

PREDICTING INNOVATION PERFORMANCE AS A FUNCTION OF TALENT MANAGEMENT: THE ROLE OF SELF-EFFICACY AND SYSTEM EMBEDDEDNESS OF KNOWLEDGE

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Abstract

Modern-day organizations work in an extremely competitive environment, wherein invention and innovation constantly affect business activities. This vibrant environment is extremely challenging, and organizations must pay due attention to invention and innovation for survival. Organizations with high innovation performance remain competitive and stay ahead of the game. One of the significant factors affecting innovation performance is talent management. Talent management practices are immensely important for an organization as they help to identify and fill the pivotal positions, through attraction, development, succession planning, and retention of talented individual. This study inspected the relationship between talent management and innovation performance considering the mediating effect of self- efficacy, and the moderating effect of system embeddedness of knowledge. The outcomes of this cross-sectional study show that talent management is positively associated with innovation performance. Likewise, self-efficacy mediated the relationship between talent management and innovation performance. Moreover, the system embeddedness of knowledge is found to have a moderating effect by strengthening the said relationship. The study provides viable strategic recommendations for improving innovation performance. It also offers new insights into the literature of talent management, and provides significant theoretical, methodological, and practical implications.

Key Words: Innovation Performance, Talent Management, Embeddedness

Introduction

Modern organizations are operating in a dynamic environment because of the unpredictable changes in economic, technological, and political landscapes (Wee & Taylor, 2018). These dynamic environments affect the nature and the mode of business by making it quite challenging for organizations to stay in the market. One way to cope with these challenges is to engage constantly in invention and innovation activities. In fact, in the face of this cutthroat

competitive environment, only cognitions with high innovation performance can survive and stay in the market. The high innovation performance is very significant feature of competitive advantage of organization (O'Regan, Ghobadian & Sims, 2006). Innovation, simply, is the successful use of new ideas to create new product or services with the combination of different resources resulting from organizational processes (Dodgson, Gann & Phillips, 2014). Likewise, innovation performance is the level to which the innovation process of the organization significantly improves the products or efforts leading to effective production of new products or services, new marketing methods, processes, or new business practices in organization as well as relations of the organization to external environment (Laursen & Saltre, 2006). Moreover, organizational sustainable competitive advantage can be achieved by the introduction of new ideas, product and services as well as by improving innovation performance (Zhou, 2006). Therefore, considering its importance for the organization sustainability, this study took innovation performance as the dependent variable. As for the innovation performance is concerned, there are multiple factors affecting it. One of such factors is talent management. Talent management can be a key source of transformation, helping organizations to secure long term survival in this dynamic environment. Talent management is a crucial factor to attain the competitive edge and meet the current as well as the future goals of an organization (Collings & Mellahi, 2009). Therefore, talent management has emerged as a growing field of management studies with significant effects on organizational performance (Collings, Mellahi & Cascio, 2019; Gallardo-Gallardo, Thunnissen, & Scullion 2017). Especially, organization requires a cohesive set of procedures and techniques to attract, manage, and retain talented individuals in order to improve their innovation performance (De Boeck, Meyers, & Dries, 2018, Salau et al., 2018).

It is worth to note that the association between talent management and organizational performance are determined by numerous variables, that may mediate or moderate the said relationships (Ingram & Gold 2016). For instance, the relationship between talent management and organizational performance is moderated by variables, such as, structure of organization (Mohrman & Lawler, 1997), the strategy of organization (Sparrow, Scullion & Tarique, 2014), climate of organization (Rogg, Schmidt, Shull & Schmitt, 2001), or the environment of the organization (Garavan, 2012). This means that the innovation performance can be achieved through different contingent variables that allow to create valuable and innovative solutions (Hunter, Bedell & Mumford, 2007). Therefore, we examined two such contingent variables, namely, self-efficacy, and system embeddedness of knowledge to explore the relationship between talent management and innovation performance. The first contingent variable of the study is self-efficacy, defined as the degree of belief of an individual on his or her abilities/behavior to perform successfully to achieve the targeted objectives and to solve the problem in organization (Bandura, 2006). It is a belief in the effort of an employees that has positive impact on the performance and produces positive results (Black, Mendenhall & Oddou, 1991). The feelings of self-efficacy have significant positive impact on individual performance. As per social cognitive theory, the self-efficacy produces higher levels of performance outcomes (Houghton, Neck & Manz, 2003) as employees have developed high degree of belief on their capabilities, they are more confident to perform a certain task, and show extra ordinary performance. Hence, self-efficacy of employees is very essential to improve innovation performance (Turró, Urbano, & Peris-Ortiz, 2014). Likewise, the previous research also proved the positive relationship between performance and self- efficacy (Olido & Bilbert, 2015).

