

Knowledge sharing and self-efficacy role in growing managers' innovation: Does job satisfaction matter?

Nidal Fawwaz AlQudah^{a,*}, Belal Mathani^a, Khaled Aldiabat^b,
Kadri Alshakary^b and Hamza M Alqudah^c

^a*Department of Business Administration, Ajloun National University, Ajloun, Jordan*

^b*Department of Management Information System, Ajloun National University, Ajloun, Jordan*

^c*Department of Accounting, Irbid National University, Irbid, Jordan*

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Abstract.

BACKGROUND: Innovation is important for companies in order to function and evolve within the competitiveness and uncertainty of economies based on knowledge. Meanwhile, the sources of knowledge and Managers' self-efficacy are basic building blocks promoting the innovation of managers in organizations, which cannot be neglected especially under different level of Managers' job satisfaction.

OBJECTIVE: This study aims at analysing the influence of both self-efficacy and knowledge sharing on managers' innovation moderated by job satisfaction.

METHODS: The study was conducted at Jordanian public sector, involving 112 managerial managers (respondents) of public institutions and the collected data were proceed using Partial Least Square (PLS) analysis.

RESULTS: The finding shows that self-efficacy and knowledge sharing have a positive direct influence on managers' innovation. Meanwhile, job satisfaction was able to moderate the influence of self-efficacy on the managers' innovation, but not the relationship between the knowledge sharing and managers' innovation.

IMPLICATIONS: These research findings provide empirical evidence of the role of self-efficacy and knowledge sharing in enhancing managers' innovation, as well as, the result confirms on the interaction influence of job satisfaction on the relationship between self-efficacy and managers' innovation in the Jordanian public sector as one of the developing countries. Finally, considering the importance of the public sector within the economy of Jordanian, the findings are valuable for decision-makers and regulators in suggesting new regulations and legislation to better manage the public sector.

Keywords: Managers' innovation, moderating effect of job satisfaction, self-efficacy, public sector, PLS



Nidal Fawwaz AlQudah is an Assistant Professor of Business Administration, Ajloun National University, Business Administration Department. His areas of interest include Human Resources Management, Innovation, Organizational Behaviour, Conflict Management and Entrepreneurship.



Belal Mathani is an Associate Professor of Business Administration, Ajloun National University, Business Administration Department. His areas of interest include Strategic Management, Human Resources Management, Knowledge Sharing, and Marketing.

*Corresponding author: Nidal Fawwaz AlQudah, Business Administration Department, Ajloun National University, Ajloun, Jordan. E-mail: nidal.alqudah@anu.edu.jo.



Khaled Aldiabat is an Associated Professor of Management Information System, Ajloun National University, Management Information System Department. His areas of interest include Knowledge Management, Electronic Administration (e-Government), Project Management and Human Resources Information Systems.



Kadri Alshakary is an Assistant Professor of Management Information System, Ajloun National University, Management Information System Department. His areas of interest include E- Marketing, Knowledge Sharing, and Electronic Commerce.



Hamza M Alqudah is the Head of Accounting Department, Irbid National University, Jordan. His areas of interest include internal Audit, Accounting Information System, E-Learning System, Human Resources Management. He has published more than 10 research papers in international journals.

1. Introduction

Innovation is seen as a crucial factor and decisive enabler of an organization to be developed in the rapid revolution epoch [1–3], and managers are the main means for implementing the behaviors that sustain organizational innovation [4]. Managers' innovation is a complex combination of generating, promoting, and realizing ideas [5], involving identifying problems, seeking support for implementing solutions to identified problems, and making products or providing services. Therefore, the improvement of managers' innovation performance has become an important aspect to enhance the ability of organizational innovation. Innovation performance is an important indicator of the success or failure of organizations [6].

Organizations' (managers') innovation performance is influenced by various factors [7–11]. Prior studies found that innovation is affected by several internal and external factors (e.g., government policies, regional culture, organizational characteristics and employee behavior) [11, 12]. However, organizations must change their ways of acquiring innovative resources or knowledge to survive and further develop [11]. But the Knowledge sharing and self-efficacy have been neglected as the main sources of the innovation in the prior research. Though, knowledge and self-efficacy is the most important resource in organizations and is thus critical to the improvement of organizational innovation performance [7].

Further, in the resource-based theory, it is asserted that organizations maintain their competitive advantage by acquiring valuable strategic resources that are difficult to replicate. Knowledge and self-efficacy sources are fundamental building blocks in facilitating employee innovation in organizations [4]. Employees' education and experience are such organizational resources for innovation [13]; however, employees' knowledge and self-efficacy is difficult to transform, making them crucial in organizations. Knowledge sharing is a process through which employees exchange knowledge and experiences to derive new ideas and create knowledge [8, 14, 15]. This type of sharing establishes favorable conditions for employee innovation by enhancing the managers' capacity to come up with creative ideas. On another hand, self-efficacy is defined as personal confidence in completing a goal. Creative self-efficacy is a personal characteristic that specifically concerns the ability to innovate and refers to an internal, sustaining force that propels individuals to persevere to produce innovative outcomes.

However, it is always observed that the public sectors deal with innovation weakly in opposite to the business organizations, which reside in an environment with high competition and need expanded innovations [2, 11, 16]. Whereby, the managerial structures and the nature of the public sector organizations may force their staff to act primarily as formal government agents for official government purposes, rather than the services for clients, as it is being a business organization [17]. Hence, in response to a series of social, technological, economic and political troubles, organizations of the public sector are required to recognize innovation as an inherent facet of organized fitly service delivery to a country.

