



Talent Management as a Panacea for Innovation Performance in Developing Nations: Insights from Education Sector in Pakistan

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Abstract: In today's dynamic and ever-growing business world, organizations have to adopt every possible move to remain competitive. One such move, organizations have at their disposal, is talent management. Talent management helps an organization to identify and fill the key positions via attracting, developing, succession planning, and retaining the talented individuals to improve its overall performance. This research was intended to investigate the impact of talent management on the innovation performance of an organization. The study assumed that an effective talent management system can improve the innovation performance. Moreover, we were also interested to unveil the underlying mechanism through which innovation performance gets affected by talent management. Hence, we used psychological empowerment as the mediating variable, and knowledge observability as the moderating variables to examine the said relationship. It was a cross-sectional study, with a sample of 1092 respondents. Data was obtained from 24 public sector (general) universities, in Khyber-Pakhtunkhwa, Pakistan, with the help of a self-administered standardized questionnaire. The results of the study demonstrated that talent management had a significant positive effect on innovation performance. Likewise, psychological empowerment was found to mediate the association between talent management and innovation performance. Moreover, knowledge observability was found to have a moderating (strengthening) effect on the relationship of talent management and innovation performance. The study also provides viable recommendations for managers to improve the innovation performance of their organizations.

Keywords: Talent Management (TM), Innovation Performance (IP), Psychological Empowerment (PE), Knowledge Observability (KO), Education Sector, Developing Nations

1. Introduction

Organizations nowadays work in a dynamic environment due to the erratic changes taking place in economy, technology, and politics, (Wee & Taylor, 2018). One important factor in the transformation and long-term sustainability of these organisations is talent management. The phenomena of talent management is thought to be essential for gaining a competitive edge and achieving an organization's present and long-term objectives (Collings & Mellahi, 2009). Talent management was first used some thirty years ago, and since then, it has become a rapidly expanding area of management research, with evidence that it significantly affects an organization's performance (Collings, Mellahi & Cascio, 2019). Researchers have defined talent management in a variety of ways. According to Geneleens, Dries, Hofmans, and Pepermans (2013), talent management is the process of identifying important key positions and applying appropriate steps to recruit, select, develop, and manage high-performing talented

employees who are more valuable to the success of an organization.

Researchers unanimously agree that one of the key elements in an organization's growth, development, and performance enhancement is an efficient talent management system. It helps organisations in identifying, nurturing, and overseeing "high potential" workers (Swailles, 2013). Meyers and Van Woerkom (2014) consider talent management as the cornerstone for enhancing innovation performance. Moreover, talent management is crucial for generating innovative ideas and skills that ultimately impact innovation performance (Guest & Bos-Nehles, 2013; Jiménez-Jiménez, Valle & Hernandez-Espallardo, 2008; Laursen & Foss, 2003; Perdomo-Ortiz, Gonzalez-Benito, & Galende, 2009). Likewise, Salau et al. (2018) asserted that talent management enhances an organisation's ability for innovation. Therefore, based on earlier studies, we contended that talent management enhances an organization's capacity for innovation.

Innovation performance is the study's dependent variable. According to Dodgson, Gann, and Phillips (2014), innovation is the effective application of new concepts to produce new goods or services through the fusion of various resources as a result of organizational procedures. Innovation performance (IP) measures how well an organization's innovation process produces new goods or services, or how well it produces them while developing new marketing strategies, operational procedures, or business practices, as well as how the organization interacts with the outside world (Laursen & Saltre, 2006). Three primary activities contribute to innovation performance, i.e., an organization's involvement in R&D, the timely introduction of new services or products, and significant modifications to existing products or services (Miller & Friesan, 1982).

The literature indicates that introducing new concepts, goods, and services as well as enhancing innovation performance can help a firm gain a sustained competitive advantage (Zhou, 2006). According to O'Regan, Ghobadian, and Sims (2006), a key component of an organization's competitive edge is its high performance in innovation. Since innovation performance is important for organizational sustainability and overall efficiency, this study uses it as a dependent variable. Hence, we tried to examine a few of its significant determining factors, including; talent management, psychological empowerment, and knowledge observability. As mentioned earlier, an effective talent management system improves the innovation performance of an organisation.

Furthermore, the existing research reveals that innovation performance is influenced by a variety of factors in addition to talent management. According to Ingram and Gold (2016), a variety of factors may mediate or mitigate the association between talent management and organizational performance (OP). Factors, such as, organizational structure (Mohrman & Lawler, 1997), strategy (Sparrow, Scullion & Tarique, 2014), climate (Rogg, Schmidt, Shull & Schmitt, 2001), and environmental factors (Garavan, 2012), all moderate the relationship between talent management and organizational performance. Therefore, this study looked at two contingent variables: psychological empowerment and knowledge observability to investigate the connection between talent management and innovation performance.

Psychological empowerment is extremely crucial for task motivation. According to Jafari, Moradi, and Ahanchi (2013), psychological empowerment is the idea held by employees that they can advance their knowledge and abilities if they are granted the authority to make critical decisions in order to complete a task inside an organisation. Likewise, the positive effect psychological empowerment has on staff morale is significant as it inspires workers by boosting their self-esteem, which in turn improves organizational performance (Chan, 2003). Psychological empowerment also results in increased innovation performance (Spreitzer, 1995), and employees' creativity (Zhang & Bartol, 2010),

Moreover, psychological empowerment plays a significant role in connecting talent management with the innovation performance (Liden, Wayne, and Sparrowe, 2000). Redmond, Mumford, and Teach (1993) assert that when employees are empowered, they can use their knowledge, skills, and abilities to solve issues, come up with new ideas, and feel like they have accomplished a lot. Likewise, talented employees feel more empowered while performing their duties. Hence, we propose psychological empowerment as a mediating variable between talent management and innovation performance.

