



Impact Of Talent Management On Organizational Sustainable Performance: A Moderating Role Of Process Innovation

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ABSTRACT

Purpose - The primary objective of this research article is to provide a substantial academic contribution to the existing body of empirical research about the influence of Talent Management (TM) practices on the sustainable performances of organizations (OSP). Additionally, this study attempts to explore the potential moderating effect of process innovation (PI) within the context of the automotive sector of Pakistan. This study presents theoretical frameworks for talent management practices and sustainable performance models of organizations and afterward conducts empirical evaluations of this framework. The concept incorporates three critical characteristics of talent management: Talent Attraction, Talent Retention, and Learning & Development. The research technique employed in this study encompasses a systematic approach to investigate and analyze the research question at hand.

Design/methodology/approach –This research paper examines the impact of talent management on the sustainable performance of businesses in the automotive sector in Pakistan. The study utilizes data collected from 309 automotive firms and explores how the link between talent management and sustainable performance is moderated by process innovation. The present study employed partial least-square structural equation modeling (PLS-SEM) as the chosen method for data analysis.

Findings – The study's findings are as follows: The results indicate that talent management has a beneficial impact on sustainable performance, hence providing support for hypothesis H1, and the role of process innovation as a moderator exhibited a statistically meaningful association between talent management and sustainable performance, providing support for H2.

Originality/value – The concept of originality is a crucial aspect in various fields of study. It refers to the report emphasizing the significance of personnel management methods for Pakistani organizations in achieving sustainability. The findings of this research provide evidence in favor of the proposition that implementing talent management and innovating talent management strategies has a notable influence on organizational sustainable performance.

Research limitations/implications – The research also contributes to the existing body of literature by demonstrating that process innovation attenuates the association between talent management and sustainable organizational performance.

Practical implications – The research paves the path for organizations to understand the importance of talent management and process innovation to achieve the goals of organizational sustainable performance.

Future Direction– The study also offers potential avenues for future research to replicate the findings across different industries since existing literature has

demonstrated the significance of process innovation and its potential impact on enhancing the sustainable performance of organizations.

Keywords Talent Management, Talent Attraction, Talent Retention, Learning and development, Sustainable performance, Process innovation

1. Introduction

Sustainability is acknowledged as a crucial issue of the twenty-first century by world leaders, social forums, and corporations. Talent management may be helpful in addressing the challenge (Singh & El-Kassar, 2019). Business enterprises cannot isolate sustainability objectives from employees (Chams & Garca-Blandón, 2019). In addition, Mujtaba and Mubarak (2002) assert that achieving sustainability is only possible if individuals have the skills and abilities to realize three-dimensional sustainability objectives. According to Mujtaba and Mubarak, the relationship between competence and sustainability is analogous to the relationship between means and ends. Top corporate employers have also acknowledged that TM is essential to their long-term success (Gallardo-Gallardo et al., 2015).

Talent management refers to the structured process of attracting, identifying, developing, engaging/retaining, and deploying individuals with exceptional potential who hold significant value for a business (Davies & Davies, 2010). Studies have revealed a strong link between successful TM practices and organizational sustainability (Latukha, 2018). Talented individuals significantly contribute to the organization's success, and effective management directly affects sustainability (Behera & Mohapatra, 2020). The emergence of globalization, which has significantly altered the roles and relationships of businesses, governments, and other significant stakeholders, is why the most influential corporations are adopting a responsible and sustainable approach to business (Morse et al., 2018). Therefore, every organization is following the trend toward sustainability in some form. The term sustainability is employed to describe mitigating environmental degradation and its adverse impacts on human well-being, social integration, and economic advancement. In contemporary discourse, sustainability has evolved to encompass various challenges, yielding a multifaceted outcome incorporating social, economic, and environmental considerations. This approach, sometimes called the triple bottom line, emphasizes the interplay between profitability, ecological preservation, and societal well-being. (Mohrman & Worley, 2010). Organizational sustainability promotes using renewable energy, local biodiversity enhancement, and restorative materials and substances to save the environment from hazards. The green economy concept supports viewing the manufacturing process as a system in which all resources can be infinitely reused or safely returned to the environment. This approach advocates the role of the sustainable organization concept (Murray et al., 2017). Although so much importance has been given to both topics, there are very few studies targeting these two topics in Pakistan, and there exists a population gap in Pakistan.

Furthermore, there lies an essential gap in the body of knowledge. Talent management, being considered a set of processes that are the backbone of attracting, retaining, and training human capital for the organization, has seldomly been tested if these processes would have an impact if any innovation is introduced to them. Previous studies have revealed a significant link between innovation and human resource management (HRM) practices (Easa & Orra, 2021). There is a consensus that more research in this area is necessary. Efficient human management is viewed as a catalyst for generating innovation inside firms. Notably, HRM practices are acknowledged as valuable strategic assets by firms striving to foster an innovative culture (Beugelsdijk, 2008; Shipton et al., 2006). Additionally, Easa and Orra's (2020) findings support the idea that organizational knowledge is created through the wise use of human resources. Given these factors, it is conceivable to claim that process innovation can revolutionize HRM and make it more sustainable, especially given the current view that talent management represents an evolutionary step forward from traditional HRM.

According to Michaels et al., global organizations would enter a new war in the twenty-first century. Organizations would wage a war for talent acquisition and retention. Pakistan's manufacturing sector also encounters many problems related to TM. Mujtaba & Mubarak (2022) state a need for more rigorous application and research of TM in Pakistan. Pakistan has a population of 207.7 million, per the Bureau of Statistics Pakistan (Bureau of Statistics, 2017). According to an assessment of the world's population, Pakistan is the fifth most populous nation. Because of its modest wages, its abundant labor force has attracted the attention of manufacturing firms.

Moreover, according to Trading Economics, Pakistan's GDP is 378.41 (Economics, 2023), which is very impressive and demonstrates the country's potential as an economic center. With a large population and a substantial share of the global GDP, Pakistan must consider sustainability issues very seriously. Despite this, 20 million tons of solid refuse are dumped annually in open fields in Pakistan (2.4% annual growth) with no feasible solution. In Pakistan, untreated waste kills more than five million people annually (Puertas et al., 2014). Therefore, Pakistan's solid waste management must be given significant consideration.