Moreover, innovation is important in order to function and evolve within the competitiveness and uncertainty of economies based on knowledge [9, 18, 19]. Also, managers are the major remedies for employing the needed behaviors that support the innovation of organizations [4, 20], where managers are the most part that affects the employees' behaviors, due to their functional level at the organization. The innovation of managers is complicated in conjunction with generating, realizing and promoting the required ideas [18, 22], comprising detecting problems, searching for support to implement the solutions to the observed problems and providing services or manufacturing products. In this vein, sharing knowledge among managers could empower each other in facilitating their innovation in organizations [23]. Besides, self-efficacy is a personal characteristic that specifically concerns the ability to innovate and refers to an internal, sustaining force that propels individuals to persevere to produce innovative outcomes [18]. It supports innovation because having creative self-efficacy motivates employees to persevere by using appropriate coping strategies in challenging situations [22].

Additionally, job satisfaction is a crucial aspect of work that is related to the attitudes [24–27]. provided a definition of job satisfaction as what people think about their work and its different facets. Also, Robins [28] defined job satisfaction as general behaviors and attitudes of a manager towards his or her organization. If managers have higher job satisfactions, then they have positive attitudes about the organization. Meanwhile, in having a high extent of job satisfaction, managers may have greater involvement in job and this may actually enhance their motivation in generating, spreading, and realizing innovative ideas inside their organizations [29]. Hence, high job satisfaction increases commitment to organizational objectives [30]. Although, a significant number of scientific studies on job satisfaction has been conducted, there is still no consensus concerning what it really is [25]. Even though innovation is a productivity type that can be influenced by managers' job satisfaction, few studies were fulfilled in which this premise was studied, especially in the context of the public sector [2, 16].

However, most of the prior research in the innovation domain was in the developed countries context, and based on the best knowledge of the researchers there is no study that has addressed the effect of knowledge sharing and self-Efficacy on the managers' innovation together, especially in the public

sector context. Also, the prior studies do not pay any attention to the job satisfaction in the innovation domine as a moderator. Subsequently, this study attempted to explore the effect of knowledge sharing and self-efficacy on the innovation performance within the Jordanian public sector, it also examined whether job satisfaction moderates the relationship between the respective independent variables and innovation performance of organizations.

This study makes important contributions to managers' innovation in the public sector. Firstly, while most research on innovation focuses on the developed countries, this study examines factors in a developing country i.e., Jordan. Secondly, it provides empirical evidence on the importance of sharing knowledge and self-efficacy factors in empowering managers' innovation. Thirdly, it provides empirical evidence on the importance of managers' innovation in improving public sector services. Our paper is the first to test the moderating effect of job satisfaction on the relationship between respective variables (independent variables) and managers' innovation in the context of the public sector. Understanding those factors is important to regulatory bodies of the public sector (i.e., Senate, Parliament, Ministers Board). Lastly, this research paper also extends the existing knowledge of innovation by looking at it from the organizational level (managers) rather than individual level (employees) perspective.

This paper is being organized to have the following: Section 2 explains the theoretical basis of the relationship between variables. Section 3 presents the model of the study. Section 4 introduces the design of the research. Section 5 provides an analysis of data using Smart-PLS to verify the hypotheses and formulate conclusions. Section 6 makes discussion of conclusions and provides the possible theoretical and practical implications and reveals the limitations of the study.

2. Literature review and hypothesis development

2.1. Knowledge sharing and the managers' innovation

Innovation includes individual, group and organizational behaviors and conducts. Moreover, knowledge sharing creates competitive advantage of organizations by means of staff' receiving, organizing, reusing as well as transferring information

on the basis of experience [16]. Many scholars have presented that knowledge sharing strengthen innovation and decreases the needless efforts e.g., [11, 32], also Hu, Horng and Sun [32] by using 621 employee's responses from international tourist hotels, the study found that knowledge sharing has an important impact on service innovation performance. Besides, Singh, Gupta, Busso and Kamboj [33] by collecting multisource data from 404 SMEs to examine antecedents and outcomes of innovation in SMEs, revealed that there is a significant relationship between knowledge sharing practices and open innovation. Further, when there are good lines in the communication channels between managers and with subordinates to knowledge sharing among them, that will enhance the innovation in the organization [34].

Many researchers have examined the individual abilities (as the intrinsic motivation and characteristics of personality) and some aspects of the environment (as encouraging from supervisor and climate in organization) that are fundamental for person's innovation [8, 31, 35–37]. Immersion into a domain with time assists the human to suggest a novel idea and realize it; therefore, knowledge has a crucial meaning in managers' innovation and contributes in creating and sustaining competitive advantage [37]. The acquisition of knowledge contains reciprocal exchanges amid colleagues, comprising communication of implicit knowledge which cannot be transferred by means of formal channels, while the plenty of ideas stimulates innovative thought [18]. Knowledge sharing assists in cultivating more effective processes of solving problems; and vice versa, the ability to use expertise and experience is obstructed if knowledge sharing is impossible [34]. Following these conclusions, the present study proposes that sharing knowledge among the Jordanian public sector managers (as a developing society) will enhance their innovation. This leads to the next hypothesis:

H1: Knowledge sharing has a positive effect on the managers' innovation in the Jordanian public sector.