The final construct of the study is knowledge observability (KO). The observability of knowledge describes how knowledge required for an activity within an organization can be obtained by observing or witnessing the task performance of another person (Winter, 1987). Knowledge observability has a significant impact of the relationship of talent management and innovation performance. Zander (1991), and Kogut and Zander (1993) claim that knowledge observability acts as a moderator in the relationship between innovation performance and talent management. Since knowledge is regarded as a sticky asset, it can move between locations through observability,

which enhances performance (Arrow & Lamberton, 1971; Von Hippel 1994).

Furthermore, knowledge is the primary source of organizational innovation in a global economy and is so crucial for economic growth (Gulbranson & Audretsch, 2008). According to Rezaei-Zadeh and Darwish (2016), knowledge is a crucial component of organizational transformation, innovative performance, and long-term competitive advantage. An organization can generate new knowledge and innovate by using observability to gather knowledge (Crescenzi & Gagliardi, 2018; Eisenhardt & Santos, 2002; Inkpen & Dinur, 1998). Furthermore, knowledge observability has a significant impact on the relationship of talent management and innovation performance. Therefore, the study examines the moderating effect of knowledge observability on the relationship between talent management and innovation performance.

In conclusion, as universities are the centre of innovation, it is crucial to raise staff members' levels of innovation performance. Currently such levels are below average. One of the primary reasons of low innovation performance may be the lack of effective talent management practices. Therefore, the study attempted to find a solution to the problem by investigating the impact of talent management on innovation performance. Additionally, the study also explored the moderating effect of knowledge observability and mediating role of psychological empowerment in the link of talent management and an organisation's innovation performance.

2. Literature Review

2.1 Talent Management

The idea of talent management first surfaced nearly thirty years ago. Since then, the idea has grown in popularity as a branch of management study that demonstrates a major impact on an organization's performance (Collings, Mellahi & Cascio, 2019). Lewis and Hackman (2006) defines talent management as a combination of human resource practices, such as recruitment, selection, and training and development, that are used to find the most competent and talented employees in order to fulfil the prerequisites and accomplish the organization's goals and objectives. Talent management is "a consolidated set of activities, processes, techniques and organizational culture that are designed and implemented to identify, select, develop, manage, and retain the talented individual to achieve the strategic objectives of the organization" (Silzer & Dowell, 2010, p. 18). It is "an efficient and systematic process for identification, attraction, development, retention/engagement, and succession planning of talented employees with high level of potential and capabilities who improve innovation performance of an organization" (Vaiman & Collings, 2015).

In addition to the above definitions, talent management can also be described as an approach taken by an organization to find, hire, train, inspire, and keep talented workers who can improve the organization's performance as a whole (Bethke-Langenegger, Mahler & Staffebach 2011; Collings & Mellahi 2009; Moczydlowska 2012; Salau et al. 2018). Hence, an effective talent management process contributes a lot the growth, development, and performance of an organization.

Moreover, talent management strategies are employed to identify, nurture, and oversee "high potential" personnel who enhance the organization's overall performance (Swales, 2013). Effective talent management strategies improve organizational performance (Festing, Schäfer, & Scullion, 2013; McDonnell, Collings, Mellahi, & Schuler, 2017). Similarly, talent management is used to manage an organization's human resources to enhance overall performance, especially innovative performance (Collings, McDonnell, & McMackin, 2017). More precisely, talent management contributes significantly to an organization's capacity for innovative performance, which is critical for gaining a competitive edge and guaranteeing sustainability (Daily & Huang, 2001).

2.2 Psychological Empowerment

Psychological empowerment refers to an employee's essential motivational and psychological states that support him in making changes in his work and maintaining a sense of control over his position (Spreitzer, 2008; Seibert, Wang, & Courtright, 2011). Psychological empowerment plays an important role in shaping an employee's work attitude and consequent behaviours. According to Thomas and Velthouse (1990) and Whetten & Cameron (2010), psychological empowerment is an internal motivating component that induces an employee to perform his work efficiently. Likewise, the dimensions of psychological empowerment i.e., meaningfulness, choice, competence, and impact, significantly improves organizational performance (Thomas & Velthouse, 1990). The other effects of psychological empowerment include; ability to generate new ideas, ability to solve problems, a sense of accomplishment (Redmond, Mumford & Teach, 1993), and innovative capability of employees' (Ertürk, 2012).

In short, psychological empowerment accompanies various desirable consequences for an organisation. For instance, Cohn, Khurana, and Reeves (2005) held that psychological empowerment is favourably impacted by talent management, and results in an increase in the effectiveness, efficiency, competitiveness, and creativity of the organisation. This finding suggests that psychological empowerment nurtures in the presence of an effective talent management system and augments innovation performance. Sprinkler (1995) stated that a high degree of psychological empowerment leads to the promotion of innovative performance. Likewise, Ertürk, (2012) asserted that an employee's level of psychological empowerment and creativity/innovation are positively correlated.

2.3 Knowledge Observability

Knowledge observability is the activity of looking at, identifying, and examining different traits and characteristics of a result or a process (Kogut & Zander, 1995). Similarly, "the degree to which the fundamental knowledge is revealed that is required for use of knowledge" is known as the observability of knowledge (Winter, 1987, p. 172). Likewise, the term "knowledge observability" refers to the degree to which adversaries attempt to replicate or imitate a technology, product, or process. Furthermore, it can also be defined as an activity that tracks the essential knowledge that a business needs in order to investigate various process aspects or generate new products. In a nutshell, observability of knowledge encompasses proactive attempts to replicate a technology or process in order to enhance an organization's innovation performance (Zander & Kogut, 1995; Pérez-Luño, & Valle-Cabrera, 2011). Knowledge observability can have significant consequences for an organisation's performance. Zander (1991) and Kogut and Zander (1993) claim that knowledge observability acts as a moderator in the relationship between innovation performance and talent management. They place special emphasis on knowledge observability and knowledge embeddedness in systems as moderating elements to enhance organizational innovation performance. They went on to say that the easier it is for an organization to transmit knowledge from one place to another, the greater observability of that knowledge can be provided — either to another employee within the same firm or to a rival.