Another contingent variable of study is system embeddedness of knowledge, defined as the degree to which the required important knowledge is embedded in a context that becomes a function of that system (Kogut & Zander, 1995). At organizational level, the knowledge embeddedness is related to the degree to which the required knowledge is embedded in procedure, networks, human relations, and practices of an organization's systems (Kogut & Zander, 1996). It is also referred as the knowledge collected in an organization for successful innovation. The innovation is made due to the flow or transfer of new knowledge into

organization from different sources, which, in combination with the internally existing body of knowledge can lead to the creation and development of new products and processes (Goerzen & Beamish, 2005). It is evident from the literature that there is a positive effect of system embeddedness of knowledge on organizational performance and innovation outcomes (Bresciani & Ferraris, 2016; Ciabuschi & Martín, 2011).

Summing up, talent management is commonly implemented to achieve sustainable competitive advantage (Ashton & Morton, 2005) and increase innovation performance (George & Kirkpatrick, 2007). However, the environment that supports creativity and innovativeness matters a lot (Lin & Liu, 2012). In this context, the study mainly focused on talent management to improve the innovation performance. It also examined the impact of self-efficacy (mediating variable) and system embeddedness of knowledge (moderating variable) to explain the said relationship.

Innovation Performance

The innovation performance is defined as the innovation process of an organization that successfully produces significantly new outcomes or improves the quality of products, processes or services, new marketing methods, business practices or new organizational methods in workplace to achieve the competitive edge (OECD, 2005, p. 46). Besides, innovation performance is defined as the ability to combine different resources in a process of organization to produce new idea or new successful application or product (Dodgson, Gann & Phillips, 2014). The innovation performance is also defined as the technical characteristic of research and development that are used for the introduction of new products to improve the economic success of organization and overall performance (Ernst, 2001; Stuart, 2000).

Huang and Chen (2017) argued that the innovation performance of the organizations (universities) can be improved by making collaboration between academia and industry that facilitates the growth of key technological innovations for developing innovative climate and entrepreneurial activities. Hence, innovation performance is the successful application of new ideas that are generated from organizational processes as well as result from the adoption of new knowledge and combining of different resources to improve new products, processes or services with which the organization consider themselves different in the market (Laursen & Salter, 2006). As far the universities are concerned, they are the hub of innovation and creation of new knowledge. The literature shows that talent management leads to the creation of new knowledge and improves the innovation performance of the universities.

Talent Management and Innovation Performance

Lewis and Hackman (2006) explained talent management as a combination of the human resource practices like recruitment, selection, and training & development that are used to get the best talented workers with high competence to achieve the objectives of an organization. Talent management is defined as a process used to attract, recruit, develop, motivate and retain the talented employee in an organization who should contribute to the overall performance of the organization (Moczydlowska 2012; Salau et al. 2018). Talent management is management of employees having perfect competencies and capabilities to improve the innovation performance of an organization (Gelens, Dries, Hofmans, & Pepermans, 2013). Research on human resource management practices highlights the need to manage the employee's knowledge and talent in an organization to produce creative ideas and skills that ultimately affect innovation performance (Guest & Bos-Nehles, 2013). Talent management practices influence the development of social capital and workforce networks to improve organizational performance (Glaister, Karacay, Demirbag, & Tatoglu, 2018; Stahl et al., 2012). Talent management plays an important role in improving an organization's ability to demonstrate innovation performance which is extremely important for achieving sustainability and improving overall innovation performance of the organization (Daily & Huang, 2001).

According to Collings, McDonnell, and McMackin (2017), talent management is used to manage the human capital of an organization to improve the overall performance, particularly,

the innovation performance. In short, talent management practices are associated with significant organizational outcomes, such as, sustainable competitive advantage (Bethke Langenegger, Mahler, & Staffel-bach, 2011), improved financial performance (Collings & Mellahi, 2009), value creation (Lepak & Snell, 1999), superior organizational performance (Gallardo-Gallardo & Thunnissen 2016; King 2016), overall economic growth (Wright & McMahan., 2011), and innovation performance (Salau et al., 2018). Therefore, based on previous research, it could be argued that talent management improves the innovation performance that results in gaining a sustainable competitive advantage.

