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Examining the Impact of Performance Appraisal Quality on Employee Innovation: The Role of Psychological Empowerment and HRM System Strength in Pakistan's Banking Sector

Muhammad Tariq[1], Muhammad Zain Malik[2], Mazhar Iqbal[3]

[1,2] MPhil Department of commerce Bahauddin zakariya university, Multan
muhammadtariq245382@gmail.com muhammadzainmalik994@gmail.com
[3] Professor Department of commerce Bahauddin zakariya university, Multan
mazhar.iqbal@bzu.edu.pk

Abstract

The present research examines the relationship between the quality of performance appraisal and innovation output of the employees in the Pakistani banking industry with psychological empowerment and strength of the HRM system as moderators. A quantitative approach was employed in the study, and data were gathered from a diverse group of banking employees from different bank organizations. The results demonstrate that utilizing high quality performance appraisals increases psychological empowerment which in turn leads to a boost in employee innovation. Moreover, integrated and effective HRM system enhances this relationship, ensuring that clients gain required support & tools at workplace for innovating. The findings emphasize on the need for better performance measures management and robust human resource management in as a way of encouraging innovation. This research work adds to the existing body of knowledge in organization performance appraisals so that it fosters the creativity and flexibility of the employees as they operate in the dynamic environment of any firm, not just the financial one. Implications for practice are reviewed and outlined for Human Resources managers and policymakers concerning performance appraisal; the strategic goals are aligned with the suggestions to make PA an empowering strategy in support of HRM initiatives.

Key Words: Performance Appraisal Quality, Innovation Behavior, Psychological Empowerment, Perception of HRM Strength Pakistan.

1.1 Introduction

This chapter opens with an overview of the background related to the current research on "Examining the Impact of Performance Appraisal Quality on Employee Innovation: The Web Based Survey: Study on the Impact of Psychological Empowerment and HRM System Strength in Pakistani Banking Industry." In the contemporary globalized world economy, it is becoming more and more evident that employee generated innovations are critical in competitiveness and sustainable organizational growth. In this regard, it has been possible to identify banking sector in Pakistan as a potential area of focus since it is located in a dynamic environment and since its formation forms a rather important layer of the economy. It was found that the tolerance of banks for innovation by employees bears a strong relationship with the institution's potential to overcome trials and garner new opportunities. Effects of HRM practices on employee innovation: role of performance appraisal quality, psychological empowering climate, and strength of the HRM systems. Perceptions of performance appraisal quality has positive direct relationship with innovation and this relation is moderated by HRM system strength and mediated by psychological empowerments of employees (Waheed et al., 2018). Innovative

work behavior is created by psychological empowerment when there is high involvement HRM system in place, with manager and co-worker support as the moderators. Motivator enhancing HR practices impact innovative behavior, while HR practices that augment ability and opportunity are linked with psychological empowering, moderating effects of innovative behavior (Rehman et al., 2019). In the context of bank employees, reward strategy positively influences innovation, as does the recruitment strategy, performance appraisal and training with partial support for performance-oriented training but not career-oriented training. Organizational cultural acts as a negative mediator between the implemented HR practices and innovation (Waheed et al., 2018). These results underscore the mediating between-role of HRM practices, psychological variables, culture in relation with employee innovation. Innovation is one of the few sources of competitive advantage and the organizations have to learn to constantly evolve in emerging markets. The situation in Pakistan banking sector necessitate the practice because it requires various practices in light of advancement in technology, changing regulation and rising level of customers' satisfaction. Thus, intrinsic motivation and specific HRM practices make employee innovation one of the most significant topics for banks in this environment. Organization performance appraisal systems are useful in changing employee attitude and behavior. Research has identified that when appraisals are credible, objective, and include developmental feedback, the perception and subsequent need to have the appraisal redone will be less likely to be sour among those being appraised. But, the impact of the performance appraisals regarding innovation totally depends on factors like psychological empowerment and strength of the HRM systems. Psychological empowerment: the level of self-determination, competency and perceived meaning, and perceived impact with reference by the employee to the work assignments motivates him or her to explore new ideas. On the other hand, the robustness of the concept of the HRM system of consistency, distinctiveness, and consensus for increasing credibility and efficiency increases the probability of improving the outcomes of HR practices. Appraisal systems that are an integral component of HRM are powerful tools in controlling and influencing organizational behavior. Where there is a good performance management system, the follow-up does not only focus on assessing the work of the employees, but also on stimulating them properly to build on that innovative capacity. Nevertheless, this research established that the usefulness of such systems in developing innovation is subject to several contingency and moderator variables including perceived quality of the appraisal system, psychological employee empowerment, and overall robustness of the HRM system. The purpose of this research is twofold: to determine the extent to which performance appraisal quality affects the innovation activities of employees in the banking industry in Pakistan and to identify the moderating variable, which is the strength of the country's HRM system and the mediating variable, which is psychological empowerment. Perceived organizational support, psychological empowerment which is self-perceived work competence, perceived autonomy, and perceived meaning at work has been shown to mediate the relationship between HR practices and innovation. In the same way, the practical strength of the HRM system, indicating the extent of its consistency, consensus, and distinctiveness, defines how organizational practices are communicated and, therefore, perceived by the employees. To fill this gap in the literature, the current study will explore the relationships of innovation and HR practices from a strategic HRM perspective amidst the banking sector of Pakistan. It became clear that to understand all these dynamics cultural, organizational and economic factors peculiar to the Pakistani context require further study. This research aims to understand these dynamics for the ways in which banks can craft their HRM policies and practices in a manner that helps employees be more innovative more often – benefitting the firm, improving satisfaction and performance for employees and stakeholders alike, as well as contributing to economic development. To explore the relation between the availability of a high-quality performance appraisal system and the level of innovation among employees. To evaluate the moderating effect of HRM system strength in these interactions and investigate

the idea! So, what is the idea, it is the psychological empowerment acts as a full mediator in the relationship between innovation and assessment quality.

1.2 Back Ground of Study

In today's rapidly evolving business landscape, particularly within the banking sector, fostering employee innovation has become critical for organizations seeking a competitive edge. As financial institutions face increasing challenges from digital transformation and shifting customer expectations, the need for innovative solutions is paramount. Modern organizations are striving ahead to harness the innovative capital of individuals for its achievement of innovation in the organizations for the purpose of enjoying competitiveness in the market place (Haq et al., 2017). Innovative employees are always in search of a new challenge for the fulfillment of creativity needs. It has become the major determinant of organizational innovation and competitive advantage since it is the key to the creation of new ways, goods, and solutions. Therefore, creation of an environment that encourages innovative behavior is important in improving performance and organizational efficiency and organizational success. Initially considered an extra-role behavior, innovative behavior is now viewed as an integral part of routine work. Katz's foundational work on this topic emphasizes that innovative behavior is not merely a formal response to uncertainty but is rooted in the social dynamics of the organization. Recent research confirms the importance of innovative behavior in increasing organizational performance in the conditions of the increasing pace of changes in the business environment. Innovative behavior is defined as purposeful behavior of organizational members performing tasks in their work roles or groups to create novelties. Extending Katz's ideas, (Kanter, 2009) brought out a model that puts focus on the micro technological activities of idea production, mobilization of supporters, idea implementation and spreading. This behavior is due to the interacting process in which people undertake innovation tasks and use existing information and experience to generate, propose, try out, and implement innovation ideas (Katz, 1964). Define innovative behavior as the processes of creating, encouraging and executing of new ideas in a group or organization while Janssen defined innovative behavior simply as the extent to which individuals generate, communicate and enact ideas in a given group or organization. In the context of this research, innovation is defined as the act of coming up with new ways to solve a problem, selling these ideas to other people, and using them within a group, section or company. Work performance literature reveals that performance appraisal quality is an important determinant of employee innovation. Performance appraisals therefore must not only simply assess an employee's performance but also facilitate his/her performance to the optimum level and in an innovative manner for the organization. A growing body of investigations explores the influence of performance appraisals on worker satisfaction and motivation (Shah et al., 2024). Employee performance appraisal is a crucial aspect of human resources management, as it assesses employees' performance and ensures they meet the required standards to support organizational goals. Performance appraisal not only enhances organizational performance but also plays a vital role in employee capabilities, skill development, experience and innovation. The aforementioned employee skills play a vital role in organizational development. The performance of the affirmation analysis reveals that PBL has paid less attention to performance evaluation and, therefore, could benefit from it in this study; the authors analyzed the dependency of the quality of performance appraisal on employee innovation in the banking sector of Pakistan. It is postulated that critically appraised innovative potential of the employees depends on the quality of performance appraisals. In particular, we examine the moderating role of psychological empowerment for this association. Psychological climate, which represents a collectivity of perceptions of the ability to perform and make a useful contribution, influences peoples' willingness to act on their own initiative and follow up on the idea. Based on the above posited theory, psychological empowerment as a positive workplace attitude plays a key role in the behavior of individuals at the workplace. For this reason, it will be useful to find how psychological empowerment acts as moderator and defines a link between PAQ and employee innovative behavior. The integrated

performance appraisal offers directions to the employees because if they find quality in performance appraisals, they probably are psychologically mobilized to show initiatives and depict new behaviors (Waheed et al., 2018). Regarding psychological implications of empowerment, psychological empowerment is defined as the cognitive reactions or motivations people have to organizational initiatives. In addition, we look at the validity of Human Resource Management (HRM) systems as moderating variables that can either support or weaken this connection. A good HRM system enhances the employees' perception to buttress the impact of the high-quality performance appraisal, demonstrate appreciation of the employees' ability to contribute to the innovation. Organizations are designing and implementing strategies which are grounded on innovation as the organization tries to sustain itself in competition and as a result be in a position to be able to gain sustainable competitive advantage. They are developing human resource management (HRM) practices and a culture that encourages and fosters creativity (Aman et al., 2018). Effective practices are critical to an organization's success, as they foster a culture that fosters employee innovation and creativity. Human resource management policies, including compensation, performance management, and career development, enable organizations to leverage their human capital for optimal performance. Research has consistently shown that organizations with specific operation achieve superior results, both individually and collectively. In particular, human resource management that encourages innovation and creativity are critical to organizational success. Organizations that fail to retain innovative talent in their workforce are likely to become obsolete over time and lose competitive advantage. In the literature, the relationship between human resource management and innovation is twofold, i.e. Can foster employees' innovative capabilities and at the same time, employees' innovative capabilities can to some extent foster the organization's practices (Afzaal et al., 2024). Through this research, we aim to explore how performance management practices can be improved to foster a culture of innovation in the banking sector. Our findings will not only contribute to the academic literature but also offer practical implications for human resource managers and organizational leaders who are striving to enhance employee engagement and innovation output in a highly competitive environment.