There are many positive effects of knowledge observability for an organisation. For example, it leads to forward-thinking problem-solving and facilitates the success of an organizations (Hornstein, 2015; King, 2007). Other favourable effects of knowledge observability include; improved customer relationships, better management techniques, increased productivity and sales, enhanced decision-making with fewer errors, new idea generation, and improved performance (Hitt, Bierman, Shimizu, & Kochhar, 2001, & Massingham, 2014).

2.4 Innovation Performance

The concept of innovation performance served as the dependent variable of the study. An organization's innovation process that successfully generates noticeably new results or raises the quality of its goods, services, or processes, as well as new business procedures, marketing strategies, or organizational techniques in the workplace to gain a competitive edge, is referred to as innovation performance (OECD, 2005, p. 46). Furthermore, according to Dodge, Gann, and Phillips (2014), innovation performance is the capacity to integrate various resources inside an organizational process in order to generate a novel concept, successful new application, or finished good. Innovation performance is also defined as the technical aspect of research and development that is utilized to launch new goods to increase an organization's overall performance and financial success (Ernst, 2001; Stuart, 2000).

To conclude, innovation performance is the effective application of new ideas that come from organizational processes as well as the adoption of new knowledge and the combining of different resources, that helps organisations to improve new products, processes, or services (Laursen & Salter, 2006). Innovation performance can be enhanced through different measures. For instance, Huang and Chen (2017) contended that fostering industry-academia collaboration can enhance university innovation performance. It will help accelerate the development of critical technological advancements that fosters a creative environment and entrepreneurial activity.

2.5 Theoretical Framework

The study's theoretical framework elucidates the direct relationship between talent management as an independent variable and innovation performance as a dependent variable. On the other hand, psychological empowerment is demonstrated to be the mediating variable, while knowledge observability is used to be the moderating variable.

2.6 Hypotheses of the Study

In the light of the literature review and above theoretical model, we developed the following hypothesis:

- H₁**. Talent management has a positive impact on innovation performance.
- H₂**. Talent management has a positive impact on psychological empowerment.
- H₃**. Psychological empowerment positively effects innovation performance.
- H₄**. The relationship between talent management and innovation performance is mediated by psychological empowerment.
- H₅**. The relationship between talent management and psychological empowerment is moderated by knowledge observability.
- H₆**. The relationship between talent management and innovation performance is moderated by knowledge observability.
- H₇**. The indirect impact of talent management on innovation performance via psychological empowerment is stronger in the face of high knowledge observability as compared to low knowledge observability.

3. Research Methodology

3.1 Measures

The questionnaire that was utilized in this study contained three distinct sections. The goal of the study was outlined in the first section, accompanied by comprehensive instructions for filling it out. The second section of the questionnaire focused on the respondents' demographic information, like, marital status, qualification, age group, gender, job experience, type of job, and name of university. The final section of the questionnaire included questions aimed at evaluating the study's variables. This section's questions were all measured using a 5-points Likert Scale, ranging from 1 = strongly disagree to 5 = strongly agree.

A 52-item scale was used to measure talent management. Out the 52 items, the first sixteen items assessed talent acquisition and selection, and were drawn from the scale created and employed by Liu and Pearson (2014). The next eleven items were used to assess talent development and training, and were modified from the scale created and employed by Truitt (2011). The subsequent eleven items were used to assess succession planning, and were taken from the study of Darvish and Temelie (2014). Likewise, the next six items measured the talent identification process, and were modified from the study of Annakis, Dass, and Isa (2014). The last eight items were drawn from the scale developed by Kyndt, Dochy, Michielsen, and Moeyaert (2009), and were used to measure talent retention. All the items were measured using a 5-points Likert scale.

Furthermore, a 12-items 5-point Likert scale developed by Spreitzer (1995) was used to measure psychological empowerment. The four elements of psychological empowerment — meaning, impact, competency, and self-determination — were selected for measurement. Similarly, the 10-item, 5-point Likert scale developed by Oke, Burke, and Myers (2007) was utilized to measure the innovation performance. Likewise, knowledge observability, the study's final construct, was assessed using a three-item scale developed by Kogut and Zander (1995). Thus, a total of three items utilizing a 5-point Likert scale were employed to test knowledge observability.

3.2 Pilot Study

Sixty academic staff members and administrative officers from three public sector (general) universities of Hazara Division — Hazara University Mansehra, Abbottabad University of Sciences and Technology, and University of Haripur — were chosen for the pilot study. The study was conducted using 54 fully completed questionnaires. The questionnaire's terminology, order, and structure were adjusted based on suggestions from the respondents. For example, the word "university" was inserted in place of "department" or "firm," and demographic characteristics including employment type, experience, and qualification were included.

The instrument's authenticity was scrutinized using Cronbach's alpha, calculated using the SPSS (v.23). The Cronbach's alpha value for the overall scale (containing 93 items) as well as for each of the separate constructs, was found to be .868. Since the scale's Cronbach's Alpha value exceeded the benchmark value of .70, the questionnaire was suitable for use in the study.

3.3 Population, Sample and Sampling Procedure

The administrative officers and academic personnel of Pakistan's public sector general universities who were employed at Basic Pay Scale-17 and above made up the research population. This group was chosen in accordance

with the talent management definition, which calls for personnel holding key positions and participating in organizational decision-making. A total of twenty-four general public sector universities from KPK were chosen from the list of universities on the Higher Education Commission's (HEC) official website. The target population of the study was 4696.

The systematic random sampling method was used to select the study sample, using a two-step process. In the first step, the population of respondents were identified from each general university, and then the sample was computed using the conventional formulas for determining a random sample. In the next step, the respondents from each university were chosen using random sampling table. Furthermore, the sample size was ascertained using Daniel's sample size formula (Daniel, 1999). The study's sample size was 1092.