2.2. Self-efficacy and the managers innovation

Managers with high self-efficacy are creative, curious and risk-prone and creative, accordingly, such characteristics stimulate them to innovate [18, 38]. Managers' innovations, in line with this, include personal efforts in introducing methods as well as

concepts into their organizations in order to generate a novel and great outcome [39]. It is indicated by Tierney and Farmer [40] that innovation is seen to be improving better with the ones who have self-efficacy that impacts innovation [41, 42], due to the fact that managers having high self-efficacy accept challenges and choose nontraditional tactics. Further, Akbari, Bagheri, Imani and Asadnezhad [43], using the simple random sampling method and included 175 CEOs and owner-managers from high technology information and communications technology SMEs. They found that employees' creative self-efficacy has a positive impact on the innovative work behavior of employees in information and communications technology SMEs. Managers' innovation is influenced by self-efficacy [18, 40, 44], thus stimulating the needed intrinsic motivation to be engaged in innovative work through strengthening the perceptions of their own competences [38]. Thereby, self-efficacy is a powerful antecedent to managers' innovation. Taking into consideration the importance of the managers' self-efficacy in the Jordanian public institutions (as a developing society), the study suggests this hypothesis:

H2: The managers' self-efficacy has a positive effect on their innovations in the Jordanian public sector.

2.3. The moderating effect of job satisfaction

Individual features are significant factors which influence innovation. Likewise, managers' comprehension of the environment at work will either assist or prevent the creative power of managers [45]. Job satisfaction presents a personal reaction to the environment at work, and in the theory of social exchange, it is claimed that satisfied staff contributes to their organizations. Therefore, job satisfaction can affect behaviors of staff regarding organizational citizenship behaviors, turnover, and loyalty [46]. Due to the fact that job satisfaction is a positive factor in work place, it can assist in decreasing the pressure related to innovative solutions and may be deliberated as an essential part in enhancing the manager's behaviors and potential resources supply [18, 46].

Christen et al. [47] revealed that job satisfaction had a positive influence on their innovation performance through generating positive evaluations and encouraging employees to set and accomplish high, challenging aims. Therefore, individuals who have high levels of job satisfaction are more

prone to create novel and beneficial ideas [48]. Those who are satisfied with their job will become open, enthusiastic, positive, confident, energetic and achievement-oriented, and will be cognitively flexible [11]. In sum, the level of managers' job satisfaction may strength or weakness the effect of self-efficacy and sharing knowledge towards the innovation performance. Since the managers of Jordanian public sector are like any employees in other organizations, this study assumes that the effect self-efficacy and sharing knowledge on the Jordanian public sector managers' innovation could be moderated by the different level of their job satisfaction. Hence, the third hypothesis is formulated as,

H3: The effect of knowledge sharing and self-efficacy on the Jordanian public sector managers' innovation is moderated job satisfaction. Hence, the specific hypotheses that are related to the moderator effect of job satisfaction are presented below:

H3a: The effect of sharing knowledge on the Jordanian public sector managers' innovation is moderated by job satisfaction.

H3b: The effect of self-efficacy on the Jordanian public sector managers' innovation is moderated by job satisfaction.

3. Research model

Based on the assumptions and logic of prior research, the current study proposes a model of the research, as shown in Fig. 1. This study has four variables, three exogenous variables (self-efficacy and sharing knowledge are independent variables, and the job satisfaction is the moderator variable) and one

endogenous variable (managerial innovation which is the dependent variable). Thus, the study proposes that the effect of self-efficacy and sharing knowledge on the Jordanian public sector managers' innovation will be moderated by the different level of job satisfaction.

4. Research design

4.1. Participants

The target population of the current study included the heads of governorates in the public sector of Jordan. Since the heads of governorates are the most relevant respondents to response on the survey as they are at the top level of each public entity. The online survey was sent via social media (WhatsApp, Messenger, Email and Telegram) to the respondents along 235 government entities (the entire population, see Fig. 2), the data collection lasted from 15\12\2020 to 20\2\2021, approximately two months later 112 valid voluntary questionnaires had been received. Among the entire population, approximately 86 percent of the study sample are men. Their average age was 42 years and the average work experience was 12 years. Most of the respondents had an educational level of bachelor degree (73%).

4.2. Measures

The measurements of studied variables in the current study have adapted/adopted from prior research (see Appindix A). More specifically, employee innovation was measured using the six indicators adapted from [5]. To measure knowledge sharing, six indicators were adapted from Chennamaneni [49]. To measure self-efficacy, eight indicators were adapted

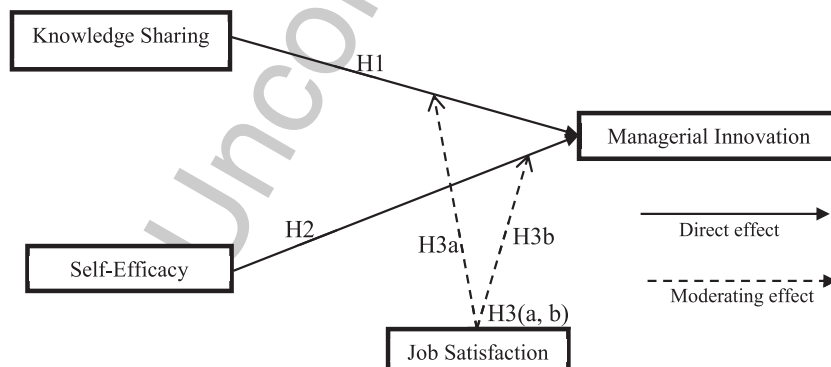


Fig. 1. The research conceptual framework.