1.3 Problem Statement and Research Gap

Though there has been a slow, developing awareness of the particular utility of performance appraisals to spear head innovation among the human personnel of organizations, there has however been minimal satisfactory empirical literature conducted in order to ascertain the quality of the performance appraisal processes and its direct influence on the level of innovation of banking organizations in Pakistan. Prior research fails to capture psychological empowerment as a mediator and HRM system strength as a moderator which has the potential to either strengthen or weaken technological/ process innovation depending on the quality of appraisal. Apart from this, there is a dearth of culture and organization banking context of Pakistan in the contemporary literature, which indicates the need for context-specific research. This research intends to address these gaps by examining the relationship between performance appraisal quality, psychological empowerment and strength of a firm's HRM system on innovation of employees in this sector. This research aims to establish that in the context of the banking industry in Pakistan, the reliability of performance appraisals in bringing about innovation among those in the organization. Still, the quality of such appraisals may be quite different, in this case, minimizing the motivation of employees to innovate. The purpose of this study is to investigate the impact of performance appraisal quality on employee innovation, where intervening role of psychological empowerment is examined and moderating role of the strength of HRM system is tested. It is important for strategic HRM to comprehend this relation so as to improve innovative performance aiming at competing pressure found in the banking sector.

1.4 Research Questions

To examine the impact of performance appraisal quality on employee innovation, and the roles played by psychological empowerment and HRM system strength, the following research questions could be explored:

1. How is the overall quality of performance appraisal systems related to innovation amongst employees in Pakistan's banking industry? This question aims at knowing whether improved quality performance appraisals result to higher levels of employee's innovation.
2. In what ways does psychological empowerment buffer the relationship between performance appraisal quality and employee innovation? This question examines how best one can determine whether employees with perceived psychological empowerment by good performance appraisals are more likely to engage in the engineering of innovation.
3. To what extent does the strength of the HRM system mediate the link between performance appraisal quality and employee innovation? This question expects to find out if the presence of robust HRM system magnifies positive impacts of efficient performance appraisals on innovative performance among employees.
4. How do factors such as fairness, feedback quality, and goal alignment in performance appraisals impact employees' perceptions of empowerment and their ability to innovate? This question delves deeper into the specific components of performance appraisals that may influence employees' motivation to innovate.
5. This research aims at identifying the implication of performance appraisal quality and psychological empowerment on the innovation culture in the banking sector of Pakistan? This question addresses the broader organizational implications, particularly how these factors shape the culture of innovation within the banking industry.

1.5 Research Objective

In the present study, the research object is the relationship between performance appraisal quality and employee innovation with specific reference to the banking industry in Pakistan. The purposes of this study are to identify the strength of this relationship under the conditions of different psychological factors including the psychological empowerment and the strength of the HRM system and Performance Appraisal Quality. The relevance of the performance appraisal methods used in determining and rewarding employee performance. This comprises how feedback is given, whether or not it results in development promotions, and how feedback is situated in relation to the employee and organizational development plans, mission, and vision. Employee Innovation: Related to how innovative employees are the number of ideas developed as well as the innovative behaviors manifested in the firm. This can also involve new ways of doing work, creating new services or products, or coming up with some solution to some problem. Psychological Empowerment: The perception of personal control, skills, task and knowledge significance and the extent of influence employees have in the organization. It is believed that achievement portrays this in ways that affect their desire to participate in innovative processes. HRM System Strength: Structural soundness, integration, and convergence in general management of people in an organization through proper hiring of employees, skills development, conduct, appraisal, and compensation and benefits. A strong HRM system is likely to create an environment that supports employee development and innovation.

1.6 Significance of the study

This study holds substantial significance for several reasons:

Theoretical Contribution: Through this cross-sectional study, the author is also able to extend existing knowledge regarding the factors that may affect innovative through the quality of performance appraisal, psychological empowerment, and strength of HRMS. It addresses gaps

in the existing literature especially within the banking sector in the context of Pakistan. Practical Implications: The study will prove useful for banking institutions planning to enhance their performance appraisal system. The knowledge of the antecedents of employees' innovativeness can help HRM implement better practices for furthering organizational innovation, hence organizational performance and competitiveness. Policy Recommendations: This study could, therefore, help Policymakers with appreciation of core human resource management that needs to be put in place in the banking sector. Through stressing chronic theoretical factors such as psychological empowerment and strength of the HRM system, the research can inform the formulation of favorable policies for enhancing employee engagement and creativity. Contextual Relevance: Thus, the results of the study will be especially useful in the context of Pakistan owing to its specific cultural and economic conditions of doing business. With this, organizations can successfully design their HR strategies so that they suit their hr. requirements and productivity as well as that of the employees greatly improves. Foundation for Future Research: Therefore, this research opens the door for continued research in this and similar fields in order to understand the relationship between performance management, employee behavior, and organizational results in other sectors and regions.

1.7 Organization of the Thesis

The study is organized as follows: Chapter 01 provides the background of the research on the relationship between PAQ and Employee Innovation during highlighting Psychological Empowerment and strength of HRM system in the context of Pakistan's banking industry. The problem definition and objectives of the research are also explained in this chapter. Chapter 02 of this research work has reviewed related literatures, developed the research hypothesis, and proffered the conceptual framework. Chapter 03 explores the variables and research design, research approach, population and sample technique, data collection through questioners with measurement scale, econometric models used in the analysis of the relationships as described above. In the last chapter, conclusion, recommendation and implication of finding based on the study are presented and made. It also discusses the limitation of the study and recommends the possible areas of further research.

Literature Review

2.1 Introduction

This chapter will present the associated theories which include the theory on relative age and time series theory. In this regard, the subsequent chapter will present the empirical evidence underlying the present study. Finally, at the end of this chapter, the conceptual and theoretical framework for this research will be outlined, and then the research hypotheses will be developed.

2.2 Theories

2.2.1 Legitimacy theory

Legitimacy Theory also is connected to the topic since it deals with the tendency of organizational actions to reflect societal expectations, norms and requirements in the sphere of behavior and functioning. Here's how legitimacy theory might connect to the study of Performance Appraisal Quality (PAQ), Employee Innovation, Psychological Empowerment (PE), and HRM System Strength in Pakistan's banking sector: Legitimacy Theory posits that organizations must operate within the bounds of societal expectations and norms to secure and maintain legitimacy. Thus, the organizations strive for the organizational legitimacy by applying policies and measures which are accepted as being fair, ethical and contributing to a positive value, not only to the employees but other organization members and wider community. In the case of the employee-related practices, legitimacy, can be achieved through the highly objective and fair HR policies, employee engagement, and promoting creativity. Performance Appraisal Systems as Legitimizing Tools: When done correctly, performance

appraisals raise an organization's standards of procedural justice, operational justice, and developmental justice. In the context of Pakistan's experience of building trust in banking as an institution, a sound and proper PAQ system can go a long way to establishing organizational legitimacy to reflect fairness and ethical handling of employees as expected within the society. Employees perceived High PAQ as a legitimacy of the organization in enhancing their professional development and innovation culture. Enhancing Internal Stakeholder Perceptions, It also expected that empowered employees are more likely to consider their organization as legitimate, as empowering fosters a compliance with the novel paradigm of organization as places for participation and development. Another way in which psychological empowerment can be strategic is, by providing legitimation to innovate by decreasing resistance to change by employees. HRM System Strength and Legitimacy Consistency and Clarity as Legitimizing Factors: It will be underscored that a strong HRM system entails fairness and uniformity in the organization's performance appraisal hence enhancing of the organization's image as being accountable. Such systems enable Pakistani organizations in the banking industries to overcome cultural and structural issues, while portraying themselves as credible and liberal to international markets. Employee Innovation and Legitimacy Innovation as a Strategy for External Legitimacy: To its external audiences, innovation is a way of communicating a firm's agility in adapting to existing market conditions or the foreseeable technological advances. By promoting the culture of innovation in the human capital, the organization can produce a rationale for its presence in the competitive environment and its responsibility before the Pakistan's banking industry. Internal Legitimacy through Supportive Practices: Employees are more inclined to endorse the organizational legitimacy when the support innovation is fostered by fairly empowering practices. Legitimacy Theory in the Context of Pakistan's Banking Sector Cultural and Structural Relevance: There is growing social pressure in Pakistan's banking industry for correct employment policies and employee welfare standards. PAQ high quality and organizational focus on developing strong HRM systems prove the organization's compliance with these expectations thus improving the internal (employee) and external (stakeholder) legitimacy. Sector-Specific Challenges: The banking framework in Pakistan has a conventionally bureaucratic and orthodox structure which poses specific challenges to innovativeness innovations, which need to be introduced with legitimacy norms to prevent traditional organizational stakeholders from getting opposed to them. Practical Implications: These sub-activities; Building Employee Trust and Buy-In: PAQ and PE guarantee that employees have a reason to be innovative as they support the legitimacy of the organization. Improving Customer Impressions Highly developed and well-publicized systems of HRM and visible support for innovation serve to enhance the perceived legitimacy of an organization's activities to customers and external agencies, including the state and investors. High PAQ increases internal legitimacy since it creates organizational fairness and development among employees. PE moderates the relationship between PAQ and innovation performance of the employees strengthening internal legitimacy. Industry standardizes PAQ and mediates relationships between HRM system strength and external legitimacy, which reinforces consistency in reinvention of employee innovation. By following the dynamics in the external environment, PAQ & PE necessary enhance external legitimacy as a source of innovation. By drawing from Legitimacy Theory, the analysis broadens the conversation by considering how PAQ, PE, and HRM systems meet or fail to meet the cross-system and organizational expectations. This view is especially applicable to a situation such as that found in the banking industry in Pakistan where social factors are key drivers of organizational performance.

