F1 = Knowledge Management Infrastructure Capabilities (KMIC). F2 = Employee Resilience (ER), F3= Functional Flexibility and F4 Innovative Work Behavior (IWB) are considered as individual factors. According to Joreskog and Sorbom (1996); [44]. The CFA results showed that this model is fitted to the data ($\chi^2 = 1056.42$; $p < 0.001$; CFI = 0.92 and GFI = 0.93).

Table 4 displays the findings of the correlation. Knowledge Management Infrastructure Capabilities, Employee Resilience, Functional flexibility has positively significant with IWB. Knowledge Management Infrastructure Capabilities has positively associated with IWB ($r = 0.26^{**}$, $p = \text{sig}$). Employee resilience has positively significant with innovative work behavior ($r = 0.24^{**}$, $p = \text{sig}$). Functional flexibility positively linked with IWB ($r = 0.36^{**}$, $p = \text{sig}$) The VIF values also proves that multi-collinearity is not an issue in this research as its value were less than 10.0.

4.1. Common method bias

The results underscore the existence of 19 factors with eigen-values were higher than 1 rather than a single-factor. Moreover, these 19 factors brought 48 % (approximately) of total variance and first factor brought 18 % change. Consequently, common method bias is

Table 1
Discriminant validity.

Sr No	Details	1	2	3	4
1	KMIC	0.831			
2	Employee Resilience	0.643	0.829		
3	Functional Flexibility	0.609	0.792	0.848	
4	Innovative Work Behavior	0.694	0.659	0.671	0.837

Table 2

Outcomes of factor loading, average-variance-extract and alpha results.

Construct Description	Fac-L	t	Alpha	CR Value	AVE Value
Knowledge Management Infrastructure Capabilities			0.82	0.96	0.78
KMIC-1	0.88	15.4			
KMIC-2	0.82	15.5			
KMIC-3	0.76	14.5			
KMIC-4	0.74	13.6			
KMIC-5	0.88	14.6			
KMIC-6	0.82	15.2			
KMIC-7	0.84	15.8			
KMIC-8	0.87	15.6			
KMIC-9	0.78	14.5			
KMIC-10	0.74	15.2			
KMIC-11	0.86	15.4			
KMIC-12	0.84	14.5			
KMIC-13	0.86	15.3			
KMIC-14	0.84	14.6			
KMIC-15	0.81	15.2			
KMIC-16	0.87	14.5			
KMIC-17	0.82	15.5			
KMIC-18	0.72	14.6			
KMIC-19	0.74	14.6			
KMIC-20	0.78	15.5			
KMIC-21	0.82	15.5			
Employee Resilience			0.88	0.92	0.72
ERes-1	0.86	15.4			
ERes-2	0.78	14.8			
ERes-3	0.88	13.7			
ERes-4	0.82	14.6			
ERes-5	0.76	15.4			
ERes-6	0.84	15.6			
Functional Flexibility			0.86	0.94	0.76
FunFlex-1	0.82	15.4			
FunFlex-2	0.86	14.6			
FunFlex-3	0.84	15.2			
FunFlex-4	0.81	14.5			
FunFlex-5	0.78	14.7			
FunFlex-6	0.82	15.3			
FunFlex-7	0.74	15.6			
FunFlex-8	0.82	15.1			
FunFlex-9	0.78	14.3			
FunFlex-10	0.86	14.6			
FunFlex-11	0.82	15.4			
FunFlex-12	0.84	15.1			
FunFlex-13	0.86	15.4			
Innovative Work Behavior			0.84	0.98	0.74
IWBeh-1	0.84	15.2			
IWBeh-2	0.88	13.6			
IWBeh-3	0.78	14.5			
IWBeh-4	0.82	15.3			
IWBeh-5	0.87	14.6			
IWBeh-6	0.81	14.3			

Table 3

Results of model Fitness.

Model Description	χ^2	Df	χ^2/Df	Rmesha	GFI	CFI
Hypothesized four-factor model	1056.42	490	2.156	0.05	0.92	0.93
Three-factor model	1145.25	385	2.975	0.13	0.86	0.82
Two-factor model	1280.52	365	3.508	0.18	0.72	0.78
Single-factor model	1485.52	350	4.244	0.22	0.64	0.68

not a problem using the Harment test.