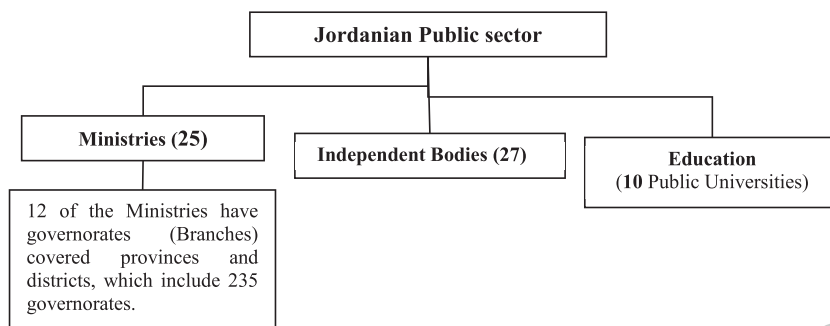


Fig. 2. The organizational structure of Jordanian public sector. Source: Jordanian Audit Bureau Website.

from Carmeli and Schaubroeck [50]. Finally, six items scale were adapted from Janz et al. [51] and Judge [49] to measure job satisfaction. The responses to all items were rated on a 7-point Likert scale ranging from 1 (strongly disagree) to 7 (strongly agree).

5. Data analysis and research findings

This study used Smart-PLS software (partial least squares-structural equation modelling) 3.0 in order

to verify the variables of the study and to test the hypotheses. Due to the ability of PLS-SEM to process reflective designs while working with a small sample size with a complex model (interaction effect) [53–56, 57], it was used in the present work. Hair et al. [58] stated that indicators with outer loadings between 0.40 and 0.70 should be considered for removal from the scale only if deleting the indicator leads to an increase in the composite reliability or the average variance extracted above the suggested threshold value. The data analysis shows that 3 items (16%)

Table 1
Indicators Reliability, CR, VIF, AVE and f^2 (after deletion)

Constructs	Items name	Items loading	VIF	CR	AVE	f^2
Managers' Innovation (MI), $Q^2 = 0.2625$	MI1	0.726	2.008	0.828	0.51	0.098
	MI2	0.657	1.927			
	MI4	0.703	2.084			
	MI5	0.634	1.875			
	MI6	0.628	1.861			
	KS1	0.637	1.878			
Knowledge Sharing (KS)	KS2	0.651	1.912	0.83	0.58	0.184
	KS3	0.731	2.028			
	KS4	0.756	2.114			
	KS5	0.732	2.026			
	KS6	0.715	2.009			
	SE1	0.626	1.857			
Self-Efficacy (SE)	SE2	0.713	1.974	0.85	0.50	0.267
	SE4	0.75	2.110			
	SE5	0.761	1.712			
	SE6	0.618	1.618			
	ES8	0.727	2.019			
	JS 1	0.675	2.023			
Job Satisfaction (JS)	JS 2	0.621	1.852	0.87	0.53	0.267
	JS 3	0.732	2.026			
	JS 4	0.863	3.212			
	JS 5	0.739	2.046			
	JS 6	0.722	2.016			

were removed (MI3, SE3 and SE7), that to increase in the average variance extracted or composite reliability over the suggested threshold value [58]. Hence, 22 items were retained for the model. Removal of some items is considered common and normal in most of studies using questionnaires [50, 53, 55].

With respect to the measurement model (As shown in Table 1), the composite reliability test shows that all variables under study exceed the expected value of 0.6. The tool validity was also verified by checking the discriminant and convergent validity [58]. The average variance extracted, meanwhile, is the standard used to test convergent validity that attempts to measure the value of variance which the indicators share with their corresponding variable [58]. The values of average variance extracted (AVE) for all variables are above 0.5. Besides, in order to investigate the range to which a given variable of the present study model differs from others, discriminant validity was estimated [57]. As presented in Table 1, all values of average variance extracted were higher than the specified value and interpret discriminant validity [60]. Furthermore, according to Hair et al. [60], multicollinearity is not an issue when the value of Variance Inflation Factor (VIF) is less than five and tolerance is above .20. The findings reported in Table 1 indicates that there was no multicollinearity among the latent variables.

In the present study, the construct cross-validated redundancies (Q^2) have been found by blindfolding procedure utilising omission distance 7 [61]. The blindfolding procedures' results in Smart PLS 3.0 presents that the Cross-validated redundancy of the endogenous construct (MI) was 0.2625, which is medium [61]. Besides, based on Cohen's [61] suggestion, f^2 values of 0.35, 0.15, and 0.02 represent large, medium, and small effect sizes in the structural model, respectively. Hence, both of Self-Efficacy and Job Satisfaction have medium effect size on the Managers' Innovation, while Knowledge Sharing has small size. Nevertheless, according to the obtained results, it is shown that the measurement model is

valid and reliable. Thus, it can be ascertained that this measurement model of the current study is appropriate for other analysis.

One of the main objectives of the present study is to measure the impact of self-efficacy and knowledge sharing on managers' innovations, which also comprises studying job satisfaction as a moderator. This type of association between dependent and independent variables may vary if the model includes an effect of the moderation [58]. Thus, the structural model in the PLS analysis should first be performed without a moderator, and then moderation can be reliably investigated in another model [58]. Accordingly, the current study has two separated models: the model of direct effects and the model of interaction effects.