Similarly, the manufacturing sector in Pakistan has encountered many operational difficulties due to inadequate logistics infrastructure (Ehsan et al., 2018). Therefore, researchers must investigate this pressing issue. Moreover, it is noteworthy that businesses function within a milieu characterized by substandard product offerings, insufficient living conditions, transgressions against human rights, remuneration concerns

that fail to meet a satisfactory standard of living, and, particularly, an alarmingly elevated prevalence of child labor. Most organizations improperly dispose of their refuse, posing a threat to water and the environment (Javeed & Lefen, 2019).

According to the economic survey of 2021-2022, Pakistan's automotive industry accounts for 3.1% of the country's total manufacturing sector. The automotive sector contributes 3% of Pakistan's GDP and employs over 3.5 million persons (Rasheed et al., 2022). Moreover, Pakistan lacks awareness of sustainable development issues (Shahid et al., 2020). Researchers argued that developing countries confront sustainability issues vastly distinct from those of the developed world (Buckley et al., 2017; Visser, 2008). Pakistan is a nation with minimal environmental preservation standards. According to government and NGO statistics (Carter & Jennings, 2002), environmental degradation in Pakistan is a significant problem. Pakistan is ranked eighth on the Environmental Protection Agency's (EPA) list of countries most affected by global warming. Therefore, organizations and researchers must pave the way for Pakistan to achieve sustainability. This study seeks to contribute by providing evidence that utilizing talent may become an essential component in organizations' pursuit of sustainable performance.

2. Literature review

2.1 Talent Management Practices

Talent management in organizations has gained significant attention in international human resource management (Belyaeva et al., 2020; Chatterjee et al., 2023). Talent management started accumulating its popularity in 19th century, in the fields such as education, arts and sports (Tarique & Schuler, 2014). In 2001 book named war of talent was released which intensified the efforts of organizations to manage talent (Michaels et al., 2001). Acquiring talent has been difficult for decades (Kaliannan et al., 2023). If employee's knowledge, abilities, experiences, attitudes, habits, and behaviors are summed the answer would be talent (Schiemann, 2014). TM is a process involving a complete and interconnected set of organizational activities to recruit and retain high-performance employees (Figliolini et al., 2008; Silzer & Church, 2010; Thunnissen et al., 2013).

Additionally, (Cooke et al., 2014; Frank & Taylor, 2004) defined talent as brilliant human abilities that authorize people to perform better and deal with higher level of difficulty to mine better result for the organization. According to the workforce diversity principles, employers should invest in their most valuable employees rather than treating everyone equally. The primary contribution of talent management (TM) lies in its ability to analyze and address the disparity between the supply and demand of talent. Equilibrium to hold talent may be achieved by identifying strengths and weaknesses in management and employees and the strategic movement of talent within an organization. TM effectively bridges the gap between talent needs and organizational success by establishing a connection between personal goals and organizational objectives and aligning workforce strategies with business strategies. (Kaur, 2013).

Strategic TM is one of the company's most important methods for retaining market-leading employees and increasing productivity (Aguinis et al., 2012). Talent management is a unique resource that has the capability to ensure the survival of an organization even in the most competitive market (Sparrow & Makram, 2015). The significance of talent management has increased along the complexity of the changing environment around it (Collings et al., 2019; Kravariti et al., 2023). TM is acknowledged across the globe as a crucial approach utilized by organizations to effectively retain high-performing individuals in a competitive market environment, while increasing overall productivity (Aguinis et al., 2012). Individuals with unique talent with a capability to protect a company's interests are viewed as a valuable asset in an intensely competitive marketplace (Sparrow and Makram, 2015). The importance of talent management has increased for businesses as they endeavor to navigate the unprecedented volatility and complexity of the current global environment (Collings et al., 2019; Kravariti et al., 2023).

Talent management is comprised of activities such as recruiting, training, retaining, maximizing the potential for strategic positions, and facilitating the effective use of abilities to contribute to organizational success (Nankervis, 2013). According to (Thunnissen et al., 2013), a considerable portion of the reviewed literature focuses on various talent management practices and activities, such as recruitment, personnel management, succession planning, training and development, and retention management. This study identifies three primary dimensions of talent management based on the dimensions most used in the literature. These dimensions are talent attraction, talent retention, and learning and development.

2.1.1 Talent attraction

Talent attraction, a pivotal aspect of talent management, involves recruitment and selection processes enhanced by effective employer branding (Rop & Kwasira, 2015). Organizations must employ various methods that relate with their values and culture to select candidates who are qualified and compatible with their culture (Armstrong, 2010). The primary objective of talent attraction is to attract qualified candidates who are a good match for open positions (Songa & Oloko, 2016). Businesses that wish to attract talent from various sources must implement a forward-thinking recruitment strategy that deviates from conventional practices (Phillips & Roper, 2009). Organizations must brand themselves by improving reputation, values, and perceived stature

in its respective industry, which play a significant role in its ability to attract external talent. Establishing a desirable employer brand is a complex but crucial aspect of talent acquisition (Iles et al., 2010). Therefore, the strategic emphasis on recruitment and retention, governed by the unique-people model, forms the basis of talent management, emphasizing delving into the talent pool, including internal and external candidates (Iles et al., 2010). Further if the organization develops its recognition as a well-known brands as recruiters, it would increase organizations' appeal to talented individuals (Glen, 2006).

2.1.2 Talent retention

In the modern business environment, where employee loyalty is frequently challenged by global opportunities and headhunting by competitors, talent retention has emerged as a significant concern for organizations. Factors influencing talent retention encompass a continuum of elements, including hygiene factors such as benefits, compensation, and location, directly impacting career fulfillment. Moreover, intrinsic incentives and opportunities for professional development play an indirect but critical role in preventing talent loss (Whelan & Carcary, 2011). As highlighted by Iles et al. (2010), some academics emphasize that the fundamental components of talent management are recruitment and retention. Therefore, emphasis is given to the need for organizations to invest in attracting talent and proactively address the factors causing their finest employees to leave. Trust and respect in Japan, passion stimulation in France, the Netherlands, and Brazil, performance targets in South Korea, practical performance assessments in Italy, a variety of factors, including employee satisfaction and retirement benefits in Canada, and even legal bonds in Pakistan to discourage employee departures are distinctive approaches to talent retention (Hughes & Rog, 2008). Recognizing that staff attrition poses substantial risks, organizations must develop and deliver compelling employee value propositions tailored to their specific context, drawing insights from research on distinct retention strategies employed in different countries (Poorhosseinzadeh¹ & Subramaniam, 2012).