2.2.2 Stakeholder theory

Stakeholder Theory is also relevant with the topic because it increasingly targets different participant and their demands in the organizational processes. As a framework for analyzing PAQ's effect on Employee Innovation, with Psychological Empowerment and HRM System Strength as moderators, stakeholder perspective is a useful tool for understanding how these aspects can help companies meet the contributor expectations and foster innovation. According

to Theory, every business organization has legal and moral responsibilities toward and for every single entity in the company including the employees, customers, regulators, shareholders among other colleges to attain sustainability in business. With regard to the HRM practices, employees are actual, important internal stakeholders of an organization whose expectations affect its performance in terms of innovation etc. Misalignment between the organizational practices and requirements of the different party may contribute to a deterioration of credibility, customer satisfaction and organizational performance in the long-term. PAQ is an essential organizational level because it influences overall perception of the employees on fairness, recognition and development. Theory is also relevant with the topic because it increasingly targets different partner and their demands in the organizational processes. As a framework for analyzing PAQ's effect on Employee Innovation, with Psychological Empowerment and HRM System Strength as moderators, stakeholder perspective is a useful tool for understanding how these aspects can help companies meet the stakeholder expectations and foster innovation. Every business organization has legal and moral responsibilities toward and for every single stakeholder in the company including the employees, customers, regulators, shareholders among other stakeholders to attain sustainability in business. With regard to the HRM practices, employees are actual, important internal stakeholders of an organization whose expectations affect its performance in terms of innovation etc. Misalignment between the organizational practices and requirements of the different participant may contribute to a deterioration of credibility, customer satisfaction and organizational performance in the long-term. PAQ is an essential organizational level because it influences overall perception of the employees on fairness, recognition and development. First of all, high-quality appraisals meet basic employee stakeholders' needs for direction, equity, and growth that is necessary to unlock their engagement and motivation. The first way is about embracing developmental and transparent appraisals that prove the organization's care about the employees-stakeholders, so expecting innovative reactions in return. Employees, also being internal stakeholders, expect to be empowered through, challenging tasks, decision making powers, and to be able to make the greatest positive impact. Towards meeting these expectations, PE establishes the relationship between PAQ and intrinsic motivation that may result into innovative behaviors. The strong HRM system also makes certain that review programs are employed fairly, evenly, and understandably within the organization. Such consistency builds more trust with employees, the internal stakeholders while ascending the reputation of the organization amongst external influencers like the regulators, customer and shareholders. Its impact is a correlation between employees' innovation and better products, services, and business processes which should consequently enhance customer and shareholders' value. Through innovation, organizational culture proves receptiveness to stakeholder demands hence improving satisfaction and loyalty. Applying on the Pakistan Banking Sector; the employees in banking sector of Pakistan work under high performance pressure and dealing with constraints structures. Their needs are met if the PAQ is high and they are empowered; this leads to commitment with creativity. External associate (Regulators and Customers): Innovation arising from the employees can help the banks to create solutions that meet with the changes in regulations and the desires of customers for enhanced services, meaning that it addresses requirements external to the firm. Cultural and Structural Challenges: Advanced HRM is useful in managing culture that may can be a barrier in fulfilling stakeholders' needs especially where subordinates have to deal with their seniors. Managerial Implications for HR Practices By integrating PAQ with the stakeholder theory, appraisals become more than timely bureaucratic processes but effective organizational tools to meet and manage employee expectation. For Organizational Strategy If the devotion of empowering employees besides encouraging the innovation processes, it supports the organizational objectives, while responding to the internal and external demands. In specific for the external stakeholders by showing an allegiant for fair and consistent HR practices these entities add to their HR legitimacy and reputation to all the members of the relevant communities. High PAQ

meets the self-employee stakeholder needs thus influencing their engagement and innovative behaviors. PE helps to moderate the relationship between PAQ and innovation among employees by fulfilling employee expectations for autonomous work. HRM system strength regulates the relationship between PAQ and employee innovation to guarantee the trust of stakeholders due to the system stability and equality. Ideas generated by the employees owning high PAQ and PE help in satisfying the external expecting optimum organizational performance and reputation. Theory provides a comprehensive framework for connecting PAQ, PE, HRM System Strength, and Employee Innovation to the broader goals of satisfying stakeholder needs and achieving organizational success.

2.3 Empirical Literature Overview

1. Performance Appraisal Quality and Employee Innovation:

Studies on Performance Appraisal Effectiveness: Research indicates that the quality of performance appraisals—characterized by clarity, fairness, and constructive feedback—directly impacts employee motivation and innovation. For instance, research evidence has established that well-developed appraisals provide employees with clearer understanding of the responsibilities and expectations or encourage innovation. Performance appraisals are basic principle of great human resource management practices. From the discussions, it has been seen how effectively performance evaluation helps different HR decisions including pay raise, promotions, training, and staff assignment (Hashmi & Ahmad, 2021). There has been considerable discussion of fair appraisal designs in the academic literature, yet many systems continue to fail to meet the needs of their employees. Performance appraisals cannot be effective if employees do not accept them (Yasir et al., 2023). It is thus important to note that even well design system would not perform optimally when their implementers do not accept the system. According to (Rowlands et al., 2022) and supported by (Jha & Ray, 2022) understanding employee reactions—shaped by their perceptions of fairness—is crucial for achieving the desired outcomes of performance appraisals These perceptions are influenced by the concept of organizational justice, which includes three key dimensions: This paper presents an analysis of interactional justice, distributive justice, and procedural fairness in performance appraisals. These dimensions do impact a great deal on how employees view their tasks and their actions. Procedural justice is more concerned with the appropriateness of the used procedure and policies towards performance assessment (Saeed et al., 2013). Interactional justice deals with the manner in which subordinates are treated during the organizational appraisal process. Research indicates that each type of justice influences employee satisfaction differently: Whereas, procedural justice influences the level of general satisfaction with the appraisal system, distributive justice was found to influence perceived satisfaction with the specific outcome. Furthermore, interactional justice reflects on the satisfaction of the person conducting the appraisal, (Shah et al., 2024). Thus, the stream of research of performance appraisals has been quite broad, and the focus has shifted over time. First reviews focused on more objective issues like psychometric properties, formats of appraisals, and training schemes (Rowlands et al., 2022). The studies that have emerged in the recent past have explored the effects of appraisals on various reaction variables such as turnover intentions, job satisfaction, and commitment (Bayo-Moriones et al., 2021). Understanding employee's perception of fair treatment is therefore important since appraisal reactions can be viewed through the lens of organizational justice, which means unfairness (Konovsky, 2000). In the case of appraisal, it is employees' perception of receiving, identifying and perceiving outcome/rewards as fair throughout the process. Within performance appraisals, three key aspects of perceived fairness are pivotal: distributive justice, who elaborate how fairly employees consider the performance ratings are, procedural justice, who is concern with the fairness of the processes used to assign the ratings, interactional justice, which is a measure of how friendly or hostile employees find the appraisal. Although these aspects were earlier distinguished from each other, a different view was presented by (Folger, 1977). Some researchers argue that interactional justice is a subset of procedural justice while others maintain they are distinct, each containing two

dimensions: Hence interactional justice was regressed on both interpersonal and informational justice while procedural justice was regressed on both system-rater procedural justices. Much more needs to be said about these subtle differences, yet the value of all of them are recognized (Tyler & Blader, 2003).

Link to Innovation: Empirical evidence suggests that organizations that implement effective appraisal systems report higher levels of employee innovation and creativity. These studies highlight how positive feedback and recognition motivate employees to propose new ideas.

Psychological Empowerment:

Role in Innovation: Some previous researches done on this context conceived psychological empowerment with the innovation. Self-generated data suggest that when employees are empowered, they are motivated to assume more initiative and even to become involved in creative problem solving (Spreitzer, 1995). Psychological empowerment (PE) is positively linked to work performance, with empowered employees often demonstrating enhanced productivity and contributing significantly to their organizations compared to those who lack such empowerment. When organizational leaders adopt a participative approach, it fosters improved individual task performance and promotes PE, leading to a strong correlation between the two. Psychologically empowered individuals tend to display more optimistic performance outcomes. Employees are likely to perform better when they feel empowered to utilize their skills in relation to their tasks. A climate of empowerment, particularly psychological empowerment, positively influences individual task-related performance. The organizational environment can further support the implementation of an effective appraisal system that enhances PE, job satisfaction, and overall task performance (Yi-Hsiu & Chen-Yueh, 2013). Moreover, while PE not only boosts performance but also fosters creativity among employees, factors such as inequality and gender stereotypes can lead to varied outcomes across different (Yasir et al., 2023). Based on this literature review, the following hypothesis is proposed.

Mediating Role: Some research has indicated that psychological empowering has an intervening role in the link between performance appraisal quality and employees' innovative behavior; it was further highlighted that improved appraisals promotes empowering, which subsequently increases innovation (Arefin et al., 2019).

2. HRM System Strength:

Importance of Strong HRM Systems: According to literature review there is a positive relation between HRM system and its practices and policies where HRM framework is very effective, coherent for the growth of employees. Performance management systems increase the efficiency of performance appraisals and creativity through the incorporation of goal congruence theory. To maintain the organizational competitive edge, and create sustainable competitive advantages, organizations are now using strategies that embraced innovation that include pulling together human resource management HRM practices that foster creativity and nurturing culture that encourages development and implementation of innovative ideas. HRM practices that help foster a culture for improving employee innovativeness are a key determinant to organizational success. Human resource management (HRM) practices refer to the measures of working that an organization uses in the management of staff. Studies show that operators with standout management and human resource management strategies perform better than acquaintances in elevating personal and unified employee productivity. HRM key processes include; employee staffing, talent acquisition, performance management, and employee reward management. It is crucial for the success of an organization that these practices relate to innovation and creativity specifically (Afzaal et al., 2024). Research has revealed that companies that did not display innovative behaviors lag behind their counterparts who foster innovation among their human capital. (Konovsky, 2000) also state that innovation is the process that can be most simply described as an initiative from employees concerning the introduction of new products, new processes, new markets and combinations of such within

the organization. HRM measures are basically aimed at selection, attraction, and preservation of the best talent for organizational functionality. Any organization that is not careful to keep updating the innovation capabilities of employees or its workforce is in danger of becoming outdated with the competitors. The literature suggests a reciprocal relationship between HRM practices and innovation: Innovative assets of employees can be developed through HRM practices, at the same time; the innovation can also affect and improve the organizational practices of HRM.