The validity of the model is assessed by the R^2 value and structural paths. The R^2 value indicates that approximately 23% of the variance in managers' innovation as illustrated by the suggested framework, which shows an acceptable level of explanation. With respect to the path structure, the study experimentally tested the suggested associations with the use of the bootstrapping procedure. The path coefficient and t-value of each association are presented in Table 3. This table indicates that the relationship between knowledge sharing and the managers' innovation was positive as well as significance (path coefficient = 0.326; $p < 0.01$), demonstrating that if the knowledge sharing among managers increases; their innovation will increase as well. Accordingly, H1 is accepted. Referring to the managers' self-efficacy role in enhancing the innovation, the relationship was positive and significant (path coefficient = 0.218; $p < 0.01$), demonstrating that if the self-efficacy of managers increases, their innovation will also increase, thus H2 is accepted.

In order to examine job satisfaction as a moderator, the model of interaction effects was fulfilled by providing two interaction effects, in which the association between job satisfaction and independent variables on the managers' innovation is shown. After

Table 2
Discriminant Validity

Constructs	JS	KS	MI	SE
JS	0.73			
KS	0.51	0.71		
MI	0.66	0.72	0.82	
SE	0.59	0.62	0.58	0.71

Table 3
The result of the interaction model

Hypothesis testing	Path coefficient	T-statistic	p-value	Decision
H1: KS -> MI	0.326	3.98	0.000	Supported
H2: SE -> MI	0.218	3.32	0.001	Supported
H3a: JS*KS -> MI	0.85	0.813	0.095	Not supported
H3b: JS*SE -> MI	0.203	2.17	0.003	Supported

that the model was examined by using 1,000 bootstrapping procedures [42, 54, 59]. Hair et al. [60] claimed that when the t-value is between 4.466 and 0.9993, the value is significant at the level of 0.05, and while a t-value higher than 2.33 is significant at the level of 0.01. The results are presented in Table 3.

As indicated in H3a and Hb, a different level of job satisfaction is predicted to lead to managers' innovation to be either less or more affected by the respective factors. Excluding the interaction between knowledge and job satisfaction, the t-value of the interactions is insignificant (t-value=0.813, $p>0.05$). Therefore, H3a is not accepted. For the interaction effect between self-efficacy and job satisfaction on managers' innovation, the t-value is positive and significant (t-value=2.17, $p<0.05$). This supports for the effect of the moderating effect of job satisfaction in the relationship between self-efficacy and high level of job satisfaction on managers' innovation. Thus, self-efficacy is more predictive in regard to the managers' innovation when the level of job satisfaction is high.

6. Discussion and conclusion

The study's purpose was to examine the effect of self-efficacy and knowledge sharing on the managers' innovation. It is also elucidated that the moderating effect of job satisfaction on the influence of knowledge sharing and self-efficacy on the managers' innovation in the Jordanian public sector. Further, the model of the current study was confirmed by the RBT's prediction that indicates to the need for sufficient resources to obtain excellent achievement. All capabilities and assets managed by organizations and empower them to achieve plans can be resources, which in turn enhance the organizations' effectiveness [21]. Hence, the managers' innovation can be improved by adequate knowledge sharing among managers and self-efficacy as internal resources. Further, the findings of this study could extend insights into the managers' innovation under the moderating effect of job satisfaction. The finding of this study could also contribute to the RBT by nominating job satisfaction as a moderator on the respective relationships.

Regarding the first hypothesis (H1), in line with the forecast of the RBV, the findings indicated that knowledge sharing motivated managers to innovate, that proposes that adequate internal resources are essential to reach innovation. If an individual wants

to create new and useful ideas, he/she needs to obtain appropriate expertise or knowledge [54]. The knowledge sharing process is critical for creative problem-solving because it can enlarge cognitive capacities of managers [19]. This finding is in line with previous studies [11, 18, 33, 54]. For example, Hu, Horng and Sun [32] found that knowledge sharing has an important impact on service innovation performance in the international tourist hotels. Another study has conducted by Singh et al. [33] found that there is a significant relationship between knowledge sharing practices and open innovation in SMEs. However, the result of the present study is inconsistent with other related studies (e.g., [11]). The finding of the international study conducted by Zhao et al. [11], revealed that inbound knowledge sharing cannot directly promote organizational innovation performance. These inconsistent findings could be context and population related. Besides, the finding of the current study confirms that knowledge sharing facilitating the managers' innovation in the Jordanian public sector institutions.

As for the self-efficacy (H2), the findings show that the managers' self-efficacy have a positive influence on their innovation significantly; wherein the high self-efficacy level drives to enhance the managers' innovation. Besides, this result is consistent with the RBV [21], which postulates that the capabilities are internal resources that improve managers' innovation. Moreover, this result is consistent with prior studies [18, 38, 41, 42]. Accordingly, in the public sector of Jordan context, the present study concluded that the managers' self-efficacy, will lead to further innovation. Therefore, the current study confirmed that self-efficacy is an integral part of the managers' innovation in the public sector of Jordan. Furthermore, the result of the present study in line with prior studies [10, 18, 40, 43, 44]. For instance, Akbari et al. [43] found that employees' creative self-efficacy has a positive impact on the innovative work behavior of employees in information and communications technology SMEs. Meanwhile, Newman et al. [23] found that the effect of employees' creative self-efficacy on innovative behavior was found to be positive and significant in the large Chinese multinational organizations.

In regard to the indirect effect model, this study nominates that the job satisfaction variable as a moderator on the relationship between knowledge sharing and self-efficacy, and the Jordanian public sector managers' innovation. Hence, this study's hypotheses H3a and H3b are associated with job satisfaction as a

moderator, respectively. Further, as shown in Table 3, the finding showed that one hypothesis was supported (Hb). Indeed, the effect self-efficacy on managers' innovation was moderated by job satisfaction positively and significantly. This shows that while the satisfactory self-efficacy to the managers' innovation is imperative, but a proper job satisfaction' extent will also raise the influence of the self-efficacy on the managers' innovation. This finding could contribute the RBV by taking into consideration the different level of job satisfaction when it is come to the effect of self-efficacy on the innovation.