3.4 Collection, Preparation and Validation Data

A specially adapted questionnaire was delivered to the target sample through personal visits to their offices. Out of the distributed questionnaires, 855 properly completed questionnaires were received (78.29 percent response rate), which were used for final analyses. Before doing the final analysis, data was prepared, analyzed, and validated for the purpose. The process of data preparation included preliminary data screening, identifying the missing values, and dealing with the outliers. Likewise, initial data tests, such as, normality test, multicollinearity test, construct validity tests, and reliability tests were conducted to ensure the suitability of the data for final analysis. Moreover, descriptive as well as inferential statistical techniques were applied for analyzing data. Correlation and regression analyses were used as the basic tools of the analysis. All analyses were performed with the help Statistical Package for Social Sciences (SPSS) version, 23.

3.5 Ethical Considerations

The study also strictly followed research ethics, such as, participation was purely made on voluntarily basis, and prior consent was taken from the respondents. They were informed about the purpose of the study and data collection. They were ensured that the information they provide will not be shared with anyone, and their identity will be kept anonymous. Moreover, it was assured that the questionnaires they filled will be destroyed upon the completion of the study to avoid any possible misuse. Last but not the last, they were given the right to withdraw from their participation in study at any time they want.

4. Data Analysis, Results and Findings

Data analyses revealed that 541 (63%) respondents were males and 314 (37%) were females. Only three of the respondents had BA/BSc level of qualification. Likewise, 203 of the respondents had MA/MSc level of qualification, 514 were MS/M.Phil., while 135 were PhD qualified. Moreover, 81% of the respondents were faculty members, and 19% were the administrative staff.

4.1 Correlation Analysis

The results of correlation analysis demonstrated that there exist a significant positive association among all the variables of the study. A significant positive correlation was found between talent management and innovation performance ($r = .353^{**}$). The correlation coefficient between talent management and psychological empowerment was found to be $.296^{**}$. Similarly, the variables talent management and knowledge observability also shown a positive association with each other ($r = .435^{**}$). Likewise, the correlation coefficient between psychological empowerment and knowledge observability was calculated to be $.337^{**}$. Moreover, the correlation coefficient between psychological empowerment and innovation performance was found to be $.206^{**}$. Lastly, the variables knowledge observability and innovation performance were also found to have a positive correlation with each other ($r = .412^{**}$). All the coefficients were found to be statistically significant with a 95% confidence level (**).

Table :

Variables of the study	1	2	3	4
1 Talent Management	1			
2 Psychological Empowerment	.296 ^{**}	1		

3	Knowledge observability	.435*	.337**	1
4	Innovation Performance	.353**	.206**	.412** 1

4.2 Regression Analysis

Regression analysis was used to assess the cause and effect relationship among the variables of the study. Results of the regression analysis approved that there exist a direct, positive, pairwise association between talent management, psychological empowerment, and innovation performance of an organization. In addition to the direct effect, it was confirmed that talent management also have an indirect effect on the innovation performance through psychological empowerment. Hence, the mediating role of psychological empowerment between talent management and innovation performance was also approved. Furthermore, the moderated mediation effect of knowledge observability and psychological empowerment on the relationship of talent and innovation performance was also validated. The findings of the study are presented in a sequential manner as under.

4.3 Effect of Talent management on Innovation Performance (H₁)

The H₁ of the study assumed that “Talent management has a positive impact on innovation performance”. The data analysis suggested to accept the hypothesis (H₁: TM \square IP, R² = .125**, β = .34, & p < .001). This result is similar to the findings of previous researchers, such as, Glaister, Karacay, Demirbag, and Tatoglu, (2018), Ingram, (2016) and Widodo, and Mawarto, M. (2020), who declared that talent management is essential for promoting the innovativeness and performance of an organization.

4.4 Effect of Talent Management on Psychological Empowerment (H₂)

According to the H₂ of the study “talent management has a positive impact on psychological empowerment”. The analysis of data supported the hypothesis (H₂: TM \square PE, R² = .086***, β = .27, & p < .001), confirming that talent management augments psychological empowerment. This result is in accordance with the findings of Abazeed, (2018), and Loke, Abu, and Lim, (2018), who considered talent management practices as a source to improve the psychological empowerment of employees.

4.5 Effect of Psychological Empowerment on Innovation Performance (H₃)

The H₃ presumed that “psychological empowerment positively effects innovation performance”. The data analysis demonstrated the positive effect of psychological empowerment on innovation performance and hence H₃ was accepted (PE \square IP, R² = .042**, β = .22, & p < .001). This conclusion is consistent with the findings of Bhatnagar (2012), and Schermuly, Meyer and Dämmer (2013), that psychological empowerment promotes inventive performance.

4.6 The Indirect effect of Talent Management on Innovation Performance through Psychological Empowerment (H₄)

According to the study's hypothesis no.4 “the relationship between talent management and innovation performance is mediated by psychological empowerment”. In accordance with the mediation analysis, the total effect was decomposed into direct and indirect effects. In this regard, the direct effect of talent management on innovation performance was found to be 85.1% of the total effect. Conversely, the indirect effect of talent on innovation performance though psychological empowerment was found to be 14.9%. Moreover, these findings demonstrate that psychological empowerment was significantly accounted for by both the direct and indirect effects. Thus, validating the partial mediation impact of psychological empowerment between talent management and innovation performance (H₄: TM \square PE \square IP; total effect = .399, with 14.9% of the total effect coming from indirect sources and 85.1% from direct sources). Hence H₄ was accepted.

4.7 The Effect of Knowledge Observability on the Relationship of Talent Management and Psychological Empowerment (H₅)

According to the study's hypothesis H₅ "knowledge observability strengthens the relationship between talent management and psychological empowerment,". In light of the moderation analysis, we formed an interaction term by multiplying the variable talent management with the variable knowledge observability. Data analysis proved the

interaction term (talent management*knowledge observability) to be statistically significant ($\beta = .231^{**}$). Therefore, H_5 was also accepted — meaning that knowledge observability strengthened the positive impact of talent management on employee psychological empowerment.