Table 5 presents the outcomes of the hypothesis testing of knowledge management infrastructure capabilities has a positively associated with IWB. SEM was conducted to examine the positive impact of knowledge management infrastructure capabilities on IWB. Table 4 specifies the results that KMIC has a positively significant with IWB and it is confirmed analytically (β value = 0.28**, so, H1 is proved $p < 0.000$).

Table 4

Correlation results, mean value and alpha.

Variable Detail	Mean	SD	Alpha	1	2	3	4	5	6
1 Respondent Exp.	1.34	0.45	0.86	1.00					
2 Respondent Educ.	1.25	0.42	0.84	0.056	1.00				
3 Knowledge Management IC	3.18	0.36	0.80	0.104**	0.012	1.00			
4 Employee Resilience	3.56	0.32	0.82	0.102*	0.014*	0.042	1.00		
5 Functional Flexibility	3.25	0.42	0.86	−0.025	0.042*	0.32**	0.34**	1.00	
6 IWB	1.16	0.22	0.83	0.026	0.011	0.26**	0.24*	0.36**	1.00

Note: * <0.05; ** <0.000.

Table 5

Results of KM infrastructure capabilities to innovative work behavior (H1).

Construct Detail	Hypothesis Description	B	F	T	Sig	Remarks
KMIC→IWB	Knowledge Management IC→IWB	0.28	14.056	11.360	0.000	Accepted

Employee resilience mediates between knowledge management infrastructure capabilities and innovative work behavior (Table 6). Preacher and Hayes (2008) [41], method was applied to test the mediation result of the employee resilience between knowledge management infrastructure capabilities and innovative work behavior (KMIC→ER→IWB). Table 5 displays indirect effect and proved that employee resilience act as a mediator ($\beta = 0.3465$, Lower = 0.2657 to Upper = 0.3870). Thus, H2 was proved that KMIC and IWB link is mediated through employee resilience.

Table 7 demonstrates functional flexibility (FF) moderating role in the relationship between knowledge-management infrastructure-capabilities (KMIC) and IWB. Hierarchical regression analysis was conducted to test the influence of knowledge management infrastructure capabilities on innovative work behavior through moderating role CSR functional flexibility. Results proves that functional flexibility were positive moderator between knowledge management infrastructure capabilities and innovative work behavior i.e., ($\beta = 0.32^{**}$, $p < 0.01$). Hence, H3 was accepted.

5. Discussion

The findings of this study provide support for the idea that organizations that invest in knowledge management practices can improve their employees' resilience, functional flexibility, and IWB. The direct and significant relationship between KMIC and IWB suggests that organizations should focus on developing their knowledge management systems to enhance their employees' ability to adapt to change and conquer hurdles. These study consequences are stable with previous examine that has exposed a optimistic involvement between information organization and worker pliability that towering stage of KMI abilities can make easy IWB through giving workers with the essential capital, apparatus, and hold to connect in inventive behavior (Chang and Chuang, 2011, Shafique et al., 2022). modernism work performance (IWB) is the person's practical performance meant at producing, promoting, and implementing inventive thoughts, goods, and processes so as to be able to get better managerial presentation (Shanker et al., 2017). The penalty also suggested that worker pliability plays intervention in the connection amid KMIC plus IWB. Associations that spend in information administration practices can get better their workers aptitude to become accustomed to dissimilar work roles and tasks and can attain their preferred goals and purposes by investing in essential capital and tackle to expand IWB abilities. This is reliable with preceding investigate so as to KMIC be the managerial aptitude to expand and use information efficiently, as well as the ability to generate, imprison, accumulate, split, and relate information to hold novelty behavior (Kmieciak, 2021). Elastic workers have the ability to become accustomed and manage with misfortune and indecision in the place of work. Associations that put in rising KMIC are probable to further superior worker pliability, which, in revolve, can guide to senior stages of IWB (Suhandiah et al., 2023).