The present research has some meanings of future researchers in this field. Whereby, the study illustrates that varying levels of job satisfaction led to varying levels of the effect of self-efficacy on the managers' innovation. Further, compared to other works on managers' innovation in developing countries, the findings of the current study are quite unexpected, since most of the prior studies were in developed countries. Our findings suggest that factors affecting the managers' innovation can strongly be affected by the different job satisfaction levels of the managers, especially in the public sector. Therefore, any stakeholders or decision-makers who are concerned in strengthening the public sector's innovation should take into account the various levels of managers' job satisfaction in various public institutions. Additionally, any stakeholders or policy-makers should emphasize on developing the strategies that could enhance managers' self-efficacy and providing the means and instruments to contribute in knowledge sharing among them.

Furthermore, the findings of this study have contributed to the RBV Theory by different ways. The present study has addressed the job satisfaction as a moderator variable, which in turn, drive to extend the theory of RBV. As well as, the knowledge sharing and self-efficacy factors have used in the present study as internal sources that leads to rise the managers' innovation, which in line with the RBV Theory's prediction.

Though, this research has some limitations. Firstly, the study focused on the contextual environment of the public sector and the influence of job satisfaction on the association between the corresponding factors and managers' innovation. Thus, future research could examine the effects of other factors, as the organizational culture and other factors that might affect the managers' innovation. It should also be noted that the results of this study are based on innovations by Jordanian public sector managers. Therefore,

any generalizations of the findings to other parameters should be addressed with caution. It is likely that the results would differ in other sectors or countries. Despite these limitations, the present study confirms the importance and relevance of the scientific investigation of managers' innovations and their determinants, supported by the RBV Theory with the moderate influence of job satisfaction.

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Author contributions

CONCEPTION: Nidal AlQudah and Belal Mathani
METHODOLOGY: Nidal AlQudah and Belal Mathani

DATA COLLECTION: Nidal AlQudah and Belal Mathani

INTERPRETATION OR ANALYSIS OF DATA: Hamza M Alqudah

PREPARATION OF THE MANUSCRIPT: Khaled Aldiabat and Kadri Alshakary

REVISION FOR IMPORTANT INTELLECTUAL CONTENT: Khaled Aldiabat and Kadri Alshakary and Hamza M Alqudah

References

- [1] Hamel G. Moon shots for management. *Harvard Business Review*. 2009;87(2):91-8.
- [2] Kumar N, Rose RC. The impact of knowledge sharing and Islamic work ethic on innovation capability. *Cross Cultural Management: An International Journal*. 2012.
- [3] Subramaniam M, Youndt MA. The influence of intellectual capital on the types of innovative capabilities. *Academy of Management Journal*. 2005;48(3):450-63.
- [4] Zhang X, Bartol KM. Linking empowering leadership and employee creativity: The influence of psychological empowerment, intrinsic motivation, and creative process engagement. *Academy of Management Journal*. 2010;53(1):107-28.
- [5] Scott SG, Bruce RA. Determinants of innovative behavior: A path model of individual innovation in the workplace. *Academy of Management Journal*. 1994;37(3):580-607.
- [6] Forés B, Camisón C. Does incremental and radical innovation performance depend on different types of knowledge accumulation capabilities and organizational size?. *Journal of Business Research*. 2016;69(2):831-48.