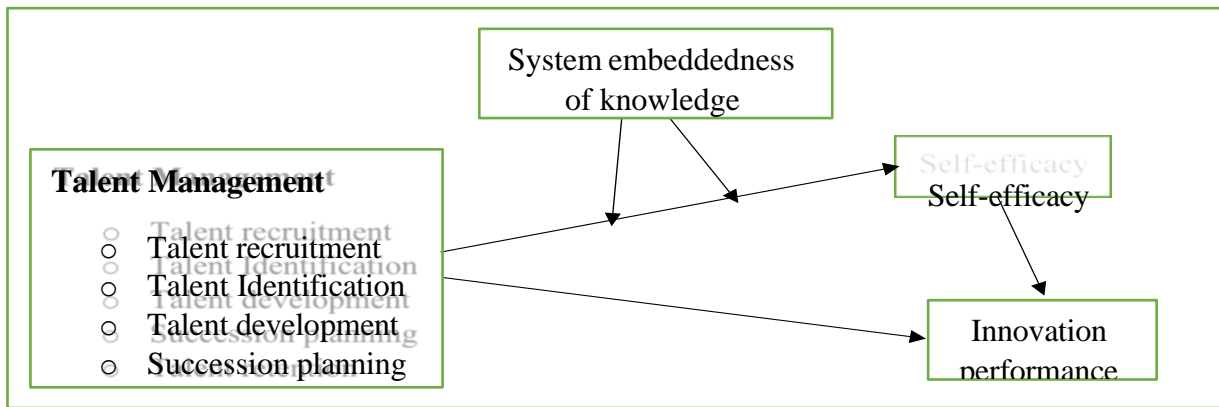
Self- Efficacy and Innovation Performance

Albert Bandura (2001) was the first social scientist who introduced the concept of self- efficacy and described it as an effort to expect and understand the human behavior. Bandura (2006) has defined self-efficacy as the belief of the individuals in their capabilities and skills to perform a certain task successfully and to affect the performance of an organization. The theory of self-efficacy describes that the capabilities and competencies which employees possess are the basis for the motivation of these employees to accomplish an assigned task successfully (Usher & Pajares, 2006). Self-efficacy is described as an employee's confidence and belief to effectively organize and perform a course of action at designated positions to improve the innovation performance and to achieve a required outcome (Bandura, 2001; Pang & Cai, 2008). Furthermore, higher performance can be achieved through self-efficacy as it increases the level of motivation to achieve the relevant goals (Phillips & Gully, 1997). This shows that self-efficacy has direct effect on emotional reaction of an employee to accomplish a required task which results in increased performance and productivity (Wright & Grant 2010). Therefore, employees who have high self-efficacy have higher level of belief that their performance can be better than others. They are masters and view hard tasks to be done efficiently rather than avoid the tasks. There exists a positive association between self-efficacy and employee performance (Cherian & Jacob, 2013). Hence, it shows a strong theoretical justification that self-efficacy is related to innovation performance.

System Embeddedness of Knowledge and Innovation Performance

Zander (1991), and Kogut and Zander (1995) define the system embeddedness of knowledge as the degree to which the knowledge is embedded in a system and that knowledge plays a role to run that system. The knowledge is embedded in the practices and activities that employee or people perform in their organizations (Currie & Kerrin, 2004). Thus, at organizational level, the system embeddedness of knowledge is related to the degree to which the required knowledge is embedded in procedure, networks, human relation, and practices of an organization's systems (Kogut & Zander, 2003). The available literature affirms the relationship of talent management and system of knowledge embeddedness. Researches such as Hsiao, Tsai, and Lee, (2006), and Glisby, and Holden, (2003), suggested the relationship of system embeddedness of knowledge with the enhancement of organizational member's skills, abilities and competencies. In additions, researchers such as Andersson, Björkman, and Forsgren, (2005), and Achcaoucaou, Miravittles, and León-Darder, (2014) proposed the relationship of system embeddedness of knowledge with the enhancement of organizational member's skills, abilities and self-efficacy. Likewise, innovative performance is improved by the system embeddedness of the organizational knowledge (Pu & Soh, 2018). Therefore, this study proposed that the system embeddedness of knowledge moderates the relationship of talent management and self- efficacy, and talent management and innovation performance. The study had three main objectives. First, to examine the impact of talent management on innovative performance. Second, to check the mediating effect of self-efficacy on the relationship between talent management and innovation performance. Lastly, to examine the moderating effect of system embeddedness of knowledge on the relationship of talent management and innovation performance. These objectives are presented in the form of theoretical framework as under.