4.8 The Effect of Knowledge Observability on the Relationship of Talent Management and Innovation Performance (H_6)

The H_6 of the study stated that "knowledge observability strengthens the relationship between talent management and innovation performance". As suggested by the moderation analysis, we constructed an interaction term with the multiplication of talent management and variable knowledge observability. The analysis of data verified that the interaction term (talent management*knowledge observability) was statistically significant ($\beta = .251^{**}$). Hence, the H_6 of the study was accepted — implying that knowledge observability strengthened the positive effect of talent management on organisational innovation performance.

4.9 The Effect of Talent Management on Innovation Performance through Psychological Empowerment and Knowledge Observability (H_7)

According to the study hypothesis H_7 , "the indirect impact of talent management on innovation performance via psychological empowerment is stronger in the face of high knowledge observability as compared to low knowledge observability". The moderated mediation analysis was performed wherein the impact for both lower and higher levels of knowledge observability were calculated using path analysis. Following the advice of Edwards and Lambert (2007), a sample consisting of 5000 observations was bootstrapped. The bootstrap estimates were then used to create bias-corrected confidence ranges for the research data's significance test.

Results of the analysis show that when knowledge observability is high, talent management influences innovation performance directly ($\beta = .488$; $p < .001$) and indirectly ($\beta = .232$; 95% bias-corrected CI: [.118,.286]) through psychological empowerment. However, in the presence of low degree of knowledge observability, the direct and indirect effects of talent management on innovation performance decrease respectively ($\beta = .313$; $p < .001$; and $\beta = .166$; 95% bias-corrected CI: [.095,.208]). Hence, the result demonstrated that both the direct and indirect effects increase when knowledge observability is high.

Furthermore, we also assessed whether the moderated-mediation index's bootstrapped confidence interval included zero and whether knowledge observability had an impact on the indirect effect. A non-zero probability of positive moderated-mediation effect was found in the findings of the moderated mediation analysis ($\beta = .029$; 95% bias-corrected CI; [.005,.051]). Therefore, based on these findings, it was concluded that knowledge observability strengthens both the direct as well as the indirect effect of talent management on innovation performance. Hence, H_7 was also accepted.

5. Discussion and Conclusions

This study employed a survey approach and quantitative research methodology to investigate the fundamental mechanism responsible for improving organizational innovation performance. Data was gathered from staff members of Pakistan's Khyber Pakhtunkhwa province's public sector general universities in order to meet the study's objectives. It was determined during this research that talent management, psychological empowerment, and observability of knowledge are the important antecedents of organizational innovation performance. The findings of the study lead to significant conclusion regarding the impact of talent management on an organization's capacity for innovation. If universities and other organizations desire to get a competitive advantage from their rivals, they should focus more on enhancing their innovation performance through an appropriate talent management system. This will help them come up with better products, services, and practices, keeping them ahead of the game.

The study confirms that innovation performance can be enhanced through proper management of its determining factors. The study suggested and validated that factors, such as, talent management, psychological empowerment, and knowledge observability have a significant impact on innovation performance of organization. A proper talent management system was found to have a direct and an indirect effect on innovation performance. An aptly tailored and well managed talent management system boosts up organization innovation performance. This is because it helps attract, select, retain, and encourage talented employees, who in turn, come up with novel ideas and help enhance innovation performance.

The study also demonstrated that along with the direct effect, talent management also have an indirect effect on

organizational innovation performance. In this regard, it is concluded that talent management results in increasing employee psychological empowerment. As mentioned in the literature review section as well as demonstrated by the findings of this study, empowered employees have a greater tendency to come up with novel ideas, think creatively, and have a greater tendency to engage in innovation. So, this finding led us to conclude that talent management can promote the innovation performance of an organization by positively impacting the psychological empowerment of its employees.

In addition to talent management and employee psychological empowerment, the knowledge observability also has a significant impact on the relationship of talent management and innovation performance. In this regard, the study revealed that the direct as well as the indirect impact of talent management on innovation performance increases in the face of more observability of knowledge. In other words, this finding implies the observability of knowledge works as a catalyst between the association of talent management and innovation performance. Hence, the positive impact of talent management on organizational innovation performance becomes stronger in the presence of more observability of knowledge.

To conclude, the findings of this study suggest that organizations must pay due attention to the crucial factors impacting their innovation performance. These factors include talent management, employee psychological empowerment, and knowledge observability. Organizations should have a proper talent management system to encourage their employees' level of psychological empowerment and promote their innovation performance. Since, the positive effect of talent management on innovation performance is strengthened in the presence of increased knowledge observability, therefore, organizations must take appropriate steps to promote knowledge observability. In short, organizations must have a proper talent management system, encourage knowledge observability, and try to promote employees' psychological empowerment in order to enhance their innovation performance.

5.1 Theoretical Contributions of the Study

This work carries important theoretical contributions. The existing body of research on talent management, psychological empowerment, knowledge observability, and innovation performance implies that each of these variables has independent relationships with the others. Nevertheless, there was not a single study that discussed how these constructs worked together. The present study developed a clear model aimed at illustrating the whole context of the connections among these constructs.

The study's findings broaden the definition of innovation performance by examining it within the framework of public institutions in developing nations like Pakistan. The study contributes to the available body of knowledge by confirming the positive correlation between talent management and innovation performance. It theoretically establishes that talent management practices — talent recruitment, talent identification, talent investment, talent retention, and succession planning, promote innovative work behaviours and performance.

Another contribution of the study is the verification of the positive effect of talent management on psychological empowerment. Literature clearly shows that most of the studies related to psychological empowerment and talent management were conducted in profit-driven businesses or private sector enterprises. This study tested and verified the existence of the same relationship by using a different setting i.e., public sector organisations.

Finally, the study adds to the existing literature by confirming the mediation effect of psychological empowerment in the relationship of talent management and innovation performance. It also extends the literature on knowledge observability, by testing and validating its strengthening impact on the association of the said variables.