- [7] Akhavan P, Mahdi Hosseini S. Social capital, knowledge sharing, and innovation capability: an empirical study of R&D teams in Iran. *Technology Analysis & Strategic Management*. 2016;28(1):96-113.
- [8] Tajpour M, Hosseini E. Entrepreneurial intention and the performance of digital startups: The mediating role of social media. *Journal of Content, Community & Communication*. 2021;13(1):2-15.
- [9] Ziyae B, Sadeghi H, Nejad MS, Tajpour M. A framework of urban entrepreneurship for women breadwinners. *foresight*. 2021 Jul 13.
- [10] Newman A, Herman HM, Schwarz G, Nielsen I. The effects of employees' creative self-efficacy on innovative behavior: The role of entrepreneurial leadership. *Journal of Business Research*. 2018;89:1-9.
- [11] Zhao S, Jiang Y, Peng X, Hong J. Knowledge sharing direction and innovation performance in organizations. *European Journal of Innovation Management*. 2020 Mar 23.
- [12] Hanifah H, Halim HA, Ahmad NH, Vafaei-Zadeh A. Emanating the key factors of innovation performance: leveraging on the innovation culture among SMEs in Malaysia. *Journal of Asia Business Studies*. 2019 Oct 7.
- [13] Van Den Hooff B, De Ridder JA. Knowledge sharing in context: the influence of organizational commitment, communication climate and CMC use on knowledge sharing. *Journal of Knowledge Management*. 2004 Dec 1.
- [14] Van Wijk R, Jansen JJ, Lyles MA. Inter-and intra-organizational knowledge transfer: a meta-analytic review and assessment of its antecedents and consequences. *Journal of Management Studies*. 2008;45(4):830-53.
- [15] Wang S, Noe RA. Knowledge sharing: A review and directions for future research. *Human Resource Management Review*. 2010;20(2):115-31.
- [16] Kozakov V, Kovalenko N, Golub V, Kozyrieva N, Shchur N, Shoiko V. ADAPTATION OF THE PUBLIC ADMINISTRATION SYSTEM TO GLOBAL RISKS. *Journal of Management Information & Decision Sciences*. 2021;24(2).
- [17] Bendell T, Boulter L, Kelly J. Implementing quality in the public sector. Pitman, London. UK. 1994.
- [18] Hu B, Zhao Y. Creative self-efficacy mediates the relationship between knowledge sharing and employee innovation. *Social Behavior and Personality: An International Journal*. 2016;44(5):815-26.
- [19] Yuan F, Woodman RW. Innovative behavior in the workplace: The role of performance and image outcome expectations. *Academy of Management Journal*. 2010; 53(2):323-42.
- [20] Rawashdeh A, Elayan M, Shamout M, Saleh M. Job satisfaction as a mediator between transformational leadership and employee performance: Evidence from a developing country. *Management Science Letters*. 2020;10(16): 3855-64.
- [21] Egan TM. Factors influencing individual creativity in the workplace: An examination of quantitative empirical research. *Advances in Developing Human Resources*. 2005;7(2):160-81.
- [22] Gupta S. Understanding the feasibility and value of grassroots innovation. *Journal of the Academy of Marketing Science*. 2020;48(5):941-65.
- [23] Bouncken RB, Fredrich V, Kraus S, Ritala P. Innovation alliances: balancing value creation dynamics, competitive intensity and market overlap. *Journal of Business Research*. 2020;112:240-7.
- [24] Mohamed N, Karim NS, Hussein R. Linking Islamic work ethic to computer use ethics, job satisfaction and organisational commitment in Malaysia. *Journal of Law and Governance*. 2010;5(1).
- [25] Niu HJ. Is innovation behavior congenital? Enhancing job satisfaction as a moderator. *Personnel Review*. 2014 Mar 4.
- [26] Pfeffer J. *Competitive advantage through people*. Harvard Business School Press, Boston, MA. 1994.
- [27] Spector PE. *Job satisfaction: Application, assessment, causes, and consequences*. Sage; 1997 Mar 26.
- [28] Robins SP, Judge TA. *Organizational behavior*. New Jersey, 9th ed., Prentice-Hall Inc. 2001.
- [29] Ng TW, Feldman DC. The impact of job embeddedness on innovation-related behaviors. *Human Resource Management*. 2010;49(6):1067-87.
- [30] Judge TA, Bono JE. Relationship of core self-evaluations traits—self-esteem, generalized self-efficacy, locus of control, and emotional stability—with job satisfaction and job performance: A meta-analysis. *Journal of Applied Psychology*. 2001;86(1):80.
- [31] Yao J, Crupi A, Di Minin A, Zhang X. Knowledge sharing and technological innovation capabilities of Chinese software SMEs. *Journal of Knowledge Management*. 2020 Feb 21.
- [32] Hu ML, Horng JS, Sun YH. Hospitality teams: Knowledge sharing and service innovation performance. *Tourism Management*. 2009;30(1):41-50.
- [33] Singh SK, Gupta S, Busso D, Kamboj S. Top management knowledge value, knowledge sharing practices, open innovation and organizational performance. *Journal of Business Research*. 2021;128:788-98.
- [34] Hoa ND, Thanh VB, Mai VT, Tung LV, Quyen HV. Knowledge sharing influence on innovation: A case of textile and garment enterprises in Vietnam. *The Journal of Asian Finance, Economics, and Business*. 2020;7(7):555-63.
- [35] Choi JN. Context and creativity: The theory of planned behavior as an alternative mechanism. *Social Behavior and Personality: An International Journal*. 2012;40(4): 681-92.
- [36] Anderson N, Potočník K, Zhou J. Innovation and creativity in organizations: A state-of-the-science review, prospective commentary, and guiding framework. *Journal of Management*. 2014;40(5):1297-333.
- [37] Scuotto V, Beatrice O, Valentina C, Nicotra M, Di Gioia L, Briamonte MF. Uncovering the micro-foundations of knowledge sharing in open innovation partnerships: An intention-based perspective of technology transfer. *Technological Forecasting and Social Change*. 2020;152: 119906.
- [38] Gong Y, Huang JC, Farh JL. Employee learning orientation, transformational leadership, and employee creativity: The mediating role of employee creative self-efficacy. *Academy of Management Journal*. 2009;52(4):765-78.
- [39] Zhou J, George JM. When job dissatisfaction leads to creativity: Encouraging the expression of voice. *Academy of Management Journal*. 2001;44(4):682-96.
- [40] Tierney P, Farmer SM. The Pygmalion process and employee creativity. *Journal of Management*. 2004; 30(3):413-32.