The consequences also point to that practical suppleness moderates the association between worker pliability and IWB, signifying that workers with elevated usefulness are further credible to interpret its pliability into IWB. Through doing so, associations can get better their rivalry and endorse growth and novelty in their labor force. Result are similar with preceding studies that elevated stages of the FF permit personnel to admission and use broad diversity of the information and skill in the association (Cassia, Costa and de Oliveira Neto, 2022). This can exist mainly significant for modernism, somewhere combining dissimilar opinion and position can guide to novel and original ideas (Majid, Yasir and Yasir, 2017). Workers with practical suppleness are improved capable to valve into the information organization communication obtainable in their association, which can assist to hold up their inventive actions (Waheed et al., 2021). Hence, we propose that organizations with high KMIC and a workforce with high levels of functional flexibility

Table 6

Mediating results.

Construct Detail	Data	Boot	SE	Lower	Upper	Sig
KMIC→ER→IWB	0.3465	0.3248	0.42	0.2657	0.3870	0.0000

Z Score = 4.67 P level at 0.000 Significant.

Table 7
Results for moderation.

Innovative Work Behavior						
Detail	Beta	T-Value	Beta	T-Value	Beta	T-Value
Step-1						
Respondent experience	0.14	0.04	0.03	0.24	1.05	1.36
Respondent education	0.16	0.24	0.18	0.85	0.08	0.14
Step 2						
KM infrastructure			0.32 ^a	5.86	0.28 ^a	4.52
Functional Flexibility			0.26 ^a	5.42	0.26 ^a	4.58
Step 3						
KMIC x FF					0.32 ^b	2.24
F		4.32 ^b		16.32*		14.42 ^a
R2		0.06		0.26		0.26
R2				0.18		0.02

Notes.

^a $p < 0.0001$.

^b $p < 0.05$ (two tailed).

will demonstrate a stronger relationship between KMIC and IWB than organizations with low functional flexibility. In conclusion, this research provides valuable insights on linkage between KMIC, employee resilience, functional flexibility, and IWB in the workplace. Findings also enlighten the significance of knowledge management practices in fostering employees' resilience, functional flexibility, and IWB. The study provides a roadmap for organizations to enhance their employees' competencies in these areas, which can lead to improved organizational performance and growth.

5.1. Theoretical implications

This study offers several theoretical implications for fields of knowledge management, organizational behavior, and innovation management. Firstly, this study provides a theoretical explanation of how employee resilience mediates in the link among KMIC and IWB. The findings suggest that KMIC positively influences employee resilience, which consecutively fosters employee's innovative-work-behavior. This paper contributes to theoretical understanding on association between KMIC and IWB through recognizing employee resilience as a mediator that ex-plains how KMIC enhances IWB. Secondly, this study offers a theoretical explanation of the moderation role of function-al flexibility between KMIC and IWB link. Moreover, this study provides insight on the correlation between employee resilience and IWB through recognizing FF moderating role that increases the positive effect of employee resilience on IWB. Thirdly, this paper extends prior literature on knowledge management and employee outcomes through highlighting the importance of KMIC in enhancing employees' resilience, FF, and IWB. This research con-tributes to the understanding about knowledge management and employee outcomes through identifying the role of KMIC as a key factor that can improve employees' resilience and functional flexibility, which in line fosters their IWB. Overall, the theoretical implications of this research offer a deeper understanding of the relationships between KMIC, employee resilience, functional flexibility, and IWB. The findings contribute to literature on KMI, employee outcomes, and innovation management through providing comprehensive model for future studies in fostering innovative work behavior. Additionally, this research enlightens the significance of seeing both individual and structural aspects when investi-gating the antecedents of the innovative-work behavior.

5.2. Practical implications

The result of present investigation hasnumeroussensiblesuggestions for businesses that plan to improve their workers'pliability, practicallitheness, and pioneering work performance. Initially, this study proposes that businesses could improve its innovative performance through capitalizing in the strong KMIC, that comprises of emergent systems for efficient knowledge allotment and teamwork. Secondly, this study recommends that employee resilience with training-programs and sustenance systems can increase the positive impacts of the KMIC on innovativeness. Additionally, increasing functional elasticity amid employees with promoting cross trainings and varied skills advancements can more strengthen this linkage, facilitating enterprises to acclimatize further rapidly to-wards shifting market-conditions and innovate further successively. Organizations can spend in informationadministration practices that get better their KMIC toimprove their worker'spliability and practicallitheness. This containerisattained by givingworkers with entrance to informationdistribution platforms, contributionpreparation and growth programs, and as long asinstruction and guiding to help workersconstruct their pliability and handylihteness. Furthermore, companies can improve their worker'susefullitheness to promote their pioneering work performance. This is able to getting by givingworkers with chance to expandmultipurpose skills, contribution job alternation and workenhancement programs, and providing a civilization of incessantknowledge and growth. In end, the realisticinsinuation of this learns givesleadership to associations that plan to improve their workerspliability, practicalsuppleness, and inventivejobperformance. By providing in informationorganizationoperations, risingworkerpliability, and attractivepracti-callitheness, association can get better their rivalry, endorseenlargement and novelty, and improve their workerscomfort and job happiness.