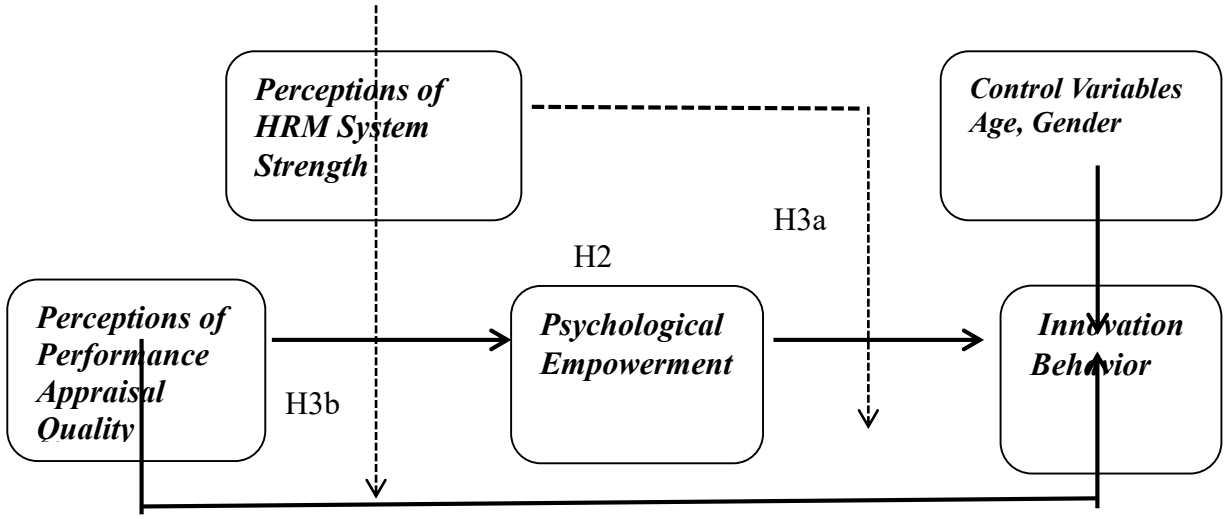
Link to Organizational Outcomes: Studies have demonstrated that organizations with strong HRM systems experience improved employee engagement, lower turnover, and increased innovation capacity (Arefin et al., 2019).

3. Context of the Banking Sector in Pakistan:

Cultural Considerations: A few authors mentioned above did empirical research on the banking sector in Pakistan and concluded that the culture affecting the appraisals for performance and the application of empowerment. It is established in this study that in collectivist cultures, performance appraisals that combine group outcomes with individual outputs are likely to be more effective (Parhi et al., 2021). Impact of Economic Conditions: Research carried out in the context of Pakistan reveals that economic pressure leads to a poor quality of performance appraisals, and human resource management practices; subsequently, tapering the level of nurture given to innovation among employees (Afzaal et al., 2024).

2.4 Theoretical Framework:

The research model discussed in figure 1 indicates that the higher level of PPAQ enhances psychological empowerment and thereby the innovative behaviors of the employees exist. However, organizational support for both psychological empowerment and innovative behavior of the employees through PPAQ are significantly increased by positive perception about the strength of the HRM system.



2.5 Conceptual Framework

PA Quality → Employee Innovation: Performance appraisals when done effectively have the potential of inspiring employees to encourage creativity.

PA Quality → Psychological Empowerment → Employee Innovation: Positive PA process that comes out of this research may help in the enhancement of psychological empowerment and thus increasing the level of innovation among the employees in the organization.

HRM System Strength → Moderation Effect: The findings also suggest that professionally implemented and well-developed HRM might increase the performance of appraisals of innovations in terms of levels.

2.6 Hypotheses:

Based on the objectives and research questions, the following research hypotheses can be formulated:

1. **H1:** Performance appraisal quality → Employee innovation (positive relationship).
2. **H2:** Performance appraisal quality therefore influences employee innovation through the mediating factor of what we call psychological empowerment.
3. **H3a:** HRM system strength as a moderating variable also explains the connection between the performance appraisal quality, and Psychological Empowerment

H3b: The greater strength of the organization's HRM system strong the relationship between the performance appraisal quality and employee innovation.

Hypothesis 1: The study shows that performance appraisals have a significant and positive impact on Pakistani banks' employee innovation. Performance appraisals that are perceived as fair, constructive, and aligned with personal and organizational goals may motivate employees to think creatively and engage in innovative behaviors.

Hypothesis 2: Psychological empowerment has an indirect relationship with performance appraisal quality and innovation where employees work. When employees receive positive and constructive feedback through quality performance appraisals, it may enhance their sense of psychological empowerment (autonomy, competence, and meaningfulness), which in turn could motivate them to innovate.

Hypothesis 3: The interactions between the system strength and performance appraisal quality and Psychological Empowerment to the level that the impact Hanoi HRM practiced are being brought to light: The high-quality appraisal should be complemented with an effective and consistent HRM structure because it may enhance the effects of positive psychological outcomes of psychological empowering.

Hypothesis 4: Performance appraisal quality is positively related to employee innovation and the strength of the HRM system has a moderating effect. High-quality performance appraisals when supported by a strong HRM system (with good, stable and positive HR practices) are likely to have a positive effect on increasing employee creativity. Therefore, a good HRM system can avail the support, resources and reward needed to support innovation.

Research Methodology

3.1 Introduction:

Integrate findings drawn from theoretical literature regarding performance appraisal, human resource management, (HRM), organizational innovation involving employees of the banking sector of Pakistan. Research has found that the perceptions towards the quality of performance appraisals are positively correlated with innovative behavior moderated by psychological empowerment (Waheed et al., 2018). It is, therefore, posited that HI- HRM systems, motivation enhancing, ability and opportunity enhancing practices had direct effects on innovative work behavior though psychological empowerment served as the mediator (Rehman et al., 2019). Psychological empowerment, innovative behavior, and their relationship are moderate by the support that an employee receives from his/her manager and other co-workers. In the banking industry, performance work systems are found to have a positive relationship with knowledge sharing behavior where psychological empowering fully mediates and organizational identification partially mediates the relationship (Abbasi et al., 2021). Reward management with special references to performance appraisals and motivation has a positive impact on work performance in context of Pakistani banks, as pointed out in the study of (Saeed et al., 2013). In light of these investigations, the research established that HRM practices and psychological factors provided an avenue for enhancing innovative and performance employees.

3.2 Research Philosophy/Design:

Use of terms such as research philosophy and study design are aimed at identifying the proper procedure a researcher disposes to, so as to foster a deep and comprehensive study, on an elementary subject. Therefore, for researchers it is crucial to choose one research strategy that would best suit their study goals. According to (Bordens & Abbott, 2002), research design entails an overall arrangement of all the parts of a given study such that they are visually appealing, harmonious, and meaningful. Today, researchers from across the global use a variety of designs and concepts in management and social sciences. This comprises of research theories for example positivism, realism, pragmatism, interpretivism, and empiricism. Positivism and interpretivism are the two most popular categories of research philosophy (Hovorka & Lee, 2010).

3.2.1 Positivism

Positivism therefore has its foundation on the philosophical perspective of natural scientist; it utilizes realities within society in generalizing. This approach stresses that data be analyzed without supplementary information and it imposes strict non-acceptance of any sights and opinions of people (Saunders et al., 2020). From the positivist perspective it is expected that a researcher should enter into a field and work without influencing the environment. It supports different techniques of processing the information, such as the surveys and questionnaires as well as other numerical, calculation and statistical procedures. The primary approach of this philosophy is to rely on quantitative measures. It aims for the discovery of general laws through the means of statistical averaging. If you were a positivist, quantifying relationships between performance appraisal quality, psychological empowerment, HRM system strength, and employee innovation would be done with structured surveys and statistic tools. This approach meets the hypothesis driven approach of your research well.

3.2.2 Interpretivism

Interpretivism seeks to bring to light this interaction through a depiction of people's point of view, their intentions and rationality other than numerical facts. This theory assumes that socio-cultural categories like bounded language, self-awareness, culture and tools that people use provide them with the means of getting at the real (Myers, 2008). This work reveals that the interpretive approach promotes the need to employ different methods of qualitative analysis such as naturalism observations, interviews among others. Direct observation, which is typical of case studies, presupposes that the researcher becomes an impartial, non-interventionist

participant-observer. The main research objective is to present a clear framework based on data available that would not only increase the amount of knowledge on relationships but also improve the overall understanding of the factors involved in finding the relationships themselves. The research was anchored on positivism research epistemology to facilitate the researcher conduct a rigorous analysis on numerical data. In keeping with this view, an exploratory and descriptive research design was employed in the study with a view of obtaining quantitative data through the use of statistical methods. It focuses on the processes that people use to make (meaning) sense of themselves and the world around them. It is prevalent in associating with Quality, specifically in data collection approach. Though this research work is quantitative in nature, a blend of interpretivism can usefully explicate the qualitative factors which contribute to innovation among the employees. In order to get more understanding on how employees perceive performance appraisals and how they affect innovation, you might undertake interviews, focus groups.

3.3 Research Approach

According to (Konovsky, 2000), there are two primary research approaches: methodological logic used both quantitative and qualitative research methods. The quantitative method is based on numerical form and, the qualitative technique is based on non-numerical data. Qualitative technique is thus developed to offer theoretical explanations, establish facts, prove hypothesis, establish relationship between variables, and forecast results. Quantitative research is further categorized by adopting natural sciences, accuracy, reliability, and reproducibility as its main goals (Weinreich, 2009). On the other hand, qualitative research is concerned with theory construction and development of knowledge, data analysis where the data is non-experimental, often not quantifiable. In the current research, the researcher has used the quantitative research method to conduct analysis on quantitative data gathered from bank employee. Data was collected from firms operating in emerging economies using a structured close ended questionnaire. This approach was adopted to examine hypothesis and relationship between variables in a quantitative context.

3.4 Population and sample selection

The target population for the research hence includes all the employees in the banking industry in Pakistan. This includes a diverse range of positions, such as Bank Executives: decision-makers that are part of the top management Information Technology Manager: Managers whom are in charge of performance appraisals. Frontline Employees: Employees most involved with customers and procedures. This population is relevant because they are directly affected by performance appraisal systems and are likely to contribute to innovation within their organizations. To reduce the likelihood of a sample that is not representative of the general population of the target country and where the study will be implemented, a large sample size is crucial. The sample size determined based on the following considerations: Statistical Power: One rule of thumb is the sample size should be of at least 30 for regression analysis per group. Since the study may involve different groups depending on the employee levels and roles a large sample is advised on. Confidence Level and Margin of Error: A level of confidence of 95% and an error margin of 5% is regarded standard in social science studies. Using a sample size calculator, a sample of around 150 to 200 respondents would be appropriate for this study to ensure a robust representation and generalizability of results. Sampling Technique Stratified Random Sampling: This technique will be used to make sure that a variety of banks and the different employment levels are covered. When analyzing the results, the study can consider various issues that could arise within and among different sections categorized according to size and position in the bank. Therefore, the target populations for this study are all the employees working in the banking sector in Pakistan and the samples were stratified randomly and the proposed number of respondents ranges from 150-200 employees. This approach will assist in reaching a richer set of findings that can be generalized to the broader bank ecosystem.