Theoretical Framework



Hypotheses of the Study

The theoretical framework led to the following hypotheses.

H1. Talent management is positively related to innovation performance

H2. Talent management is positively related to self-efficacy

H3. Self-efficacy is positively related to innovation performance

H4. Self-efficacy mediates the relationship between talent management and innovation performance.

H5. System embeddedness of knowledge moderates the relationship between talent management and innovation performance.

H6. System embeddedness of knowledge moderates the relationship between talent management and Self-efficacy.

H7. The indirect effect of talent management on innovation performance through self-efficacy is stronger when system embeddedness of knowledge is high, whereas this effect is weaker when system embeddedness of knowledge is low.

Methods

Sample and Data Collection

The population of this research were the administrative officers and faculty members, working in Basic Pay Scale-17 and above, from the public sector general universities of Khyber-Pakhtunkhwa (KPK), Pakistan. This group was selected according to the definition of talent management, i.e., those employees who are working on key positions and are involved in decision making process of an organization. The general public sector universities were selected from the list of universities available on the Higher Education Commission's (HEC) official website. A questionnaire was distributed in the twenty-four public sector general universities. The total population of the study was 4696. The systematic random sampling method was used to select the sample. The sample of the study was found to be 1092, using the Daniel's sample size formula (Daniel, 1999).

Instrument/Scale

This study used primary data applying survey method. Data was collected through a questionnaire comprising three sections. The first section defined the purpose of the study. The second section contained questions relating to the organization of the respondents and their demographic information. The third section comprised of questions to assess the prime variables of the study. All the questions in section three were measured on a five-points Likert scale, as detailed as under. Talent management was measured by adapting a 52-items scale. The first sixteen items, measuring talent recruitment and selection, were taken from the scale formulated and used by Liu and Pearson (2014). The next eleven items, relating to talent training and development, were adapted from the scale developed and used by Truitt (2011). The next six items, assessing talent identification process, was adapted from the study of Annakis, Dass and Isa (2014). Similarly, the subsequent eleven items, aimed to measures

succession planning, were taken from the study of Darvish and Temelie (2014). The final eight items, measuring talent retention, were taken from the scale constructed by Kyndt, Dochy, Michielsens, and Moeyaert (2009). Innovation performance was measured with a 10- items scale used by Oke, Burke, and Myers (2007). Self-efficacy was measured with a 10-items scale constructed by Riggs et al. (1994). The system embeddedness of knowledge was measured using a 6-items scale used by Birkinshaw, Nobel, and Ridderstrale (2002). All the variables were measured using a 5-points Likert scale. Moreover, the authentication of the instrument was examined by Cronbach's alpha, using SPSS (V.21).

Reliability of the Instrument/Scale

A pilot study, comprising of 60 completed questionnaires, was conducted to assess the reliability of the scale. The Cronbach's alpha values for the entire scale, as well as, the subscales are shown in the following table.

Cronbach's Alpha for Pilot Study

S. No	Variable	No. of items	Cronbach's alpha
1	Talent management	52	0.864
3	Innovation Performance	10	0.851
4	Self-Efficacy	10	0.883
6	System Embeddedness of Knowledge	6	0.789
7	Total	78	0.847

Cronbach's alpha ≥ 0.70 demonstrates scale is reliable

Haier, et al., (2010) suggested the Cronbach's alpha value of equal to or higher than 0.7 as the threshold value for the reliability of instruments in the field of social sciences. As the above table shows that the values of Cronbach's alpha are more than .70 for the overall as well as the sub-scales, hence, it is concluded that the scale is internally consistent, and is used for data collection.