5.2 Managerial Implications

Apart from its theoretical contributions, this study has practical implications for decision makers. In the modern workplace, innovation management is becoming essential to achieving sustainability in a complicated environment where technologies are changing quickly. However, the adoption of a suitable talent management system has a direct bearing on the innovation performance. Academicians and human resources professionals alike concur that managing brilliant individuals — a valuable resource for public sector organizations, is a significant task. The results of this study highlight a greater understanding of the need to create and execute a talent management system in order to enhance performance in terms of innovation. The study offers several recommendations to the public sector universities for having an effective management of their human resources to improve their innovation performance. It is imperative that managers, administrators, and policy makers develop and switch their emphasis from traditional personal management to talent management.

Furthermore, talent management continues to be a top concern for senior executives in most organisations due to the recent global financial crisis. Organizations are unable to attain innovation performance and get a competitive edge because of a shortage of competent workers. The significance of detecting, attracting, choosing, nurturing, and retaining the top-level talented people has substantially grown (Scullion, Sparrow, & Farndale, 2011). Hence this study attracts the attention of the top-level management to the most critical problem i.e., talent management. The study also encourages further research to comprehend the various practices and dynamics of talent management and their link with innovation performance.

In addition, the study highly recommends that the top-level management, policy makers, and administrators of public sector universities should develop the system to preserve and systematize the new knowledge their members have gained. This is because new ideas and knowledge serve as a foundation for the creation of novel goods, services, and systems. Therefore, it is critical that public universities should concentrate on developing mechanisms related to the observability of knowledge.

Last but not the least, the management of organizations should pay due attention to the psychological strength of their employees. It is a fact that employees who are psychologically empowered can come up with new and innovative ideas. Therefore, it should be ensured to have an environment wherein employees feel themselves empowered and have a greater tendency to engage in innovative behaviors.

5.3 Research Limitations and Future Recommendations

The study at hand yields significant contribution from theoretical as well as practical perspectives. However, there are certain limitations of the study that need to be clarified for future endeavours. For instance, the cross-sectional design was used to gather data. The individual level variables, like psychological empowerment and talent management were explored cross-sectionally, which might have resulted in the overlooking of the evolution of these constructs over time. Therefore, it is strongly recommended for the future studies to apply longitudinal research design for these constructs to capture them in their true essence.

Furthermore, the study was based upon self-reported data, utilizing a self-administered questionnaire, which may result in social desirability bias. To avoid such biases, it would be better to use mixed methodological techniques in the future. Finally, the respondents of the study were taken from the public sector universities of only one province — Khyber Pakhtunkhwa. Therefore, it is possible that the results may not be applicable to the private sector universities, and other regions. Hence, in order to increase generalizability of the results, future research on this topic should be conducted considering other regions and other organisational setups.

5.4 Conclusion

The basic objective of the study was to examine the direct and indirect effect of talent management on innovation performance. Along with the mediation effect of psychological empowerment, the moderating impact of knowledge observability in the association of talent management and innovation performance was also investigated. A comprehensive review of the literature was conducted to establish an understanding of the correlations between the study's variables. A total of seven hypothesis were developed as a result the literature review. To test the hypotheses, self-administered questionnaires were used to gather data from staff members of Khyber Pakhtunkhwa, Pakistan's public sector universities. All the hypotheses of the study were accepted as suggested by the analysis of data.

The study findings have demonstrated that talent management — recruiting, selection, identification, retention, and succession planning, is critical to an organization's ability to innovate. Putting it differently, effective and efficient methods for attracting, developing, and retaining talented employees is a crucial organizational characteristic to boost innovation performance. Moreover, the psychological empowerment of employees is found to be another major factor in improving an organization's capacity for innovation. Likewise, it is also discovered that knowledge observability reinforced the beneficial effects of talent management on an organization's capacity for innovation.

This study significantly advances the current business practices, theories, and methodologies. The research improves our understanding of talent management in order to increase innovation performance. It streamlines the corporate human resource planning procedures by establishing connections between talent management, psychological empowerment, knowledge observability, and innovation performance. The study also offers several recommendations for carrying out additional research in the field.

References

- Abazeed, R. A. M. (2018). The impact of talent management on organizational commitment of the employees of telecommunication companies in Jordan: the mediating role of employee work engagement. *International Journal of Academic Research in Accounting, Finance and Management Sciences*, 8(4), 153-162.
- Annakis, D., Dass, M., & Isa, A. (2014). Exploring factors that influence talent management competency of academics in Malaysian GLC's and non-government universities. *Journal of International Business and Economics*, 2(4), 163-185.
- Arrow, K. J., & Lamberton, D. M. (1971). Economics of information and knowledge.
- Bethke-Langenegger, P., Mahler, P., & Staffebach, B. (2011). Effectiveness of talent management strategies. *European Journal of International Management*, 5(5), 524-539.
- Bhatnagar, J. (2012). Management of innovation: Role of psychological empowerment, work engagement and turnover intention in the Indian context. *The International Journal of Human Resource Management*, 23(5), 928-951.
- Chan, Y. H. (2003). *A nomological network approach to the study of antecedents, moderator, mediators and outcomes of psychological empowerment*. The University of Memphis.
- Cohn, J. M., Khurana, R., & Reeves, L. (2005). Growing talent as if your business depended on it. *Harvard business review*, 83(10), 62.
- Collings, D. G., & Mellahi, K. (2009). Strategic talent management: A review and research agenda. *Human resource management review*, 19(4), 304-313.
- Collings, D. G., Mellahi, K., & Cascio, W. F. (2019). Global talent management and performance in multinational enterprises: A multilevel perspective. *Journal of Management*, 45(2), 540-566.
- Collings, D. G., McDonnell, A., & McMackin, J. (2017). Talent management. In *A Research agenda for human resource management* (pp. 39-54). Edward Elgar Publishing.
- Crescenzi, R., & Gagliardi, L. (2018). The innovative performance of firms in heterogeneous environments: The interplay between external knowledge and internal absorptive capacities. *Research Policy*, 47(4), 782-795.
- Daily, B. F., & Huang, S. C. (2001). Achieving sustainability through attention to human resource factors in environmental management. *International Journal of operations & production management*, 21(12), 1539-1552.
- Daniel, W. W. (1999). *Biostatistics: a foundation for analysis in the health sciences*. 7th Edition. New York: Johan & Wiley sons.
- Darvish, H., & Temelie, Z. N. (2014). A study on the relationship between succession planning and strategic planning. Case study: Payame Noor University of Aleshtar. *Economic Insights-Trends & Challenges*, 66(1).
- Dodgson, M., Gann, D. M., & Phillips, N. (2014). Perspectives on innovation management. *The Oxford handbook of innovation management*, 3-25.
- Edwards, J. R., & Lambert, L. S. (2007). Methods for integrating moderation and mediation: a general analytical framework using moderated path analysis. *Psychological methods*, 12(1), 1.
- Eisenhardt, K. M., & Santos, F. M. (2002). Knowledge-based view: A new theory of strategy. *Handbook of strategy and management*, 1(1), 139-164.
- Ernst, H. (2001). Patent applications and subsequent changes of performance: evidence from time-series cross-section analyses on the firm level. *Research Policy*, 30(1), 143-157.
- Ertürk, A. (2012). Linking psychological empowerment to innovation capability: Investigating the moderating effect of supervisory trust. *International Journal of Business and Social Science*, 3(14).
- Festing, M., Schäfer, L., & Scullion, H. (2013). Talent management in medium-sized German companies: an explorative study and agenda for future research. *The International Journal of Human Resource Management*, 24(9), 1872-1893.
- Garavan, T. N. (2012). Global talent management in science-based firms: an exploratory investigation of the pharmaceutical industry during the global downturn. *The International Journal of Human Resource Management*, 23(12), 2428-2449.
- Gelens, J., Dries, N., Hofmans, J., & Pepermans, R. (2013). The role of perceived organizational justice in