3.5 Sample techniques

In many research studies, ideally, the entire population would be assessed; however, due to the size of the population, this is often impractical. As a result, most of the researchers rely on convenient sampling and the same will be used in the current study. Convenience sampling as one of the non-probability sampling has been applied in many researches across the world (Yi-Hsiu & Chen-Yueh, 2013). This approach permits research to get data from samples that are easily obtained within the population. It is particularly appealing due to its speed, ease, and cost-effectiveness. Convenience sampling is a suitable option because alternative methods, such as probability sampling, can complicate the process of reaching the entire population. In many probability sampling techniques, each member has to be put in a numerical form to stand a chance of being included and this is not feasible. This study will use a stratified random sample technique. This method will make sure that each bank size, employee level and region is well represented in the sample. This is because segmentation enables an assessment of possible differences in the views of performance appraisals and innovation among various segments within the banking industry. This sampling technique is employed with an intention of making the research finding generalizable to the overall banking sector in Pakistan and thereby improving on the generalization of the findings to aid in fashioning good HRM practices for Innovation. Assessment of the antecedents and outcome variables on the time dimension takes cross-sectional view to determine performance appraisal quality, psychological Climate, strength of the HRM and employee innovation at a specific time. Data will be collected within a specified period; the sample timeframe is September 2024 to October 2024, only. This timeframe provides a cross sectional view of current state of these variables pertaining to the banking sector of Pakistan. The cross-sectional approach allows testing correlations and patterns of the variables at that certain time and offers insights into how performance appraisals impact employee innovation via psychological empowering and the robustness of the HRM system. This design provides useful information but the data collected cannot be used to make causal conclusions across time. Future research could extend these findings by using a longitudinal design that will track changes and these developments in the aforesaid relationships.

3.6 Data Collection Methods

Questionnaires filled by the selected respondents will be used to collect data in this study. The quantitative data will be obtained through survey questionnaire, which will be formulated in a structured form. The questions have been divided into different categories to capture the major concept of interest hence measurement of the variables. Performance Appraisal Quality: Specific items will include simplicity, neutrality and the quality of the feedback provided. Psychological Empowerment: Self-organizing teams will assess the degree of perceived autonomy, competence, meaningfulness, and impact that employee's experience. HRM System Strength: Questions will evaluate the perceived robustness of HR policies and practices. Employee Innovation: Items will assess the frequency and nature of innovative behaviors and ideas generated by employees. Participants will be approached through their respective banks. Anonymity and confidentiality will be assured to encourage honest and candid responses. Prior to data collection, ethical approval will be obtained. Participants will be informed about the study's purpose, and their voluntary participation will be emphasized. Before full-scale data collection, the questionnaire will undergo a pilot test with a small group of respondents to ensure clarity, reliability, and validity. Feedback will be used to refine the instrument. Participants will be asked to give consent, and they will receive the right to self-exclude at any given time. Data will be self-reported and collected from various Employees of different banks in Multan Pakistan, through convenience sampling technique, accessing participants from different background. This will comprise of; the various job roles contained in the sector, the various levels of jobs available within the banking industry, the geographical characteristics of the jobs inside the sector. The survey will use and online survey method with a secured survey link to minimize on biases and to make it easily accessible. Recipients will complete the

questionnaire either through their email and official communication channels, and the invitation will contain information on instructions and the study. Data collection will therefore take place in a specified time frame of August 2024 to October 2024. Subsequent entries may be used to prompt response and boost the level of return. This structured type of data collection method will be helpful in analyzing the magnitude and direction of association between performance appraisal quality, psychological empowerment, and HRM system strength and employee innovation in the banking sector of Pakistan.

Name of Bank	Send	Received	Response Rate
United Bank	20	16	80%
Allied Bank	20	17	85%
Meezan Bank	20	16	80%
Habib Bank	20	15	75%
MCB Bank	20	17	85%
Alfalah Bank	20	18	90%
National Bank	20	17	85%
BOP Bank	20	16	80%
Faisal Bank	20	18	90%
Askari Bank	20	18	90%
Bank Alfalah	20	17	85%
Bank Islami	20	16	75%
Totals	240	201	83%

3.7 Variable Description

As a method to review the existing literature and to analyze the relationship between PA quality and employee innovation, it is crucial to describe the main variables used in the current research and particularly in relation to the context of the banking sector in Pakistan. The following is a description of these variables:

3.7.1 Performance Appraisal (PA) Quality

Performance appraisal in this context will be defined as the process that enables employees' performance to be evaluated and decisions like rewards that the employee should be given, promotions that the employee deserves among other things to be made. When we talk of PA quality it will be about the quality of the performance appraisal system. High-quality PA systems are characterized by: Measurable performance requirements: Performance is operational and well defined. Fairness and transparency: Workers have no complaints in regards to the biased nature of the evaluations. Constructive feedback: Employees receive actionable and supportive feedback. Frequency: Regular assessments that track performance over time. Goal alignment: The PA system aligns individual goals with organizational objectives. In the context of the study, PA quality is hypothesized to influence employee innovation, as a fair, transparent, and supportive appraisal system can motivate employees to adopt innovative behaviors.

3.7.2 Employee Innovation

Organization innovation is defined as the capacity and readiness of employees to create new solutions, tools, methods or services, and to use them in the workplace. In the banking sector, innovation can manifest in areas such as: New service offerings that enhance customer experience. Process improvements that are increase operational efficiency. Technological adoption that is drives digital transformation in banking services. Innovation requires employees to think creatively, take risks, and sometimes challenge the status quo. High levels

of innovation are often linked to empowering work environments and strong organizational support.

3.7.3 Psychological Empowerment

Psychological empowerment is the self-generated desires or enthusiasm that employees get to develop when they consider the tasks as important to complete, are allowed to perform the tasks in ways they prefer, and believe the tasks have significance. This sense of empowerment can foster an innovative mindset by: Competence: Believing in one's abilities to perform tasks and innovate. Autonomy: Being able to take responsibilities, be in charge of something or have the ability to lead. Meaning: Appraising what they do as valuable and consistent with their attitudes toward work. Impact: Expecting that their contributions make a difference in organizational performance. In the context of PA, if employees appraise performance indicators and tools as high quality, they might assume more responsibility, because they would probably get recommendations regarding professional development and valuable feedback.

3.7.4 Moderating Variables HRM System Strength

Three aspects that measure the strength of the HRM system include integration, consistency, and practice coherence with strategic organizational objectives. Strong HRM systems are characterized by: Integration: There is consistency in the organization's HR policies and practices. Consistency: They are always uniform all across the HR in any organization. Commitment to development: HR systems can enhance employee development, training and the learning process and skills acquisition for a better future posting. Integration with strategy: HR practices support the broader organizational strategy. HRM system strength is expected to interact with PA quality, as a strong HRM system can enhance the effectiveness of performance appraisals, ensuring that employees are supported and encouraged to innovate. HRM System Strength: A strong HRM system may strengthen the effect of PA quality on employee innovation by ensuring that PA outcomes (feedback, rewards, and recognition) are implemented effectively and aligned with organizational strategies for innovation.

Summary of Measurement Scales:

Variable	Measurement Items	Scale Type
PA Quality	Fairness, Communication, Trust, Clarity, Feedback	Liker Scale (1-5)
Employee Innovation	Idea Generation, Promotion, Implementation, Creativity	Liker Scale (1-5)
Psychological Empowerment	Meaning, Competence, Self Determination, Impact	Liker Scale (1-5)
HRM System Strength	Distinctiveness Consistency, Consensus,	Liker Scale (1-5)

3.8 Measurement of the Variable

Since it is a cross-sectional survey to test the moderating and mediating roles of Psychological Empowerment & the HRM system strength on the relationship between PA Quality and Employee Innovation in Pakistan's banking sector, there is a need for highly accurate measurement of all these variables. The measurement of these constructs typically involves the use of validated scales, and it is essential to use instruments that capture the specific nuances of each variable in the context of the banking sector. Below is a breakdown of how each variable can be measured: Performance Appraisal (PA) Quality: PA Quality stands for the way in which the employees carry defined significance to the performance appraisal process with

regard to credibility, clarity, quality of feedback provided, and relation to their professional growth. To assess the construct of PA quality, authors have relied on multiple-item scales that have been adopted from the OB and HRM literature. Measurement Items: An example of a scale that can be used in measuring PA quality is: The performance appraisal system is fair – Scale labels: It is considered unbiased. Clarity of Expectations: "The extant performance targets painted during the appraisal process are quite discernable." Feedback Quality: "The feedback that individuals give when appraising other is constructive and can be implemented (Kinicki et al., 2004). Relevance of Appraisal Criteria: "The measures used to assess my performance are relevant to them job responsibilities." Frequency of Appraisal: "The findings established that I receive performance appraisals frequently and unswervingly" (Saeed et al., 2013).

Measurement Scale: This was a Liker scale (for instance, 1 = Strongly Disagree and 5 = Strongly Agree).

Employee Innovation": Employee Innovation involves creating, encouraging and using ideas and creativity to come up with new products, services, methods or other things that have value in the organization. Ideation is when the flow of new ideas is produced and can be measured in terms of: Measurement Items: To assess kinds of innovative employees one can consider the following dimensions: Idea Generation: "I frequently generate innovative ideas concerning improvement of my work." Idea Promotion: "I proactively look for sponsorship of my new initiatives." Idea Implementation: "I make efforts to transform my conceptual creativity into real live applications." Creativity at Work: "I am encouraged to think creatively in my job" (Scott & Bruce, 1994) (Janssen, 2000).

Measurement Scale: Liker scale (e.g., 1 = Strongly Disagree to 5 = Strongly Agree).