2.1.3 Learning and development

Learning and development are crucial components of talent management, necessary for maximizing the potential of a company's personnel. To cultivate a high-performing workforce, organizations must combine talent development with comprehensive strategies for ongoing learning and development tailored to each career stage (Charan et al., 2011). Beyond acquiring skills and knowledge, talent development encompasses performance, perception, and behavior changes. A novel approach to talent development involves categorizing employees (A, B, C, or D) based on their growth potential, with customized development strategies for each group (Williamson, 2011). In addition, talent management must proactively prepare top performers for future positions within the organization by addressing knowledge deficits and enhancing capabilities to ensure retention (Poorhosseinzadeh & Subramaniam, 2012). Corporate universities have emerged as significant contributors to talent development and strategic human resource development, playing a crucial role in organizational talent management success (Pyman & Holland, 2005). Effective learning and development initiatives should also include opportunities for on-the-job development, mentoring, counseling, and high-quality assessment activities, all essential for fostering talent growth and success (Chambers et al., 1998; Glen, 2006).

Talent management enhances the capability of human resources and motivates it to pursue the opportunity that is organizational sustainability. In addition, AMO is frequently employed in modern HRM research, particularly to investigate the HRM-performance relationship (Malik & Lenka, 2019; Nadeem & Rahat, 2021). AMO is suitable for this study, as the primary focus is on the influence of talent management and the moderating effect of process innovation. In addition, it is consistent with applying AMO ideas to reveal individual-level skill and motivation and system-level opportunities that apply to assessing individual comprehension of the activities (Szulc et al., 2021).

2.2 Process Innovation

The concept of innovation, particularly process innovation, has received considerable attention in the organizational discourse of the twenty-first century. The UK Department of Trade and Industry defines innovation as successfully exploring novel ideas (Adams et al., 2006). The origin of the term "innovation" from the medieval legal term "novation" adds an intriguing historical dimension, denoting the act of renewing an obligation (Taylor, 2017). Innovation management, briefly as applying innovative management strategies to improve corporate performance (Choi et al., 2020). Innovation management involves creating and implementing innovative management practices, structures, processes, or techniques to achieve organizational objectives, emphasizing modifying managerial actions and techniques, such as goal-setting, decision-making, activity coordination, and employee motivation.

Critical to an organization's long-term success, innovation capability refers to its ongoing capacity to transform information and ideas into more innovative products and innovative processes that benefit the organization and its stakeholders (Lawson & Samson, 2001). Innovation includes distinctions between process and product innovation, radical and incremental Innovation, and technological and non-technological Innovation (Bodlaj et al., 2020; Saunila, 2020).

Process innovation is the comprehensive arrangement of process elements in producing products or services, including equipment, personnel, material inputs, and information flows (Utterback & Abernathy, 1975). While product innovation typically dominates in the early stages of a product's life cycle, process innovation acquires prominence as market knowledge and familiarity increase, highlighting its significance as a competitive advantage (Linton & Walsh, 2003).

Process innovation is essential in pursuing competitive advantage, particularly in volatile corporate environments (Bintara et al., 2023). Process innovation encompasses subcategories such as eco-innovation, which significantly impacts organizational sustainability. Innovation encompasses developing novel solutions to mitigate the ecological consequences arising from corporate operations, emphasizing the interrelation between human conduct and its environmental implications (Fussler & James, 1996; Özer, 2012). Process innovation is a subset of process innovation. Emphasizes augmenting environmental sustainability by minimizing resource consumption, employing eco-friendly manufacturing practices, and fostering employee eco-awareness (Muisyo & Qin, 2021; Parida & Brown, 2021). Reducing material consumption, using eco-friendly basic materials, and promoting eco-design principles are among the strategies employed. Process innovation also entails enhancing employee skills, aligning them with green goals, and researching eco-friendly workplace practices, recycling, waste management, and energy conservation (Singh et al., 2021). Process innovation, including its subset green process innovation, is essential for augmenting efficiency, reducing environmental impact, and securing competitive advantages in contemporary business environments, highlighting the importance of comprehending its origins and implications.

2.3 Underpinning theory of the study

Talent management is profoundly rooted in the principles of the AMO (Ability, Motivation, Opportunity) theory, as highlighted by (Malik & Lenka, 2019) and (Nadeem & Rahat, 2021). This theoretical framework highlights the importance of enhancing human resource capability and motivation to capture opportunities for organizational sustainability. The AMO model is notably applicable to the current study, which focuses on the impact of talent management on sustainable performance and the moderating effect of process innovation. By employing AMO concepts, the study aims to elucidate individual-level skills, motivation, and system-level opportunities, comprehensively evaluating individual comprehension of these activities (Szulc et al., 2021). This integration of talent management and AMO theory highlights the significance of aligning human resource strategies with organizational sustainability goals, enhancing overall performance and competitive advantage.

3. Research Framework and hypothesis development

The paper discusses talent management's impact on organizations' sustainable performance and the moderating impact of process innovation. Below are the research framework and hypothesis development.

3.1 Talent management and organizational sustainable performance

The issue of sustainability holds significant importance in the current business environment and is widely recognized by leaders, companies, and researchers worldwide (Singh & El-Kassar, 2019). There is ongoing discourse among scholars and professionals regarding the specific impact of talent management (TM) on sustainability, as evidenced by the works of (PricewaterhouseCoopers, 2012; Schuler et al., 2011). However, it is widely acknowledged that sustainability objectives are inherently connected to the skills and abilities of employees (Chams & García-Blandón, 2019; Mujtaba & Mubarak, 2022). According to Mujtaba and Mubarak, there is a relationship between talented people and achieving sustainability targets.