Demographics and Descriptive Statistics

A self-administered questionnaire was used to get data from the 1092 employees. A total of 855 questionnaires completed in all respects (78.29% response rate) were returned and used for analyses. The demographic characteristics of the respondents revealed that 541 respondents were male and 314 were female. Similarly, 694 respondents were the faculty members and 161 were the administrative staff. Likewise, 64 respondents were of 20 to 30 years of age, 304 were of 31 to 40 years of age, 287 were of 41 to 50 years of age, and 200 respondents were of 51 and above years of age. Moreover, 511 respondents were married, and 344 respondents were unmarried. Additionally, only three respondents were BA/BSc qualified, 203 were MA/MSc, 514 were MS/MPhil, and 135 PhDs. Lastly, 177 respondents had less than 10 years of experience, 329 had an experience between 11 to 20 years, 178 had 21 to 30 years of experience, and 171 were from the experience category of more than 30 years. These demographic variables have been taken as control variables in the next stages of the analysis.

Analysis and Results

Correlation Analysis

Study Variables	1	2	3	4
1. Talent Management	1			
2. Self-Efficacy	.313**	1		
3. System embeddedness of Knowledge	.307**	.303**	1	
4. Innovation Performance	.353**	.349**	.247**	1

** Correlation is significant at 0.01 level of significance (2-tailed)

* Correlation is significant at 0.05 level of significance (2-tailed)

The correlation analysis revealed that all the variables of the study are positively and significantly correlated to each other. The table shows that talent management has significant positive relationship with self-efficacy ($r = .313$), system embeddedness of knowledge ($r = .307$), and innovation performance ($r = .353$). Likewise, self-efficacy has a positive relationship with system embeddedness of knowledge ($r = .303$) and innovation performance ($r = .349$). Lastly, system embeddedness of knowledge has a positive relation with innovation performance ($r = .247$).

The Regression Analysis

The regression analysis was performed to examine the direct, the moderating, the mediating, and the moderated mediating relationships, and test the study hypothesis.

Path coefficients (the direct, and moderated effects)

Regression path	Coefficient (beta)	P-value
H1: Innovation performance \square Talent management	.34	< .01
H2: Self-efficacy \square Talent management	.32	< .01
H3: Innovation performance \square Self-efficacy	.36	< .01
H5: Innovation performance \square talent management * system observability of knowledge	.22	< .05
H6: Self-efficacy \square talent management * system observability of knowledge	.13	< .05

The above table shows talent management has a positive and significant impact on innovative performance ($\beta = .34$, $P < .01$), and self-efficacy ($\beta = .32$, $P < .01$) respectively. Similarly, self-efficacy has a positive and highly significant impact on innovation performance ($\beta = .36$, $P < .01$). Likewise, the system embeddedness knowledge modified/enhanced the impact of talent management on innovation performance ($\beta = .22$, $P < .05$), and self-efficacy ($\beta = .13$, $P < .05$) respectively. These results are in line with the respective hypotheses, hence, H1, H2, H3, H5, and H6 are accepted.

The indirect effect (the mediation analysis)

Indirect Effect			
	Effect size	LLCI	ULCI
Self-efficacy	.1363	.0852	.1564

The H4 of the study “self-efficacy mediates the relationship between talent management and innovation performance” was examined using mediation analysis. The moderated mediation effect is found to be positive and significant ($\beta = .1363$, $LLCI = .0852$, & $ULCI = .1564$). Therefore, self-efficacy has been found to mediate the relationship between talent management and innovation performance. This result is consistent with the proposed hypothesis (H4), hence, the hypothesis is accepted.

The moderated mediated effect (the moderated mediation analysis)

Moderated Mediation Effects			
	Index size	LLCI	ULCI
Self-efficacy * System embeddedness of knowledge	.082	.0043	.0158

Finally, the H7 of the study stating that “the indirect effect of talent management on innovation performance through self-efficacy is stronger when system embeddedness of knowledge is high, whereas this effect is weaker when system embeddedness of knowledge is low” was examined using the moderated mediation analysis. Results revealed that the impact of talent

management on innovation performance through self-efficacy was modified by the system embeddedness of knowledge. The moderated mediation impact was found to be positive and significant ($\beta = .082$, LLCI = .0043, & ULCI = .0158), showing that the positive impact of talent management on innovation performance through self-efficacy is stronger in the presence of high system embeddedness of knowledge. This result is in accordance with the projected hypothesis (H7); therefore, it is accepted.