5.3. Policy implications

This research also offers a noteworthy policy implication. The policymakers must deliberate sponsoring frameworks that supports in the advancement of the KMIC within different industries, identifying its significant role in determining innovation. Strategies that incentivizes enterprises to finance in employee-resilience and FF could foster workers adaptability and creative capacity. Moreover, developing an atmosphere that backing continuous knowledge and growth can assist in sustainable long-run organizational invention and competitiveness.

6. Future research directions and conclusion

This learning has a variety of limitations that must to be in use keen on explanation when understand the result. Firstly, the information was composed by determining questionnaires, which canister initiate answer partiality and communal appeal partiality. Viewpoint studies conserve use additional objectives actions of KMIC, worker pliability, practical suppleness, and pioneering work performance to authenticate the result of this learning. Secondly, in this study quantitative design is used for data collection. Hence, future studies can use longitudinal designs to examine the causal relationships between KMIC, employee resilience, functional flexibility, and innovative work behavior over time. This can provide a more robust test of the theoretical model proposed in this study. Thirdly, this study only looked at how KMIC affected innovative work behavior directly and indirectly. Future research could investigate the moderating effects of additional factors in the relationship between KMIC, employee resilience, functional flexibility, and innovative work behavior, such as leadership style and organizational culture. Finally, this learning was managed in an exact business and confined site, which restrictions the validity of the result. Future studies can replicate this study in different industries and geographic locations to assess the generalizability of the findings. Through focusing on these restrictions and finding novel paths, upcoming researches could shape on these findings to more explicate the mechanisms determining IWB and foster the practical applications of the KMIC within different backgrounds. The research examines the relations amid knowledge-management infrastructure-capabilities, ER, functional flexibility and IWB within the perspective of the 5-star hotels in the Saudi-Arabia. This study outcomes proposes that KMIC definitely affects the IWB, with employee's flexibility acting as a significant intermediary and FF as a substantial moderation. Accordingly, these findings add to the understandings of the how knowledge management infrastructure-capabilities could be leveraged to boost innovation in the organization.

Data availability statement

The data associated with the study have not been deposited into a publicly available repository; they are available on demand.

Funding

Researchers Supporting Project number (RSP2024R87), King Saud University, Riyadh, Saudi Arabia.

CRediT authorship contribution statement

Abdelmohsen A. Nassani: Writing – original draft, Supervision, Software, Resources, Methodology, Investigation, Formal analysis, Data curation, Conceptualization. **Khalid M. Al-Aiban:** Writing – review & editing, Writing – original draft, Visualization, Supervision, Project administration, Methodology, Investigation, Formal analysis, Conceptualization. **Joanna Rosak-Szyrocka:** Writing – review & editing, Writing – original draft, Visualization, Supervision, Project administration, Funding acquisition. **Zahid Yousaf:** Writing – review & editing, Visualization, Supervision, Software, Resources, Project administration, Investigation, Formal analysis. **Nicoleta Isac:** Writing – review & editing, Visualization, Supervision, Formal analysis. **Waqar Badshah:** Writing – review & editing, Visualization, Validation, Supervision, Project administration.

Declaration of competing interest

Authors declare No Conflict of Interest.

Acknowledgments

Researchers Supporting Project number (RSP2024R87), King Saud University, Riyadh, Saudi Arabia.

Appendix-A

Section 1 Respondent

Q1. Respondent Experience.

- 1 1 years–5 years
- 2 6 years–10 years
- 3 11 years–15 years
- 4 16 years–20 years
- 5 More than 21 years

Q2. Respondent Education.