Moreover, prominent corporate organizations have recognized the importance of talent management (TM) in ensuring their sustained prosperity. TM is instrumental in the recruitment, development, and retention of skilled individuals who, in turn, make substantial contributions to the organization's long-term success (Behera & Mohapatra, 2020; Gallardo-Gallardo et al., 2015). The comprehensive management of talent involves the processes of talent acquisition, development, and retention, which create a continuous and interconnected cycle (Wah & Fernando, 2020). The issue of finding appropriate people for crucial positions has been exacerbated by the worldwide scarcity of skilled individuals (Anbumathi & Sivasubramanian, 2016). The limitations of conventional hiring strategies have been insufficient in effectively resolving this matter, leading organizations to pursue novel methods to attract highly skilled individuals (Al Aina & Atan, 2020; Rynes & Cable, 2003).

Contemporary talent development (TD) techniques, encompassing training and information dissemination, have become indispensable for sustainability (Chaudhuri et al., 2018). Implementing these practices enables employees to acquire essential skills and competencies, improving organizational operations' effectiveness and bolstering their competitive advantage (Osman-Gani & Paik, 2016). Talent retention is an essential element of talent management, playing a vital role in ensuring the long-term success of an organization (Salau et al., 2020). The issue's significance is underscored by the considerable obstacles and expenses arising from the high demand for people across several industries, compounded by employee turnover (Ambrosius, 2018; Bryant & Allen, 2013). In light of the given literature, the study has developed hypothesis H1.

H1: Talent management has a positive impact on sustainable organizational performance.

3.2 Moderating effect of process innovation

The relationship between innovation and organizational sustainability has emerged as a central area of inquiry and discourse within the business realm. The concept of innovation encompasses a range of manifestations, such as product, process, business model, and service innovation. However, it is commonly recognized that technological and managerial innovations significantly influence organizational sustainability. The objective of this section of the paper is to examine the distinct function of process innovation (PI) as a moderator within the realm of talent management (TM) and its influence on the sustainable performance of organizations.

In strategic management, scholars have recognized innovation as a crucial driver of competitive advantage and sustained performance. This encompasses several aspects, such as product creation, operational efficiency, and managerial practices (Anwar, 2018; Ortiz-Villajos López & Sotoca López, 2018). Academic scholars have repeatedly underscored the need to research the effectiveness of sustainable management practices within an organization and external factors to get superior outcomes (Khan & Qianli, 2017).

Previously, scholarly investigations on the correlation between innovation and organizational performance have predominantly concentrated on product and process innovation (Foo et al., 2018). Nevertheless, there is a growing need for a more extensive comprehension of how different types of innovation contribute to sustainability and profitability in the current business environment. The significance of process innovation in sustaining competitiveness in a globalized context has been acknowledged by scholars (Anwar, 2018; Ortiz-Villajos López & Sotoca López, 2018). However, it is essential to acknowledge the influence of product and process innovation on organizational sustainability, considering both types of innovation may pose different results and require different types of efforts to be implemented in the organization.

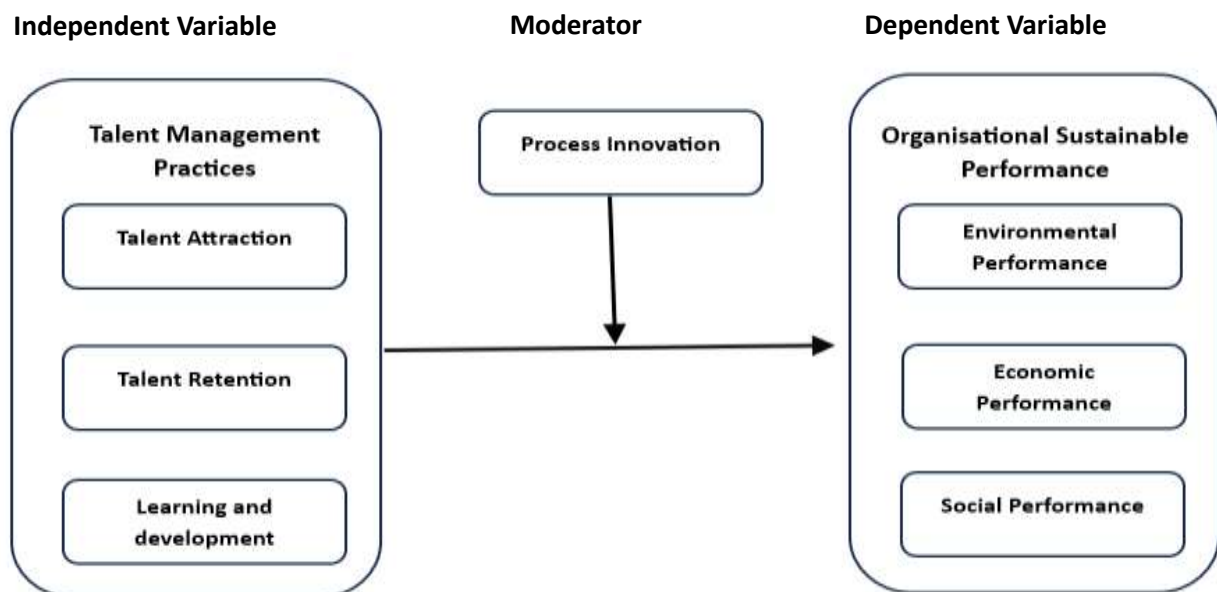
The introduction of this nuanced view on innovation has facilitated the exploration of novel research directions. Shahid et al. (2020) conducted a novel study that focused on process innovation and utilized it as a moderating variable. The results of their study indicated that process innovation had a moderating effect on the association between environmental management and supplier monitoring evaluation, eventually impacting the overall sustainability of the business. This study emphasizes the need to include process innovation as a moderating factor alongside other management processes to facilitate enterprises' progress toward sustainability.

Moreover, the study by Easa and Orra (2020) shed light on the correlation between Innovation and human resource management practices, thus indicating the necessity for additional investigation in this domain. Developing creativity inside businesses has been linked to effective people management (Shipton et al., 2005). Many progressive companies have acknowledged the significance of human resource management strategies as significant resources in their endeavor to foster Innovation (Beugelsdijk, 2008). Furthermore, the employment of human capital has been recognized as a driving force in developing organizational knowledge and skills (Essa & Orra, 2020).

Considering that talent management is often seen as a progression from conventional human resource management (Hughes & Rog, 2008), it is essential to examine the impact of process innovation on human resource management practices as a moderator to improve their sustainability. Given the existing vacuum in the literature, the study develops hypothesis H2.