- [41] Hirst G, Van Knippenberg D, Zhou J. A cross-level perspective on employee creativity: Goal orientation, team learning behavior, and individual creativity. *Academy of Management Journal*. 2009;52(2):280-93.
- [42] Aref-Eshghi E, Schenkel LC, Ainsworth P, Lin H, Rodenhiser DI, Cutz JC, Sadikovic B. Genomic DNA methylation-derived algorithm enables accurate detection of malignant prostate tissues. *Frontiers in Oncology*. 2018;8:100.
- [43] Akbari M, Bagheri A, Imani S, Asadnezhad M. Does entrepreneurial leadership encourage innovation work behavior? The mediating role of creative self-efficacy and support for innovation. *European Journal of Innovation Management*. 2020 Jun 11.
- [44] Wei J, Chen Y, Zhang Y, Zhang J. How does entrepreneurial self-efficacy influence innovation behavior? Exploring the mechanism of job satisfaction and Zhongyong thinking. *Frontiers in Psychology*. 2020;11:708.
- [45] Mathisen R. Roman aristocrats in barbarian Gaul: strategies for survival in an age of transition. University of Texas Press; 2011 May 1.
- [46] Ziegler R, Hagen B, Diehl M. Relationship between job satisfaction and job performance: Job ambivalence as a moderator. *Journal of Applied Social Psychology*. 2012;42(8):2019-40.
- [47] Christen M, Iyer G, Soberman D. Job satisfaction, job performance, and effort: A reexamination using agency theory. *Journal of Marketing*. 2006;70:137-50.
- [48] Wang BC. An empirical study on the relationships of organization innovation climate, employee job satisfaction, and employee innovation performance. *Enterprise Vitality*. 2011;1:59-62.
- [49] Chennamaneni A. Determinants of knowledge sharing behaviors: Developing and testing an integrated theoretical model. (Unpublished doctoral dissertation). The University of Texas, Arlington, USA. 2007.
- [50] Carmeli A, Schaubroeck J. The influence of leaders' and other referents' normative expectations on individual involvement in creative work. *The Leadership Quarterly*. 2007;18(1):35-48.
- [51] Janz BD, Wetherbe JC, Davis GB, Noe RA. Reengineering the systems development process: The link between autonomous teams and business process outcomes. *Journal of Management Information Systems*. 1997;14(1):41-68.
- [52] Judge TA, Bono JE, Locke EA. Personality and job satisfaction: The mediating role of job characteristics. *Journal of Applied Psychology*. 2000;85(2):237.
- [53] Gefen D, Rigdon EE, Straub D. Editor's comments: an update and extension to SEM guidelines for administrative and social science research. *Mis Quarterly*. 2011:iii-xiv.
- [54] Park CG, Kim I. Robust difference-based outlier detection. *Communications in Statistics-Theory and Methods*. 2020;49(22):5553-77.
- [55] Al-Okaily M, Alqudah H, Matar A, Lutfi AA, Taamneh A. Impact of Covid-19 pandemic on acceptance of elearning system in Jordan: A case of transforming the traditional education systems. *Humanities and Social Sciences Review*. 2020;6(4):840-51.
- [56] Alqudah HM, Amran NA, Hassan H. Extrinsic Factors Influencing Internal Auditors' Effectiveness in Jordanian Public Sector. *Rev Eur Stud*. 2019;11:67.
- [57] Başol O, Yalçın EC. How does the digital economy and society index (DESI) affect labor market indicators in EU countries? *Human Systems Management*. 2020 (Preprint):1-0.
- [58] Hair Jr JF, Hult GT, Ringle C, Sarstedt M. A primer on partial least squares structural equation modeling (PLS-SEM). Sage Publications; 2016 Feb 29.
- [59] Alqudah HM, Amran NA, Hassan H. Factors affecting the internal auditors' effectiveness in the Jordanian public sector. *EuroMed Journal of Business*. 2019 Oct 7.
- [60] Hair Jr JF, Sarstedt M, Hopkins L, Kuppelwieser VG. Partial least squares structural equation modeling (PLS-SEM): An emerging tool in business research. *European Business Review*. 2014 Mar 4.
- [61] Chin WW. The partial least squares approach to structural equation modeling. *Modern Methods for Business Research*. 1998;295(2):295-336.

Appendix A: Variables Measurements and Sources

Managers' Innovation (MI) (adapted from Scott & Bruce, 1994)

1. If given opportunity, I would keep search out new technologies, processes, techniques, and/or product ideas.
2. If given opportunity, I would generate creative ideas.
3. If given opportunity, I would promote and champion ideas to others.
4. If given opportunity, I would investigate and secure funds needed to implement new ideas.
5. If given opportunity, I would develop adequate plans and schedules for the implementation of new ideas.
6. If given opportunity, I would be innovative.

Knowledge Sharing (KS) (adopted from Chennamaneni, 2007)

1. If given opportunity, I would share factual knowledge (know-what) from work with my co-workers.
2. If given opportunity, I would share business knowledge about the customers, products, suppliers and competitors with my co-workers.
3. If given opportunity, I would share work experiences with my co-workers.
4. If given opportunity, I would share know-how or tricks of the trade from work with my co-workers.
5. If given opportunity, I would share expertise from education or training with my co-workers.
6. If given opportunity, I would share know-why knowledge from work with my co-workers.

Self-Efficacy (SE) (adapted from Carmeli & Schaubroeck, 2007)

- 1 I will be able to achieve most of the goals that I have set for myself in a creative way
- 2 When facing difficult tasks, I am certain that I will accomplish them creatively
- 3 In general, I think that I can obtain outcomes that are important to me in a creative way
- 4 I believe I can succeed at most any creative endeavor to which I set my mind
- 5 I will be able to overcome many challenges creatively
- 6 I am confident that I can perform creatively on many different tasks
- 7 Compared to other people, I can do most tasks very creatively
- 8 Even when things are tough, I can perform quite creatively.

Job Satisfaction (JS) (adapted from (Janz et al., 1997; Judge, 2000) Items:

- 1 Generally speaking, I am very satisfied with this job.
- 2 Most days I am enthusiastic about my work
- 3 Each day at work seems like it will never end
- 4 I find real enjoyment in my work
- 5 I consider my job to be rather unpleasant
- 6 I am generally satisfied with the kind of work I do in this job.