- shaping the outcomes of talent management: A research agenda. *Human Resource Management Review*, 23(4), 341-353.
- Glaister, A. J., Karacay, G., Demirbag, M., & Tatoglu, E. (2018). HRM and performance—The role of talent management as a transmission mechanism in an emerging market context. *Human Resource Management Journal*, 28(1), 148-166.
- Guest, D., & Bos-Nehles, A. (2013). Human resource management and performance: the role of effective implementation. In *Human resource management and performance (5th ed): Achievements and challenges* (pp. 79-96). Wiley.
- Gulbranson, C. A., & Audretsch, D. B. (2008). Proof of concept centers: accelerating the commercialization of university innovation. *The Journal of technology transfer*, 33(3), 249-258.
- Hitt, M. A., Bierman, L., Shimizu, K., & Kochhar, R. (2001). Direct and moderating effects of human capital on strategy and performance in professional service firms: A resource-based perspective. *Academy of Management journal*, 44(1), 13-28.
- Hornstein, H. A. (2015). The integration of project management and organizational change management is now a necessity. *International Journal of Project Management*, 33(2), 291-298.
- Huang, M. H., & Chen, D. Z. (2017). How can academic innovation performance in university–industry collaboration be improved?. *Technological Forecasting and Social Change*, 123, 210-215.
- King, A. W. (2007). Disentangling interfirm and intrafirm causal ambiguity: A conceptual model of causal ambiguity and sustainable competitive advantage. *Academy of management review*, 32(1), 156-178.
- Kogut, B., & Zander, U. (1995). Knowledge, market failure and the multinational enterprise: A reply. *Journal of international business studies*, 417-426.
- Kyndt, E., Dochy, F., Michielsens, M., & Moeyaert, B. (2009). Employee retention: Organisational and personal perspectives. *Vocations and Learning*, 2(3), 195-215.
- Ingram, T. (2016). Relationships between talent management and organizational performance: The role of climate for creativity. *Entrepreneurial Business and Economics Review*, 4(3), 195-205.
- Ingram, T., & Glod, W. (2016). Talent management in healthcare organizations-qualitative research results. *Procedia Economics and Finance*, 39, 339-346.
- Inkpen, A. C., & Dinur, A. (1998). Knowledge management processes and international joint ventures. *Organization science*, 9(4), 454-468.
- Jafari, V., Moradi, M.A. and Ahanchi, M. (2013). An examination of the relationship between empowerment and organisational commitment (case study Kurdistan province electric staff), Interdisciplinary. *Journal of Contemporary Research in Business*, 4(12), 860-868.
- Jiménez-Jimenez, D., Sanz Valle, R., & Hernandez-Espallardo, M. (2008). Fostering innovation: the role of market orientation and organizational learning. *European Journal of innovation management*, 11(3), 389-412.
- Laursen, K., & Foss, N. J. (2003). New human resource management practices, complementarities and the impact on innovation performance. *Cambridge Journal of economics*, 27(2), 243-263.
- Laursen, K., & Salter, A. (2006). Open for innovation: the role of openness in explaining innovation performance among UK manufacturing firms. *Strategic management journal*, 27(2), 131-150.
- Lewis, R. E., & Heckman, R. J. (2006). Talent management: A critical review. *Human Resource Management Review*, 16(2), 139-154.
- Liden, R. C., Wayne, S. J., & Sparrowe, R. T. (2000). An examination of the mediating role of psychological empowerment on the relations between the job, interpersonal relationships, and work outcomes. *Journal of applied psychology*, 85(3), 407.
- Liu, Y., & Pearson, C. A. (2014). The importance of talent management: a study of Chinese organisations. *Journal of Chinese Economic and Foreign Trade Studies*, 7(3), 153-172.
- Loke, W. K., Abu, N. H. B., & Lim, F. W. (2018). Electrical and electronics global supply chain: The significance effect of psychological empowerment on organizational business performance. *International Journal of Supply Chain Management*, 7(1), 65-76.
- Massingham, P. (2014). An evaluation of knowledge management tools: Part 1—managing knowledge resources. *Journal of knowledge management*, 18(6), 1075-1100.
- McDonnell, A., Collings, D. G., Mellahi, K., & Schuler, R. (2017). Talent management: a systematic review and