H2: Process innovation moderates the relationship between talent management and organizational sustainability performance.

Figure 1. Research Model. Talent management and sustainability moderated by process innovation.



The presented model illustrates the research framework that serves as the foundation for this study. This study centers on evaluating the firm's sustainable performance, which is influenced by the impact of TM practices. These practices encompass several aspects, such as talent attraction, talent retention, learning and development. Within this context, the concept of process innovation assumes the role of a moderator in the correlation between the organizational sustainable performance of a corporation. The study employed the Ability Motivation and Opportunity Theory (AMO) as a foundational framework. Moreover, the explanatory framework for the link between the variables under investigation is elucidated by the AMO. Based on the above discourse, further hypotheses have been formulated:

H1: Talent management has a positive impact on sustainable organizational performance.

H2: Process innovation moderates the relationship between talent management and organizational sustainability performance.

4. Methodology

Respondents for the survey were high ranking executives, supervisors, and directors of automotive organizations that are members of the Pakistan Automotive Manufacturers Association (PAMA), automotive parts manufacturers are members of the Pakistan Auto Parts Manufacturers Association (PAAPAM) and Association of Pakistan Motorcycle Assemblers (APMA). These three are the leading associations comprising the companies involved in automotive and auto parts manufacturing. The research conducted was cross-sectional. This study employed a questionnaire to assess the correlation between talent management, process innovation, and sustainable performance within the automotive industry of Pakistan. The researchers employed a self-administered methodology and utilized Google Forms as a means of data collection. The present study was conducted through an examination of the organizational standpoint regarding the characteristics mentioned above.

The Likert-style scale, consisting of five points, was utilized to assess all inquiries about TM practices, process innovation, and the sustainable performance of a corporation. A survey was conducted in the automotive sector of Pakistan, targeting workers from the manufacturing sector who were members of PAMA, PAAPAM, and APMA. A total of 347 questionnaires were distributed to the participants. 320 questionnaires were received from the participants, and the data collection process spanned nearly three months. However, among the 320 questionnaires that were returned, 11 surveys were deemed unsuitable due to insufficient information and were subsequently excluded from the analysis. The response rate of the remaining 309 questionnaires was found to be 89%, which meets the recommended threshold for further analysis (Sekaran & Bougie, 2016). They propose that a response rate of at least 30% is sufficient for further analysis. The research instrument utilized in this survey was developed by relevant scholarly literature.

Measurement scales have been adapted from the literature. Talent management and organizational sustainable performance are higher-order reflective/ reflective variables, including talent attraction, talent retention, and learning and development for TM and environmental performance, economic performance, and social performance for sustainable business performance. For TM, the questionnaire was adapted from (Lyria et al., 2017), and for sustainable business performance, the questionnaire was adapted from (Chow & Chen, 2012). The talent management scale comprised 11 items. For talent attraction, 4 items. For talent retention, 4 items, and for learning and development, 3 items. The scale of organizational sustainable performance comprised 21 items. Environmental performance comprised 10 items, social performance comprised 6 items and economic performance comprised 5 items. Process innovation is a subdimension of innovation and is one of the two parts of the Innovation process and product innovation. Hence, the process innovation is a lower-order variable. The variable was materialized with a 5-point Likert scale comprised of 11 items from (Camisón & Villar-López, 2010).

The present study employed the partial least-squares (PLS) method for conducting structural equation modeling (SEM). The abovementioned approach is widely employed in business analysis. It possesses a robust capability to manage intricate models effectively—the study conducted by Hair et al. in 2014. The measurement and structural models were evaluated in this study using Smart PLS software (version 4.0). Henseler et al. (2009) argue that Partial Least Squares Structural Equation Modeling (PLS-SEM) is more advantageous compared to covariance-based Structural Equation Modeling (SEM) software like AMOS. The authors contend that PLS-SEM is specifically developed to cater to predictive objectives. (Henseler et al., 2009).

4.1 Data Analyses and Discussion

4.1.1 Measurement Model

The present study adhered to the guidelines proposed by various renowned researchers in Partial Least Squares (PLS) analysis to evaluate the measurement model (Hair et al., 2012). in order to determine (i) individual item reliability, (ii) internal consistency reliability, and (iii) validity. For each construct, the 'individual item reliability' was assessed by examining the outer loadings of items for each measure (Bacon et al., 1995; Bijttebier et al., 2000; Hair et al., 2012). 'Internal consistency reliability' is the extent to which all the scale items measure the same concept (Bagozzi & Yi, 1988; Chin, 1998). To assess the scale internal consistency

reliability, Cronbach's alpha and composite reliability coefficients appear to be the most commonly used estimators in organizational research settings (Henseler et al., 2015). Therefore, the researchers additionally used Cronbach's alpha and composite reliability coefficient to determine the internal consistency dependability of the modified measures for this study. Cronbach's alpha, however, may not be as relevant as composite reliability, according to the literature. For this study both . Cronbach's alpha and composite reliability were found satisfactory.

This study examines that 39 items were kept out of the original 44, while five (5) were eliminated because of poor loading. The remaining 39 components, with loadings ranging from 0.529 to 0.933, were kept in this study model. In this investigation, the Cronbach alpha ranged from 0.850 to 0.943, and the composite reliability (CR) of all variables ranged from 0.909 to 0.956, indicating that all variables met the criteria for excellent internal consistency set out by Henseler et al. (2010). Results revealed that the average variance extract (AVE) states that the threshold value should be above 0.50 for all variables ranging from 0.625 to 0.872, in agreement with Chin. Table 1 lists the values for the outer loadings, Cronbach's alpha, composite reliability, average extracted variance, and variance inflation factor. Furthermore, Figure 2, which is reflective, also depicts the evaluation of the measurement model stage one.