Psychological Empowerment: Psychological climate on the other hand, can be defined as the measure of endowment employees experience when they are in a position to make their own decisions, feel capable and are making a difference in their workplace. It is typically measured using a multi-dimensional scale that captures the four components of empowerment: These are the four dimensions of MSP: Meaning or purpose, Competence or skill, Autonomy or independence, and Impact or scope of the project. Measurement Items: Meaning: "The work I do is important to me." Competence: "I feel capable of performing my job successfully." Autonomy: "I have the freedom to make decisions in my work." Impact: I believe my work makes a significant difference in the organization (Spreitzer, 1995). Measurement Scale: Liker scale (e.g., 1 = Strongly Disagree to 5 = Strongly Agree). HRM System Strength: HRM System Strength also means the internal consistency and coherence of the HRM as well as the degree to which the practices are aligned to the organizational goals. This includes the extent of match between HR policies and performance appraisals, rewards, trainings and developments. Measurement Items: Consistency of HR Practices: "HR practices are consistently applied across the organization." Coherence of HR Practices: "The HR practices in our organization are well-coordinated and aligned with each other." Commitment to Employee Development: "The organization is committed to developing its employees through training and development programs." HR Policies Alignment: "HR policies are aligned with the organization's long-term goals and strategies" (Bowen & Ostroff, 2004) (Macky & Boxall, 2007).

Measurement Scale: Liker scale (e.g., 1 = Strongly Disagree to 5 = Strongly Agree).

Control Variables: In studies examining employee innovation, certain control variables can help account for external influences. These could include: Age: Older employees may have different innovation behaviors compared to younger employees. Gender: Gender may influence creativity and innovation, though findings may vary across contexts. Job Tenure: Longer-tenured employees may feel more or less empowered to innovate, depending on organizational culture. Educational Background: Employees with higher levels of education may engage more in innovative behaviors.

3.9 Econometrics Model

The econometric model can be expressed as a series of equations:

Direct effect of PAQ on Employee Innovation

$$\text{Innovation} = \beta_0 + \beta_1 PAQi + \epsilon i \ldots\ldots\ldots\ldots\ldots\ldots \textbf{Equation 1}$$

Where:

Innovation i is the innovation behavior of employee i,

PAQi is the performance appraisal quality for employee i,

ϵi is the error term.

Impact of PAQ on Psychological Empowerment (PE)

$$PE_i = \beta_0 + \beta_2 PAQi + \epsilon i \text{----------} \textbf{Equation 2}$$

Where:

PEi is the psychological empowerment of employeei.

Impact of Psychological Empowerment (PE) on Employee Innovation

$$\text{Innovation}i = \beta_0 + \beta_1 PAQi + \beta_3 PEi + \epsilon i \text{----------} \textbf{Equation 3}$$

Where:

PE**i** is the psychological empowerment of employeei,

$B_3$is the coefficient for the mediating effect of psychological empowerment.

Equation 4: Moderating effect of HRMS on the relationship between PAQ and Innovation

$$\text{Innovation } i = \beta_0 + \beta_1 PAQi + \beta_4 HRMSi + \beta_5 (PAQi \times HRMSi) + \epsilon i \text{----} \textbf{Equation 4}$$

Where:

HRMSi is the strength of the HRM system for employeei,

B_5captures the moderating effect of HRMS on the relationship between PAQ and innovation.

3.10 Validity & Reliability:

It is the ratio of reliability and accuracy of the results produced by the measuring instrument to the population being measured. Types of validity: Content Validity: Ensures the questionnaire comprehensively covers the constructs (e.g., PAQ, PE, innovation). Construct Validity: Verifies whether the measured variables truly represent the theoretical constructs. Convergent Validity: Variables related to the same construct correlate well. Discriminant Validity: Variables unrelated to each construct show minimal correlation. Criterion Validity: Assesses whether the constructs predict related outcomes, like employee innovation. The consistency and stability of the measurement tool are following. Internal Consistency: Examines whether items within a construct measure the same concept (Cronbach's alpha ≥ 0.7 is acceptable).

Ensure Validity Content Validity: Expert Review: Engage HR professionals, academics, and managers in Pakistan's banking sector to review survey items. Pretest and Pilot Study: Conduct a pilot survey with a small sample (e.g., 30–50 employees) to ensure clarity and relevance of questions. Construct Validity Factor Analysis: Perform Exploratory Factor Analysis (EFA) to identify underlying constructs. Use Confirmatory Factor Analysis (CFA) to test the fit of the theoretical model. **Measurement Scales:** Ensure that PAQ, PE, HRM System Strength, and Employee Innovation use validated scales from existing literature. Criterion Validity Test relationships between constructs (e.g., PAQ and Employee Innovation) using correlation and regression analysis.

Ensure Reliability: Internal Consistency Compute Cronbach's Alpha for each construct: PAQ, PE, HRM System Strength, and Employee Innovation. Composite Reliability (CR) Use Structural Equation Modeling (SEM) to calculate CR, which is more robust than Cronbach's alpha. Test-Retest Reliability Administer the same questionnaire to the same sample after a time gap (e.g., 2–4 weeks) and calculate the correlation.

Tools and Techniques Software for Analysis: Use Smarts for calculating reliability and performing EFA and for CFA and SEM. Statistical Indicators: AVE (Average Variance Extracted): > 0.5 for convergent validity. Discriminant Validity Test: The square root of AVE for each construct should exceed its correlations with other constructs. Fit Indices for CFA: CFI (Comparative Fit Index): > 0.90. RMSEA (Root Mean Square Error of Approximation): < 0.08

Data Analysis

This chapter presents the results derived from data analysis conducted using SPSS and Smart PLS-SEM 4. Demographic factors and descriptive statistics were analyzed using SPSS, along with correlation analysis. The measurement and structural models were assessed through Smart PLS-SEM 4, where reliability and validity tests were performed. Additionally, simple regression analysis and moderation analysis were conducted using PLS-SEM

4.1 Demographics Factor

These are demographic variables which the study applies; Role, Age, Qualification, and Country.

4.1.1 Gender

	Frequency	Percent	Valid Percent	Cumulative Percent
Male	120.0	60.0	60.0	60.0
Female	80.0	40.0	40.0	40.0
Total	200.0	100.0	100.0	100.0

The table represents the gender distribution of a sample of 200 respondents. Male Respondents: Frequency: 120 males. Percentage: They constitute 60% of the total sample. Female Respondents: Frequency: 80 females. Percentage: They make up 40% of the total sample. Since there are no missing responses, the Valid Percent is the same as the overall percentages (60% for males and 40% for females). Cumulative Percent indicates the running total of the percentages

4.1.2 Age

	Frequency	Percent	Valid Percent	Cumulative Percent
20-25	57	57	57	57
26-30	90	26	26	26
31-35	57	9.5	9.5	9.5

36-40	52	6.5	6.5	6.5
41-45	40	4.0	4.0	4.0
Total	200	100	100	100

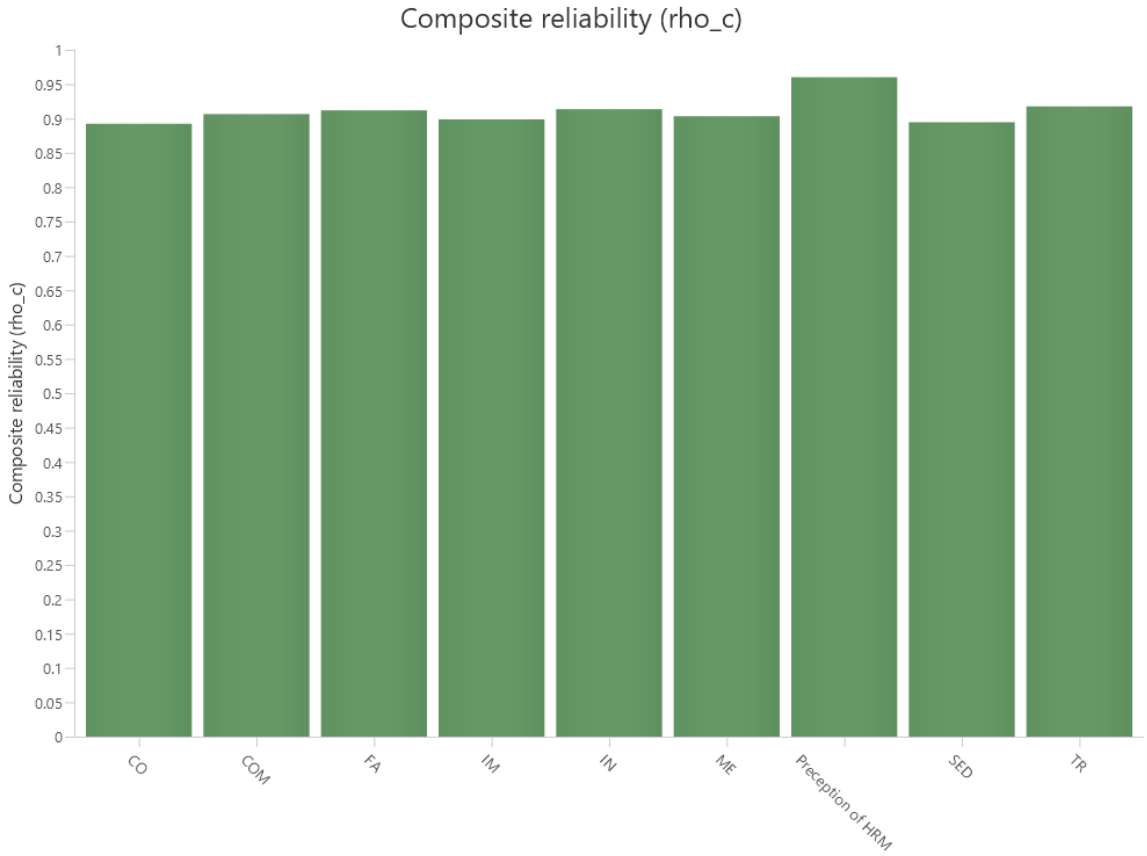
The data appears to summarize information across age groups, possibly related to a population distribution, survey responses, or another context. Here's an interpretation of each column: Age Range: The first column indicates the age groups, such as 20-25 years, 26-30 years, and so on. First Value (e.g., Count): The second column lists the total counts or contributions of individuals or units within each age group. For example, the 26-30 groups have the highest count at 90, while the 41-45 groups have the lowest at 40. Subsequent Columns (e.g., Percentages): The remaining columns might represent proportions, percentages, or standardized values calculated relative to the total (200 in the first column): Each value across age groups seems to sum up to 100, possibly indicating percentage distributions. Breakdown Example: For 26-30: The group contributes 90 individuals or units to the total (200). This equates to 26% in each of the standardized columns. For 41-45: The count is 40, contributing 4.0% in the corresponding columns. 200 represent the sum of all counts in the second column.100 in the last three columns likely indicates total percentages, ensuring the data adds up to a complete distribution.