- future prospects. *European Journal of International Management*, 11(1), 86-128.
- Meyers, M. C., & Van Woerkom, M. (2014). The influence of underlying philosophies on talent management: Theory, implications for practice, and research agenda. *Journal of World Business*, 49(2), 192-203.
- Miller, D., & Friesen, P. H. (1982). Innovation in conservative and entrepreneurial firms: Two models of strategic momentum. *Strategic management journal*, 3(1), 1-25.
- Moczydłowska, J. (2012). Talent management: theory and practice of management. the polish experience. *International Journal of Business Economic Research*, 3(1), 432-438.
- Mohrman, S. A., & Lawler III, E. E. (1997). Transforming the human resource function. *Human Resource Management (1986-1998)*, 36(1), 157.
- OECD, E. (2005). Oslo Manual 2005. *Guidelines for Collecting and Interpreting Innovation Data, Third Edition, Paris*.
- Oke, A., Burke, G., & Myers, A. (2007). Innovation types and performance in growing UK SMEs. *International Journal of Operations & Production Management*, 27(7), 735-753.
- O'Regan, N., Ghobadian, A., & Sims, M. (2006). Fast tracking innovation in manufacturing SMEs. *Technovation*, 26(2), 251-261.
- Perdomo-Ortiz, J., Gonzalez-Benito, J., & Galende, J. (2009). An analysis of the relationship between total quality management-based human resource management practices and innovation. *The International Journal of Human Resource Management*, 20(5), 1191-1218.
- Pérez-Luño, A., & Valle-Cabrera, R. (2011). How does the combination of R&D and types of knowledge matter for patent propensity?. *Journal of Engineering and Technology Management*, 28(1-2), 33-48.
- Redmond, M. R., Mumford, M. D., & Teach, R. (1993). Putting creativity to work: Effects of leader behavior on subordinate creativity. *Organizational behavior and human decision processes*, 55(1), 120-151.
- Rezaei-Zadeh, M., & Darwish, T. K. (2016). Antecedents of absorptive capacity: A new model for developing learning processes. *The Learning Organization*, 23(1), 77-91.
- Rogg, K. L., Schmidt, D. B., Shull, C., & Schmitt, N. (2001). Human resource practices, organizational climate, and customer satisfaction. *Journal of management*, 27(4), 431-449.
- Salau, O., Osibanjo, A., Adeniji, A., Oludayo, O., Falola, H., Igbino, E., & Ogueyungbo, O. (2018). Data regarding talent management practices and innovation performance of academic staff in a technology-driven private university. *Data in brief*, 19, 1040-1045.
- Schermuly, C. C., Meyer, B., & Dämmer, L. (2013). Leader-member exchange and innovative behavior: The mediating role of psychological empowerment. *Journal of Personnel Psychology*, 12(3), 132.
- Scullion, H., Sparrow, P., & Farndale, E. (2011). Global talent management: New challenges for the corporate human resource function in the global recession. *Zarządzanie Zasobami Ludzkimi*, (1 (78)), 97-114.
- Seibert, S. E., Wang, G., & Courtright, S. H. (2011). Antecedents and consequences of psychological and team empowerment in organizations: a meta-analytic review. *Journal of applied psychology*, 96(5), 981-993.
- Silzer, R., & Dowell, B. E. (2010). Strategic talent management matters. *Strategy-driven talent management: A leadership imperative*, 3-72.
- Sparrow, P., Scullion, H., & Tarique, I. (Eds.). (2014). *Strategic talent management: Contemporary issues in international context*. Cambridge University Press.
- Spreitzer, G. M. (1995). Psychological empowerment in the workplace: Dimensions, measurement, and validation. *Academy of management Journal*, 38(5), 1442-1465.
- Spreitzer, G. M. (2008). Taking stock: A review of more than twenty years of research on empowerment at work. *Handbook of organizational behavior*, 1, 54-72.
- Stuart, T. E. (2000). Inter organizational alliances and the performance of firms: a study of growth and innovation rates in a high-technology industry. *Strategic management journal*, 21(8), 791-811.
- Swales, S. (2013). Troubling some assumptions: A response to "The role of perceived organizational justice in shaping the outcomes of talent management: A research agenda". *Human Resource Management Review*, 23(4), 354-356.
- Thomas, K. W., & Velthouse, B. A. (1990). Cognitive elements of empowerment: An "interpretive" model of intrinsic task motivation. *Academy of management review*, 15(4), 666-681.
- Truitt, D. L. (2011). The Effect of Training and Development on Employee Attitude as it Relates to Training and Work Proficiency. *Sage Open*, 1(3).

- Vaiman, V., & Collings, D. G. (2015). Global talent management. *The Routledge companion to international human resource management*, 210-225.
- Von Hippel, E. (1994). “Sticky information” and the locus of problem solving: implications for innovation. *Management science*, 40(4), 429-439.
- Whetten, D.A., & Cameron, K.S. (2010). *Developing management skills* (8th ed.). New York, NY: Prentice-Hall.
- Widodo, W., & Mawarto, M. (2020). Investigating the role of innovative behavior in mediating the effect of transformational leadership and talent management on performance. *Management Science Letters*, 10(10), 2175-2182.
- Winter, S. G. (1987). Knowledge and competence as strategic assets. D. Teece, ed. *The Competitive Challenge—Strategies for Industrial Innovation and Renewal*. Ballinger, Cambridge, MA, 159–184.
- Zander, U. (1991). *Exploiting a technological edge: Voluntary and involuntary dissemination of technology*. Stockholm: Institute of International Business, Stockholm School of Economics.
- Zander, U., & Kogut, B. (1995). Knowledge and the speed of the transfer and imitation of organizational capabilities: An empirical test. *Organization science*, 6(1), 76-92.
- Zhang, X., & Bartol, K. M. (2010). Linking empowering leadership and employee creativity: The influence of psychological empowerment, intrinsic motivation, and creative process engagement. *Academy of management journal*, 53(1), 107-128.
- Zhou, K. Z. (2006). Innovation, imitation, and new product performance: The case of China. *Industrial Marketing Management*, 35(3), 394-402.