Table 1: Cronbach alpha, CR, AVE

Construct	Item	Loading	Cronbach alpha	CR	AVE	VIF				
Organizational sustainable performance										
Environmental Performance	OS1	0.529	0.931	0.943	0.625	1.245				
	OS2	0.802				2.581				
	OS3	0.741				2.170				
	OS4	0.855				3.271				
	OS5	0.884				3.532				
	OS6	0.788				2.545				
	OS7	0.853				4.033				
	OS8	0.849				3.580				
	OS9	0.823				3.742				
	OS10	0.744				2.056				
Economic Performance	OS11	0.897	0.943	0.956	0.814	3.402				
	OS12	0.901				3.572				
	OS13	0.913				4.040				
	OS14	0.902				3.891				
	OS15	0.899				3.443				
Social Performance	OS17	0.859	0.904	0.929	0.723	2.521				
	OS18	0.795				1.939				
	OS19	0.839				2.239				
	OS20	0.879				3.249				
	OS22	0.878				3.234				
	Talent Management									
	Talent Attraction	TM1				0.862	0.852	0.910	0.771	1.804
TM2		0.892	2.418							
TM4		0.883	2.337							
Learning and Development	TM6	0.933	0.853	0.931	0.872	2.235				
	TM7	0.934				2.235				
Talent Retention	TM8	0.873	0.850	0.909	0.768	1.829				
	TM9	0.885				2.311				
	TM10	0.871				2.267				
Process Innovation										
Process Innovation	PI1	0.650	0.941	0.950	0.635	1.623				
	PI2	0.752				2.111				
	PI3	0.792				2.669				
	PI4	0.825				2.924				
	PI5	0.820				2.836				
	PI6	0.820				2.871				
	PI7	0.844				3.198				
	PI8	0.872				3.903				
	PI9	0.888				4.122				
	PI10	0.828				2.841				
	PI11	0.659				1.669				

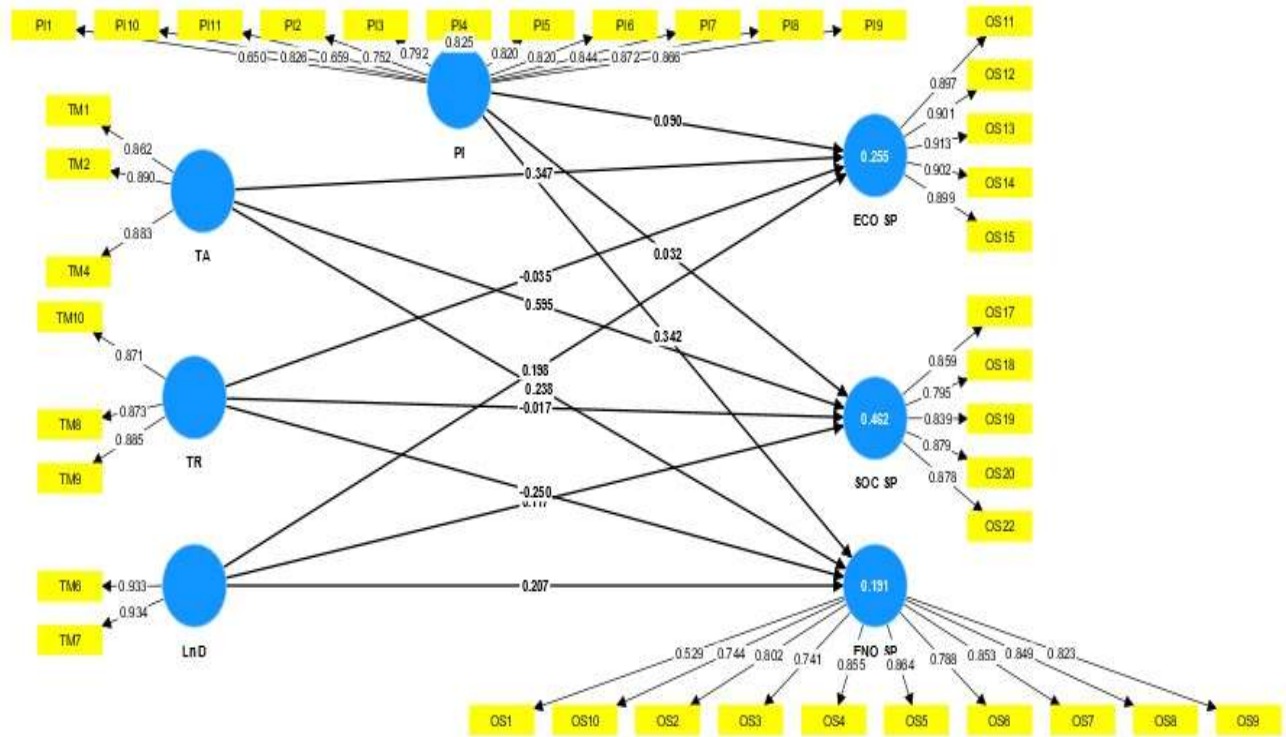


Figure 2: Assessment of Measurement Model Stage 1

All correlation coefficients between variables were lower or equal to the threshold value of 0.865 (Henseler et al., 2015). As a result, it can be said that all research variables varied and that the HTMT approach provided discriminant validity. As a result, the validity and reliability of the measurement model used in the current investigation were confirmed. The HTMT values for each latent component are displayed in Table 2.

Table 2: Results of Discriminant Validity (HTMT)

	ECO SP	ENO SP	LnD	PI	SOC SP	TA	TR
ECO SP							
ENO SP	0.487						
LnD	0.494	0.256					
PI	0.152	0.359	0.129				
SOC SP	0.592	0.410	0.634	0.140			
TA	0.534	0.266	0.885	0.152	0.767		
TR	0.421	0.155	0.823	0.247	0.583	0.865	

A Fornier-Larker criterion examines validity using a correlation matrix. This criterion suggests that the diagonal scores must be greater than other (off-diagonal) scores (Akthar, 2022). Table 3 shows that the entire diagonal scores are higher than other values, which fulfills the Fornier-Larker discriminant validity criteria.

Table 3: Results of Fornier Larker

	ECO SP	ENO SP	LnD	PI	SOC SP	TA	TR
ECO SP	0.902						
ENO SP	0.460	0.791					
LnD	0.444	0.244	0.934				
PI	0.150	0.342	0.104	0.797			
SOC SP	0.548	0.387	0.557	0.122	0.851		
TA	0.482	0.254	0.754	0.136	0.675	0.878	
TR	0.383	0.148	0.712	0.217	0.516	0.744	0.876

4.1.2 Establishment of the Higher-Order Constructs

As measured by their Lower-Order Components (LOCs), organizational sustainable performance and talent management are two Higher-Order Components (HOCs) included in the current study's hierarchical component modeling framework. This study's reflected/ reflective HOC should be observed as it suggests a connection between higher order constructs and lower order constructs (reflecting/ reflective). The second stage of the measurement model is again measured with all the dimensions considered a part of the variable. However, since proven innovation is a single order, it has been measured previously with lower-order components. Table 4 shows the reliability of higher-order contracts where the values of Outer loadings, Cronbach alpha, CR (Composite Reliability), AVE (Average Variance Extracted), and VIF (variance inflation factor) values are higher than the threshold values.