- 1 Matric/Secondary School Certificate/10 Year Education
- 2 Intermediate/Higher Secondary School Certificate/12 Year Education
- 3 Bachelor/Graduate/14 Year Education
- 4 Master/16 Year Education
- 5 MS/M. Phil/18 Year Education
- 6 PhD

Section 2 Respondent

Please select your level of agreement with the following statement using the scale below, 1 is strongly disagree (SD) and 7 is strongly agree (SA)

Knowledge Management Infrastructure Capabilities—12 items.

Organizational Culture (4 items)

Employees in our company understand the importance of knowledge sharing to corporate success.

Employees in our company are encouraged to participate in seminars and group discussion

Employees in our company are generally trust worthy.

Employees in our company are willing to support and help each other.

IT Infrastructure (4 items)

The company has invested in effective knowledge management technologies to enable knowledge sharing between employees (e.g. intranets/extranets, groupware, repositories, etc)

Information technology plays a critical role in facilitating knowledge sharing.

Our company has technological systems that help us communicate outside and inside the organization.

Our company uses technology that allows us as a learning group from several sources at different times.

Organizational Structure (4 items)

Organizational structure is flat (Few management levels)

Organizational structure is flat (Few management levels)

Decision making is decentralized.

The organizational structure facilitates knowledge discovery and creation.

Employees Resilience—6 items.

I have a hard time making it through stressful events.

I tend to take a long time to get over set-backs in my life.

I usually come through difficult times with little trouble.

It is hard for me to snap back when something bad happens.

It does not take me long to recover from a stressful event.

After tough times, I generally recover swiftly.

Functional Flexibility—13 items.

I am broadly skilled and can carry out several tasks in this organization.

I can quickly adapt to new situations in the organization.

I am ready for a change of my job position of tasks within my organization.

I am willing to devote time and energy to education in order to develop myself for a future job.

With my knowledge and experience, I would be able to change to another job within the organization.

I have competence to deal with customers and sell products at low cost. I can deliver best quality performance through wide range of skills. I can develop novel products and services. I can decide how to perform my work flexibly. I determine the order of performing my tasks. I am careful about performing different tasks. I have control over my plans of working.

I can do numerous tasks in my team.

Innovative Work Behavior—6 items.

I search out new technologies, process, techniques or product ideas?

I develop adequate plans and schedules for the implementation of new ideas.

I take notice of the problems which are not part of the routine work.

I focus on how belongings could be enhanced.

I discover new techniques and methods of working.

I make innovative solutions for the problems.