Findings, Discussion, and Conclusions

This research explored the basic mechanism that is involved in the enhancement of organizational innovation performance utilizing the survey approach and quantitative research methodology. In order to accomplish the research objectives, data was collected from the employees of the public sector general universities of Khyber Pakhtunkhwa province of Pakistan. During this research, it was established that the two of the significant antecedents of organizational innovation performance are the talent management, and self-efficacy. Furthermore, the system embeddedness of knowledge could also play a vital role in shaping these relationships. The theoretical model of this research is formulated upon the fundamental conception that talent management plays a vital role in the enhancement of the innovation performance of the universities directly as well as through self-efficacy. Furthermore, the system embeddedness of knowledge is taken as moderator in these associations. The available literature acknowledges the various attributes that contribute to the enhancement of the innovation performance of organizations. However, there is lack of focus on role of talent management in enhancing the innovation performance of an organizations. Moreover, the role of self-efficacy, and system embeddedness of knowledge in the association of talent management and innovation performance in developing economies, like Pakistan, remains unexplored. To address this gap, this research was undertaken to empirically evaluate the hypothesized model. The study proposed seven hypotheses aimed to examine the direct, indirect, moderation, and moderated-mediation relationships among the variables concerned. Results of the statistical analysis lead to the acceptance of all the proposed hypotheses. The direct association of the talent management and innovation performance was affirmed by the results of statistical analysis. This result is consistent with the findings of the Glaister, Karacay, Demirbag, and Tatoglu, (2018), Ingram, (2016) and Widodo, and Mawarto, M. (2020) who suggested that talent management augments the knowledge base that is essential for enhancing the innovativeness and performance of the organization irrespective of structure, size and age. Likewise, the direct impact of talent management on self-efficacy of the employees was also accepted. This finding is in line with the findings of Meyers, (2020), Iroegbu, (2015) and Oladapo, (2014), who concluded that talent management enhances the self-belief and confidence of the organizational members to perform a specific task.

Similarly, the positive impact of self-efficacy on innovation performance of the organization is also supported by the statistical results. This finding is in line to the findings of, Jaiswal, and Dhar, (2015), and Wei, Chen, Zhang, and Zhang, (2020), who also supported that self-efficacy enhances innovation performance. We further suggested in our model suggested that system embeddedness of knowledge strengthens the relationship among talent management and innovation performance, which is also supported. Our results further confirmed that system embeddedness of knowledge moderates the effect of talent management on self-efficacy. We found that the positive impact of talent management on self-efficacy gets strengthen in the presence of system embeddedness of knowledge. Furthermore, we found that self-efficacy works as a mediating factor between talent management and innovation performance. The mediation analysis reveals that both the direct and indirect effects are accounted to be significant. Since, the direct effect of talent management remains significant even in the presence of self-efficacy, therefore, self-efficacy partially mediates the relationship between talent management and innovation performance. Last but on the least, our model suggested that the indirect effect of talent management on innovation performance through self-efficacy is stronger in the presence of a high system embeddedness of knowledge. The results of the

moderated mediation analysis demonstrated that system embeddedness of knowledge not only positively moderated the direct relationship between talent management and innovation performance, but as also strengthened the indirect effects of talent management on innovation performance through self-efficacy. In short, our findings led us to the conclusion that the innovation performance of an organization can be improved by promoting an organizational culture characterized by a proper system of talent management, an enhanced self-efficacy of the employees, and an appropriate system of embedding the existing and the new knowledge.

Theoretical Contribution

The study contains several theoretical contributions. It conceptualized an explicit model to depict the holistic background of the relationships between talent management, self-efficacy, system embeddedness of knowledge, and innovation performance. It explicitly explained how talent management, self-efficacy, and system embeddedness of knowledge are going to affect each other, and ultimately influence the innovation performance of employees. The findings of this research expand the resource-based view, contingency theory, human capital theory, and social exchange theory. It explains the organizational conditions relating to the internal mechanism, and individual behavior that boosts the innovative culture within the organization — a pre-requisite to enhance productivity and performance. The research findings expand the scope of the innovation performance by examining the it in the context of public sector universities of developing economies like Pakistan. It also adds to the existing literature of talent management and innovation performance. The findings demonstrate that talent management is not exclusively enough for the enhancement of the innovation performance if the internal system — self-efficacy, and system embeddedness of knowledge, is not involved. Moreover, in the existing literature, a major portion of investigations linked to talent management and innovation performance are carried out in profit-oriented business organizations or private sector organizations. This research examined the said relationship in the context of nonprofit organization (public sector universities), thus cross validating the findings of the previous studies. The study specifically adds to the theory of system embeddedness of knowledge, and self-efficacy by identifying their roles in implementation of new ideas and achieving innovation performance. Last but not the least, this research adds to the body of existing literature by evaluating the moderated mediation effect of system embeddedness of knowledge in the association of talent management and innovation performance.