Table 4: Cronbach alpha, Composite Reliability, and Average Variance Extracted

Construct	Item	Loading	Cronbach alpha	CR	AVE	VIF
Organizational Sustainable Performance	ENO SP	0.658	0.723	0.837	0.635	1.312
	ECO SP	0.837				1.593
	SOC SP	0.877				1.478
Talent Management	TA	0.929	0.893	0.933	0.824	2.904
	LnD	0.905				2.628
	TR	0.887				2.537

Two same criteria identify the existence of discriminant validity as they were exhibited in the lower order, Fornier Larker criteria and Heterotrait-Monotrait ratio. HTMT ratio of less than 0.90 is acceptable to achieve the discriminant validity of constructs (Henseler et al., 2015). Table 5 depicts that all the HTMT ratios are less than the threshold (0.90); hence, this criterion also fulfills the discriminant validity' condition. A Fornier-Larker criterion examined in Table 6 suggests that the diagonal scores are greater than other (off-diagonal) scores, and the table fulfills the criterion for data to be valid.

Table 5: Results of Discriminant Validity (HTMT)

	OS	PI	TM	PI x TM
OS				
PI	0.300			
TM	0.703	0.178		
PI x TM	0.231	0.279	0.304	

Table 6: Results of FORNER LARKER

	OS	PI	TM
OS	0.797		
PI	0.216	1.000	
TM	0.622	0.164	0.907

4.1.3 Structural Model

This study assessed the structural model after evaluating the measurement model, where the significance of the path coefficients was determined using the standard bootstrapping technique (with 5000 bootstrap samples). Based on the pertinent literature, this was conducted (Bijttebier et al., 2000; Hair et al., 2012; Henseler et al., 2009). Table 7 provides full estimates of the structural model. Table 7 also shows that hypothesis H1 is supported.

Table 7. Assessment of structural model direct relationships

Direct Path Relationship	Path Coefficient (β)	T statistics	P values	Decision
TM -> OS	0.566	14.818	0.000	Supported

As shown in Table 7, p and t values are obtained using PLS 4.0. The value is used to determine the robustness of the direct relationship, whereas the p and t values determine the significance of these relationships. If the p-value is less than or equal to 0.05 and the t-value is greater than or equal to 1.96, it is generally presumed that the relationship is significant. The presented Table 7 reveals that p-values for the relationship of TM and OS is less than 0.05, and t-values are greater than 1.96. This relationship has a p-value of 0.000 and a t-value of 14.8, which meets the threshold.

Additionally, Figure 3 depicts the reflective/ reflective aspect of the assessment of the measurement model.

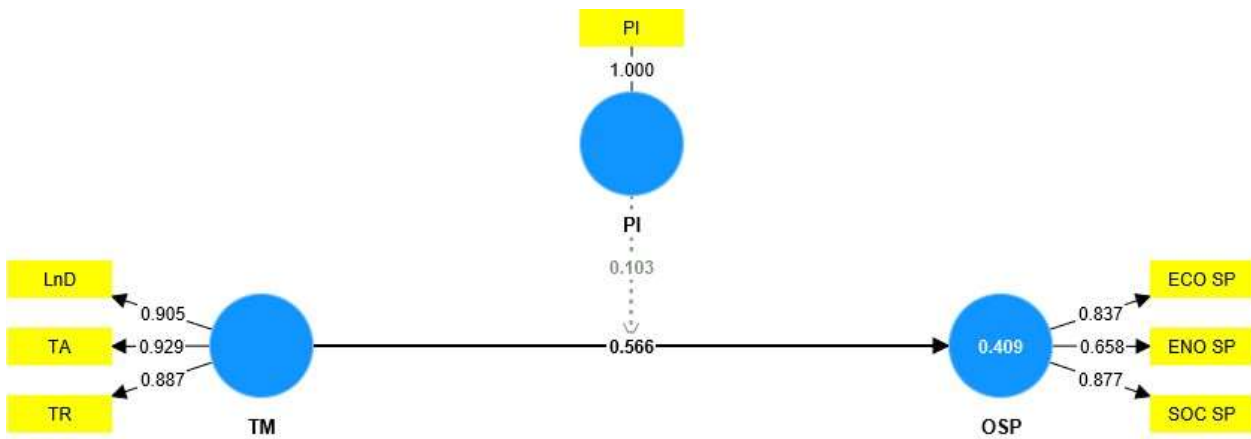


Figure 3: Measurement Model Stage 2

4.1.2 Moderation Test

This study examined the moderating role of process innovation in the link between exogenous and endogenous dimensions, in addition to testing the primary hypotheses. Figure 3 depicts the relationship's moderating impact of process innovation using PLS-SEM bootstrapping. The findings demonstrated that process innovation moderated the association between organizational sustainable performance and talent management, as the interaction impact of PI x TM -> OS was significant, supporting H2.

The study assesses the moderating role of PI on TM and OS. Without the moderation effect (TM*PI), the original R² value of OSP was 0.396. This shows that TM accounts for a 39.6% change in OS. Including the interaction term, the R² increased to 41%. This shows an increase of 1.4% in the variance explained in the dependent variable (OSP).

Further significance of the moderation effect was analyzed, and the result revealed a significant moderating impact of PI on TM and OSP. (b=0.103, t=2.382, p<0.017) supporting This shows that with an increase in process innovation, the strength of the relationship between talent management and organizational sustainable performance also increases.

4.1.4 Slope Analyses

Slope Analyses, according to Figure 4 indicate that at the blue line, PI is at mean value, and the relationship between TM and OSP is growing at a stagnant rate. When we see the green line representing +1 PI, we see that a growth in TM will increase OSP faster, but at the red line representing -1 PI, the relationship between TM and OSP starts decreasing. This represents that the PI plays a moderation role between Tm and OSP. The same can be observed in Table 8, where the values of β and p value meet the threshold value and indicate substantial evidence of moderation.