References

- [1] T. Mack, C. Landau, Submission quality in open innovation contests-an analysis of individual-level determinants of idea innovativeness, *R&D Management* 50 (1) (2020) 47–62.
- [2] B. Obeidat, M. Al-dalahmeh, R. Masadeh, The role of knowledge management infrastructure in enhancing innovation at mobile telecommunication companies in Jordan, *Eur. J. Soc. Sci.* 50 (3) (2015) 313–330.
- [3] R. Kmiecik, Trust, knowledge sharing, and innovative work behavior: empirical evidence from Poland, *Eur. J. Innovat. Manag.* 24 (5) (2021) 1832–1859.
- [4] Z.M.E. Siregar, E.A. Suryana, S.H. Senen, Factors influencing innovative work behavior: an individual factors perspective, *International Journal of Scientific & Technology Research* 8 (9) (2019) 324–327.
- [5] T. Yidong, L. Xinxin, How ethical leadership influence employees' innovative work behavior: a perspective of intrinsic motivation, *J. Bus. Ethics* 116 (2013) 441–455.
- [6] S.C. Pandey, A. Dutta, Role of knowledge infrastructure capabilities in knowledge management, *J. Knowl. Manag.* 17 (3) (2013) 435–453.
- [7] T.C. Chang, S.H. Chuang, Performance implications of knowledge management processes: examining the roles of infrastructure capability and business strategy, *Expert Syst. Appl.* 38 (5) (2011) 6170–6178.
- [8] I. Shafique, M.N. Kalyar, M. Shafique, A. Kianto, L.S. Beh, Demystifying the link between knowledge management capability and innovation ambidexterity: organizational structure as a moderator, *Bus. Process Manag. J.* 28 (5/6) (2022) 1343–1363 (ahead-of-print).
- [9] Y. Sun, M. Shahzad, A. Razaq, Sustainable organizational performance through blockchain technology adoption and knowledge management in China, *Journal of Innovation & Knowledge* 7 (4) (2022) 100247.
- [10] T. Hatton, C. Brown, R. Kipp, E. Seville, P. Brouggy, M. Loveday, Developing a model and instrument to measure the resilience of critical infrastructure sector organisations, *Int. J. Crit. Infrastruct.* 14 (1) (2018) 59–79.
- [11] R. Abukhait, S. Bani-Melhem, F. MohdShamsudin, Do employee resilience, focus on opportunity, and work-related curiosity predict innovative work behaviour? The mediating role of career adaptability, *Int. J. Innovat. Manag.* 24 (7) (2020) 2050070.
- [12] S. Suhandiah, F. Suhariadi, P. Yulianti, A. Abbas, Autonomy and feedback on innovative work behavior: the role of resilience as a mediating factor in Indonesian Islamic banks, *Cogent Business & Management* 10 (1) (2023) 2178364.
- [13] I. Irfan, M.S.U.K. Sumbal, F. Khurshid, F.T. Chan, Toward a resilient supply chain model: critical role of knowledge management and dynamic capabilities, *Industrial management & data systems* 122 (5) (2022) 1153–1182 (ahead-of-print).
- [14] A. Majid, M. Yasir, M. Yasir, Individual and work dynamics affecting the determinants of functional flexibility in SMEs: evidence from Pakistan, *Journal of Entrepreneurship in Emerging Economies* 9 (2) (2017) 144–160.
- [15] M. Yasir, A. Majid, Z. Yousaf, A.A. Nassani, M. Haffar, An integrative framework of innovative work behavior for employees in SMEs linking knowledge sharing, functional flexibility and psychological empowerment, *Eur. J. Innovat. Manag.* 26 (2) (2023) 289–308.
- [16] M. Yasir, A. Majid, High-involvement HRM practices and innovative work behavior among production-line workers: mediating role of employee's functional flexibility, *Employee Relat.* 42 (4) (2020) 883–902.
- [17] E.A. Saether, Motivational antecedents to high-tech R&D employees' innovative work behavior: self-determined motivation, person-organization fit, organization support of creativity, and pay justice, *J. High Technol. Manag. Res.* 30 (2) (2019) 100350.
- [18] N. Rafi, A. Ahmed, I. Shafique, M.N. Kalyar, Knowledge management capabilities and organizational agility as liaisons of business performance, *South Asian Journal of Business Studies* 11 (4) (2022) 397–417.
- [19] M.M. Khan, M.S. Mubarik, T. Islam, Leading the innovation: role of trust and job crafting as sequential mediators relating servant leadership and innovative work behavior, *Eur. J. Innovat. Manag.* 24 (5) (2021) 1547–1568.
- [20] C. Boon, D.N. Den Hartog, P. Boselie, J. Paauwe, The relationship between perceptions of HR practices and employee outcomes: examining the role of person-organization and person-job fit, *Int. J. Hum. Resour. Manag.* 22 (1) (2011) 138–162.
- [21] H. Lee, B. Choi, Knowledge management enablers, processes, and organizational performance: an integrative view and empirical examination, *J. Manag. Inf. Syst.* 20 (1) (2003) 179–228.
- [22] P. Boselie, J. Paauwe, P. Jansen, Human resource management and performance: lessons from The Netherlands, *Int. J. Hum. Resour. Manag.* 12 (7) (2001) 1107–1125.
- [23] R. Shanker, R. Bhanugopan, B.I. Van der Heijden, M. Farrell, Organizational climate for innovation and organizational performance: the mediating effect of innovative work behavior, *J. Vocat. Behav.* 100 (2017) 67–77.
- [24] M.J. Sheeba, P.B. Christopher, Exploring the role of training and development in creating innovative work behaviors and accomplishing non-routine cognitive jobs for organizational effectiveness, *Journal of Critical Reviews* 7 (4) (2020) 263–267.
- [25] A. Purwanto, The impacts of leadership and culture on work performance in service company and innovative work behavior as mediating effects, *Journal of Research in Business, Economics, and Education* (2020).
- [26] F. Kock, A. Berbekova, A.G. Assaf, Understanding and managing the threat of common method bias: detection, prevention and control, *Tourism Manag.* 86 (2021) 104330.
- [27] T. Islam, I. Zahra, S.U. Rehman, S. Jamil, How knowledge sharing encourages innovative work behavior through occupational self-efficacy? The moderating role of entrepreneurial leadership, *Global Knowledge, Memory and Communication* 73 (1/2) (2022) 67–83 (ahead-of-print).
- [28] T.S. Putra, A.D. Pramusiwi, Well-being and innovation: investigating the linkage among well-being oriented management, knowledge sharing, innovation climate, and innovative work behavior, *Media Ekonomi dan Manajemen* 38 (1) (2023) 147–160.
- [29] J.R. Kuntz, S. Malinen, K. Näswall, Employee resilience: directions for resilience development, *Consult. Psychol. J. Pract. Res.* 69 (3) (2017) 223.
- [30] L. Hülscher, A Mixed Methods Approach to Individual Resilience and Innovative Work Behavior in Adversity (Master's Thesis, University of Twente, 2020).
- [31] A.R. Cassia, I. Costa, G.C. de Oliveira Neto, Assessment of the effect of IT infrastructure on the relationship between knowledge sharing and technological innovation capability: survey in multinational companies, *Technol. Anal. Strat. Manag.* (2022) 1–21.
- [32] T.T. Luu, Can human resource flexibility disentangle innovative work behavior among hospitality employees? The roles of harmonious passion and regulatory foci, *Int. J. Contemp. Hospit. Manag.* 33 (12) (2021) 4258–4285.
- [33] I.E.B. Salem, Toward better understanding of knowledge management: correlation to hotel performance and innovation in five-star chain hotels in Egypt, *Tourism Hospit. Res.* 14 (4) (2014) 176–196.
- [34] J. Waheed, W. Jun, Z. Yousaf, H. Hussain, Towards employees creativity in the healthcare sector: investigating the role of polychronicity, job engagement, and functional flexibility, *Healthcare* 9 (2021) 837, 2021.
- [35] Y. Vakili, S. Jafarinia, N. Rafiee, The effect of human Resources flexibility on innovative work behavior: explaining the mediating role of psychological capital, *Organizational Behaviour Studies Quarterly* 7 (4) (2019) 31–52.
- [36] A.A. Davidescu, S.A. Apostu, A. Paul, I. Casuneanu, Work flexibility, job satisfaction, and job performance among Romanian employees—implications for sustainable human resource management, *Sustainability* 12 (15) (2020) 6086.
- [37] S. Abualoush, K. Bataineh, A.A. Alrowwad, The role of knowledge management process and intellectual capital as intermediary variables between knowledge management infrastructure and organization performance, *Interdiscipl. J. Inf. Knowl. Manag.* 13 (2018) 279–309.