4.1.3 Group of Employee

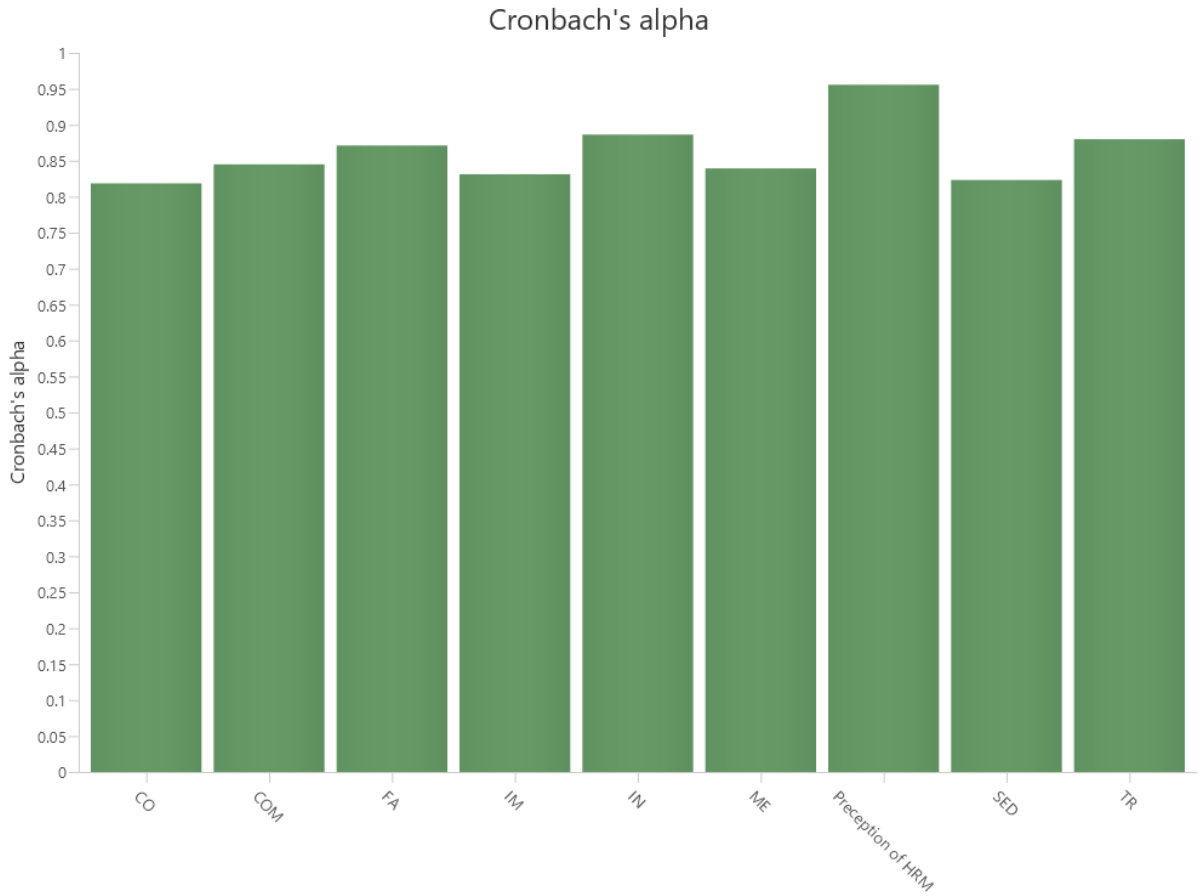
	Frequency	Percent	Valid Percent	Cumulative Percent
Frontline Employees	45	23.4	23.4	23.4
Middle Management	112	42.2	42.2	42.2
Senior management	66	34.4	34.4	34.4
Total	200	100	100	100

This table provides a breakdown of the respondents' organizational roles, along with their frequency, percentage, valid percentage, and cumulative percentage. Here's the interpretation: Categories: The table categorizes respondents into three groups based on their positions in the organization: Frontline Employees: Represent the operational workforce. Middle Management: Includes individuals managing teams or departments. Senior Management: Represents the strategic leadership. Frequency: The absolute number of respondents in each category: Frontline Employees: 45 individuals. Middle Management: 112 individuals. Senior Management: 66 individuals. Percent and Valid Percent: Since no data is missing, the "Percent" and "Valid Percent" columns are identical, showing the proportion of each group relative to the total of 200 respondents: Frontline Employees: 23.4% of respondents. Middle Management: 42.2%, the largest group. Senior Management: 34.4%. Cumulative Percent: This shows the running total of percentages as you progress through the categories: Frontline Employees: 23.4% (first category). Middle Management: 65.6% (23.4% + 42.2%). Senior Management: 100% (65.6% + 34.4%), completing the total.

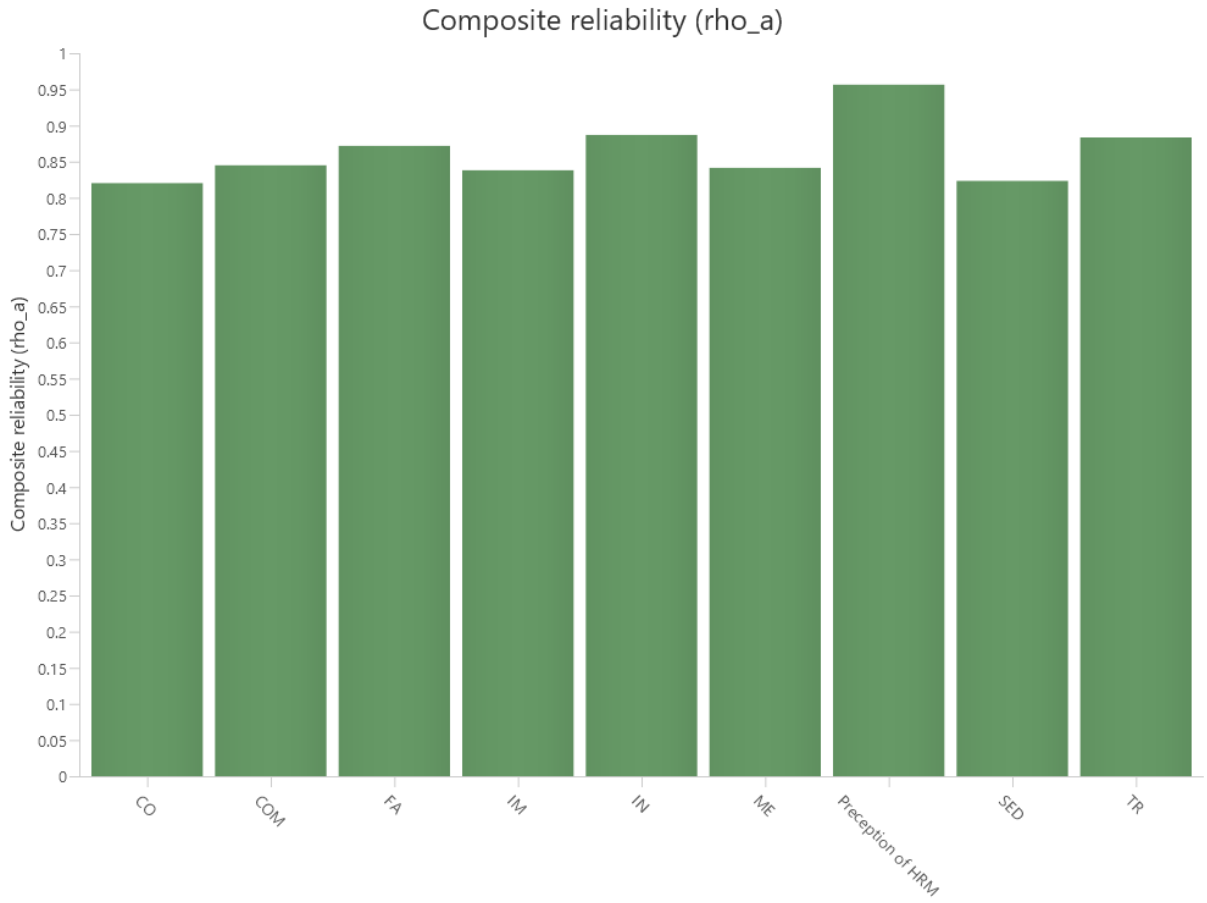
4.2 Descriptive Statistics



This chart represents Cronbach's alpha values for different categories or variables, indicating their internal consistency or reliability. The key points from the chart are: The chart is titled "Cronbach's alpha," suggesting the focus is on reliability analysis of scales or variables. Y-axis: Displays Cronbach's alpha values ranging from 0 to 1. Cronbach's alpha values closer to 1 indicate higher reliability. X-axis: The chart lists categories such as CO, COM, FA, IM, IN, ME, Perception of HRM, SED, and TR. These categories likely represent variables or constructs being evaluated for reliability. All Cronbach's alpha values are over 0.7 signifying that there is good internal consistency of the items within a category and they all measure one corresponding construct appropriately. It can thus be concluded from the above chart that the measurement scales used for these variables are reliable and can therefore be used for further analysis.