Managerial Implications

This study entails several important managerial/practical implications. The findings of this study are beneficial for practitioners, especially, for the administration and policy makers of public sector universities. It offers practical implications regarding the appropriate management of organizational distinctive resource — human resources, to augment the innovation performance. This is because talent management and organizational members' behaviors, such as, self-efficacy are the essential tools for enhancing innovation performance (Bester, Stander, & Van Zyl, 2015). Therefore, it is vital for the managers, administration, and policy makers to devise strategies and shift their focus from traditional personal management to talent management aggressively. Moreover, talent management is the major source of creating new ideas, new knowledge, and human capital. These factors help develop the innovative work behavior, innovative capabilities, and innovative culture within organizations (Krishnan, & Scullion, 2017; Salau, et al., 2018; van den Broek, Boselie, & Paauwe, 2018). Therefore, it is significant for managers to dedicate their focus on enhancement and adaptation of talent management practices. It is also strongly recommended that managers should utilize their energies to enhance strategic sensing, collective commitment, and resources fluidity through talent management and self- efficacy in order to respond quickly to market changes and adopting innovative culture. The managers should also focus on the enhancement of the system embeddedness of knowledge by amplified information gathering from their members through their relationships with external environment and other social actors. Organizations

should also respond to the wide range of information and social stimuli from both inside and outside organization for acquiring the new knowledge and enhancing their innovation performance.

Limitations and Future Recommendations

This study brought forward valuable insights in the form of theoretical contributions and practical implications. However, just like other studies, this study has several limitations. For instance, we used a cross sectional research design, wherein data collection and construct measurement were done at a single point of time. Hence, the variation in these study constructs over the time has been overlooked. However, the individual level variables, like self-efficacy and talent management, need longitudinal exploration for developing a further understanding of these phenomena. Therefore, it is strongly emphasized that researchers should utilize the longitudinal research design for these constructs in the future studies. Furthermore, this study used self-reported questionnaires for data collection. However, there are several limitations with this method of data collection, such as, the social desirability bias. Hence, it is advised to undertake the mixed methodology approach — peer reported, and supervisor reported, along with self-reported questionnaires for collecting data. Likewise, this study elaborated the information relating to the complex natured relationships of talent management, self-efficacy, system embeddedness of knowledge. and innovation performance in public sector universities of a developing economy (Pakistan). The sampling frame of this research included respondents only from the public sector universities of one province, Khyber Pakhtunkhwa, wherein the data was collected from the grade 17 and above employees. So, the results of this research may not be generalizable to all the employees or other universities. Therefore, it is suggested that future research should be conducted to test the study hypotheses in different clusters of universities, employees, and localities. Last but not the least, the study scope can be extended to other areas within education sector; for instance, students' talent management, and examining how talent management supports the development of soft skills, such as, teamwork, communications, and stress management etc.

Conclusion

This study was basically aimed to examine the impact of talent management on innovation performance directly as well as through the mediation effect of self-efficacy. The moderating effect of system embeddedness of knowledge was also examined in connection with the said relationship. The resource-based theory, contingency theory, human capital theory, and social exchange theory were used to develop an understanding of the relationships between the study's variables. Likewise, an extensive literature review was done to develop a total of seven hypotheses. Data was collected from the employees of the public sector (general) universities of Khyber Pakhtunkhwa, Pakistan, through a self-administered questionnaire. Results revealed that the innovation performance depends on appropriate management of talent, such as, talent recruitment, talent selection, talent identifications, talent retention, and succession planning. Additionally, the internal system involved in the connection of talent management and innovation performance is also significant. It is revealed that the effective talent management along with the self-efficacy of the organizational members, and system embeddedness of knowledge are the key antecedents of the innovation performance. Without the effective psychological empowerment and self-efficacy, and a sound system of knowledge embeddedness, it is not easy for organizations to implement the effective talent management for the development of innovative culture. This research makes significant contributions to business practices by refining the understandings of talent management for augmenting the innovation performance. It further facilitates the processes of organizational human resource planning by linking talent management, self-efficacy, system embeddedness of knowledge, and innovation performance. The study also presented various avenues for the future research in the area of talent management and innovation performance.

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