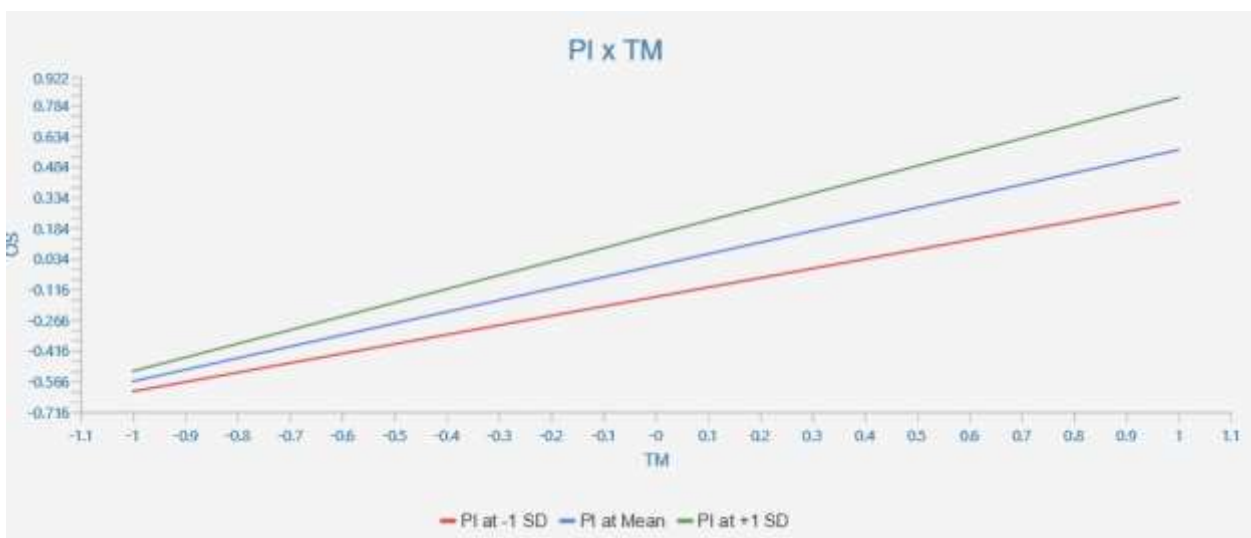


Figure 4: Slope Analyses for moderation

Table 8. Structural model path coefficient moderators assessment

Paths Relationship with Moderation	Path Coefficient (β)	T statistics	P values	Decision
PI x TM -> OS	0.103	2.382	0.017	Supported

4.2 Assessment of the Variance Explained in the Endogenous Latent Variables

Additionally, one of the parameters employed in the study's structural model evaluation using PLS-SEM was the coefficient of determination (R^2 value) (Hulland, 1999). R-squared measures the percentage of an endogenous construct's variance that can be accounted for by its predictor design (Hair et al., 2012; Hair Jr et al., 2014). The acceptable R^2 values for endogenous variables are 0.19, 0.33, and 0.67, which are low, moderate, or substantial, respectively. (Chin, 1998). As recommended, the minimum acceptable R^2 value is 0.10 (Falk & Miller, 1991). This study model explained 40.9% of the overall variance in sustainable performance, as shown in Table 9. The exogenous latent construct known as talent management, as a whole, accounted for 40.9% of the variance in the endogenous variables (organizational sustainable performance).

Table 9: Assessment of R-square

Latent Constructs	R-square
Organizational sustainability performance	0.409

4.3 Assessment of Effect Size (f^2)

This study also looked at the effect magnitude to calculate the R^2 value of the endogenous variable. R-squared change is used to demonstrate the impact of a specific external latent variable on the endogenous latent variable (Hayes, 2013). Therefore, the magnitude of the effect can be estimated using Cohen's (1988) method. The terms "R² included" and "R² excluded" refer to the R^2 value of the exogenous latent variable in a model, when the chosen exogenous variable is included or omitted, respectively. F^2 values of 0.02, 0.15, and 0.35 correspond to mild, moderate, and strong effects, respectively. The aforementioned source provides relevant information on the subject matter (Cohen, 1988). The calculation and outcome of the effect magnitude for latent variable are presented in Table 10.

Table 10: Assessment of Effect Size (f^2)

Latent Constructs	Effect Sizes	Degree of Effect
TM -> OS	0.462	Medium

5. Conclusions and Managerial Implications

This paper explored the impact of talent management and process innovation on organizational sustainability. TM practices should ensure a firm's sustainability based on AMO theory. Data from 309 automotive companies from Pakistan was analyzed, with TM practices covering the three dimensions: TA, TR, and LnD, which, according to the literature, may have different impacts on organizational sustainable performance. Innovative talent management processes can improve sustainable performance. This paper shows how process innovation moderates the relationship between TM and the sustainable performances of organizations. This research paper has important managerial implications for Pakistani firms, especially the automotive sector, and possibly for other developing countries. First, organizations must consider and be more innovative to improve their TM practices, which may lead to better sustainable outcomes. The automotive industry should recognize the importance of organizational sustainable performance. Organizations should acknowledge that disregarding environmental and social responsibility will affect their corporate image and reputation, hindering the pursuit of economic interests. In the long run, businesses should strengthen their workforce to promote sustainable development and the natural environment. Equipping their workforce with proper knowledge and skills and motivating employees towards sustainability would ensure long-term success for the organization. Bringing innovation to the talent management process will also ensure a workforce more prone to organizational sustainability.

6. Research Limitations and Future Research

The present study has various limitations when examining the relationship between talent management and organizational sustainable performance, within the specific context of the automotive sector in Pakistan. The generalizability of the findings may be constrained to the industry and region under study, restricting their relevance to other sectors or global contexts. Furthermore, the research depends on cross-sectional data, which offers a limited view of the associations between these factors at a specific moment, thus neglecting the dynamic and causative elements. To overcome these constraints, future research could incorporate longitudinal methodologies, expand the participant pool to encompass greater diversity, enhance the precision of measurement instruments, and consider contextual variables that may impact the examined associations.

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