- [38] H.A. Al-Omar, A.M. Arafah, J.M. Barakat, R.D. Almutairi, F. Khurshid, M.S. Alsultan, The impact of perceived organizational support and resilience on pharmacists' engagement in their stressful and competitive workplaces Saudi Arabia, *Saudi Pharmaceut. J.* 27 (7) (2019) 1044–1052.
- [39] E. Molleman, A. van den Beukel, Worker flexibility and its perceived contribution to performance: th moderating role of task characteristics, *Human Factors and Ergonomics in Manufacturing and Service Industries* 17 (2) (2007) 117–135.
- [40] A. Wojtczuk-Turek, D. Turek, Innovative behaviour in the workplace: the role of HR flexibility, individual flexibility and psychological capital: the case of Poland, *Eur. J. Innovat. Manag.* 18 (3) (2015) 397–419.
- [41] M. Kang, M.J. Lee, Absorptive capacity, knowledge sharing, and innovative behaviour of R&D employees, *Technol. Anal. Strateg. Manag.* 29 (2) (2017) 219–232.
- [42] K.J. Preacher, A.F. Hayes, Asymptotic and resampling strategies for assessing and comparing indirect effects in multiple mediator models, *Behav. Res. Methods* 40 (3) (2008) 879–891.
- [43] C. Fornell, D.F. Larcker, Evaluating structural equation models with unobservable variables and measurement error, *J. Mark. Res.* 18 (1981) 39–50.
- [44] K.G. Jöreskog, D. Sörbom, PRELIS 2 user's reference guide: a program for multivariate data screening and data summarization: a preprocessor for LISREL, Scientific Software International (1996).