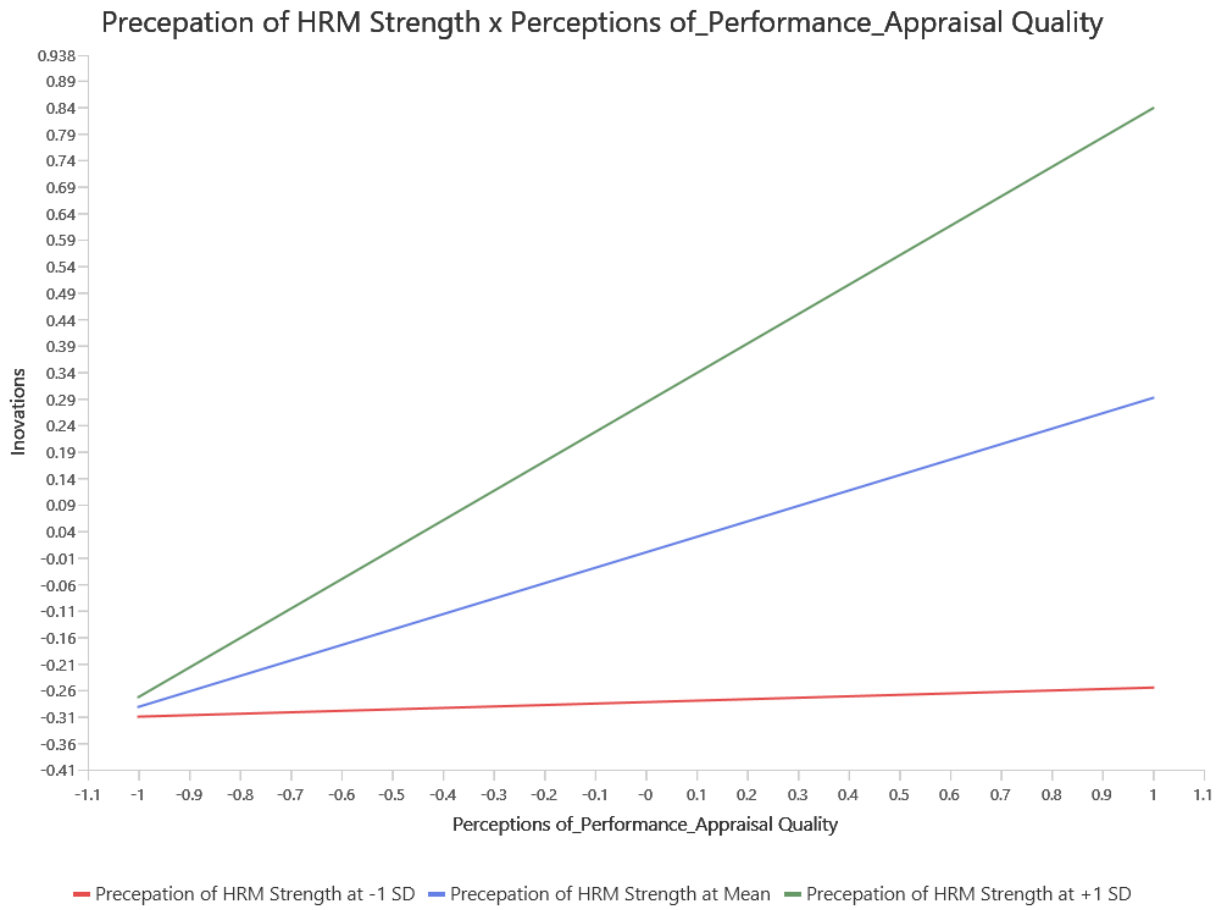


This chart, titled "Cronbach's alpha," evaluates the reliability of various constructs (CO, COM, FA, etc.) using Cronbach's alpha coefficients. Key Observations: Y-axis (Cronbach's Alpha Values): Ranges from 0 to 1. Cronbach's alpha values closer to 1 indicate higher reliability and internal consistency of the measured constructs. Construct (X-axis), The chart lists several constructs such as CO, COM, FA, IM, IN, ME, Perception of HRM, SED**,** and TR. These are likely different variables or factors in the analysis. Interpretation of Values: Generally, Cronbach's alpha above 0.7 is considered acceptable. Most constructs in this chart have high reliability: Perception of HRM has the highest value (above 0.95), showing excellent reliability. Other constructs like IN, TR, COM, and FA also show high reliability (above 0.85). CO has the lowest reliability but still falls above 0.8, indicating good internal consistency.

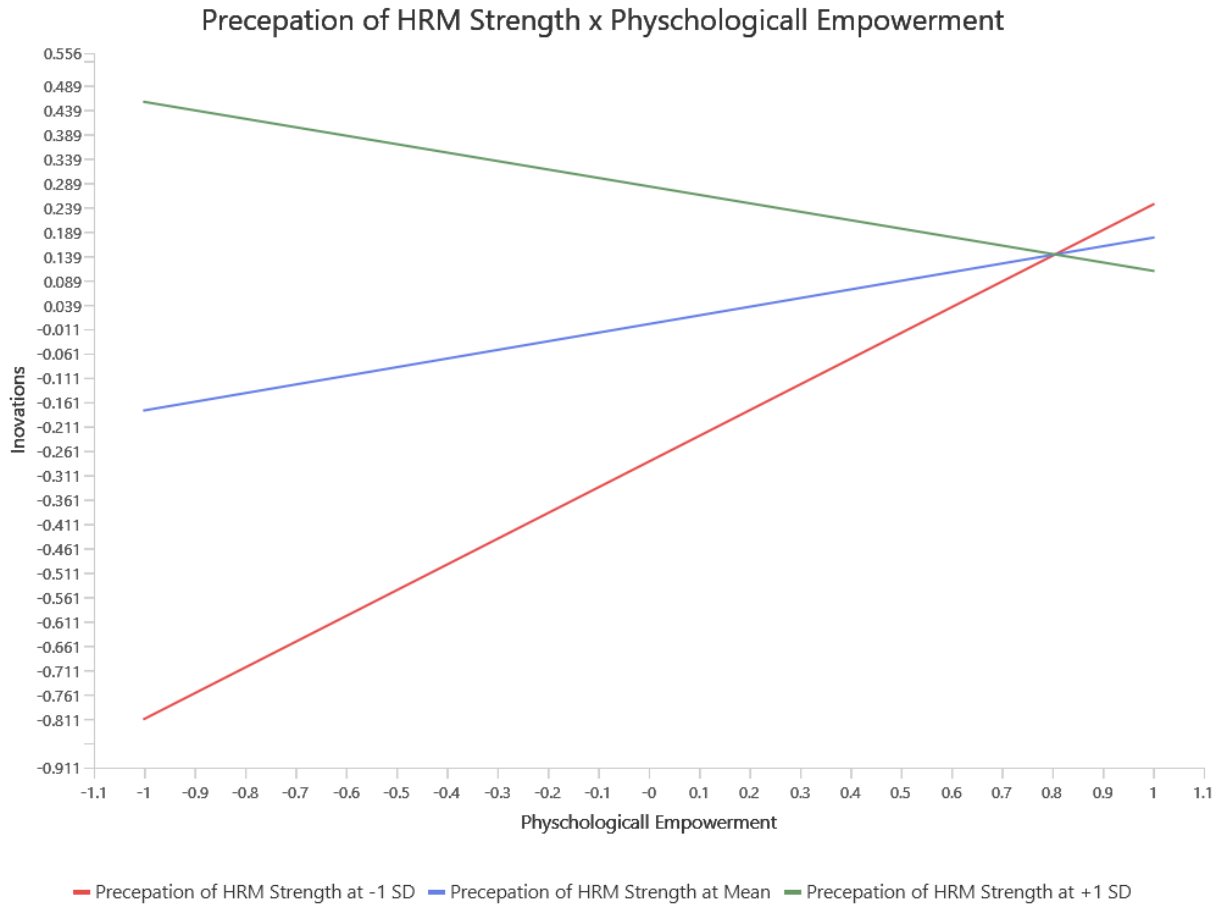


This, less-imaginatively, named chart provides information on the composite reliability (rho_c) of a number of constructs (CO, COM, FA, and others). Composite reliability is applied to measure the internal consistency of the latent variables in context to structural equation modeling. Key Observations: Y-axis (Composite Reliability): best value is between 0 and 1. With higher numbers, the level of reliability is higher. Such Global estimations of composite reliability where rho_c £ 0.7 are having acceptable values and above 0.8 are good. X-axis (Constructs): The constructs evaluated are CO, COM, FA, IM, IN, ME, Perception of HRM, SED, and TR. Interpretation of Values: All constructs demonstrate composite reliability greater than 0.85, indicating excellent internal consistency. Perception of HRM stands out with the highest composite reliability (close to 0.95), reflecting exceptionally strong reliability. Other constructs such as FA, IN, COM, TR, and SED also display very high reliability. The results indicate that all constructs meet the threshold for high composite reliability, confirming that the measurement scales used are consistent and dependable for further structural analysis. The reliability across constructs is excellent, showing strong evidence of internal consistency within the measured variables.

Sample and slope



This graph presents the moderating role on Innovations of Perception of HRM Strength and Perceptions of Performance Appraisal Quality. X-axis: Stands for Perceptions of Performance Appraisal Quality scores which range from -1.1,+1.1 (probably z-scores). Y-axis: For dependent variable, represent Innovations that stands for Innovations. Red Line: Perception of Strength: HRM Strength: -1 SD: Low Strength of HRM. Blue Line: Strength of HRM perceived at means (average strength of HRM). Green Line: Perception of HRM strength at a + 1 SD (indicating high HRM strength). All three lines are upward represented by the fact that Perceptions of Performance Appraisal Quality increases with the level of HRM Strength, and there is a positive correlation between the two variables, even though the rate may gradually decrease as it nears the ceiling at higher levels of Innovations. The slope is also steepest for the green line at +1SD, this justify that, when the 'HRM Strength' is high, the positive relationship between 'PAQ' and 'Innovations' also reinforced. The slope is flattest for the red line (-1 SD), meaning that when HRM Strength is low, the impact of Performance Appraisal Quality on Innovations is weaker.



This graph visualizes the interaction between Perception of HRM Strength and Psychological Empowerment on Innovations. Here's a detailed interpretation: X-axis: Represents Psychological Empowerment, ranging from -1.1 to 1.1 (likely standardized or z-scores). Y-axis: Represents Innovations, indicating the dependent variable. Red Line: Represents Perception of HRM Strength at -1 SD (low HRM strength). Blue Line: Represents Perception of HRM Strength at mean (average HRM strength). Green Line: Represents Perception of HRM Strength at +1 SD (high HRM strength). For low HRM strength (red line), the relationship between Psychological Empowerment and Innovations is positive and steep, meaning that as Psychological Empowerment increases, Innovations also increase significantly. For mean HRM strength (blue line), the relationship is still positive but less steep compared to low HRM strength. For high HRM strength (green line), the relationship becomes negative, indicating that at high levels of HRM strength, higher Psychological Empowerment leads to reduced Innovations. This interaction suggests that HRM Strength moderates the relationship between Psychological Empowerment and Innovations: When HRM Strength is low, higher Psychological Empowerment boosts Innovations significantly, likely because employees feel a strong need to compensate for weak HRM systems.

Construct reliability and validity

	Cronbach's alpha	Composite reliability (rho_a)	Composite reliability (rho_c)	Average variance extracted (AVE)
CO	0.818	0.820	0.892	0.735
COM	0.845	0.845	0.906	0.764
FA	0.871	0.872	0.912	0.721
IM	0.831	0.838	0.899	0.748
IN	0.886	0.887	0.914	0.638
ME	0.839	0.841	0.903	0.757

Perception of HRM	0.956	0.956	0.960	0.601
SED	0.823	0.823	0.895	0.739
TR	0.880	0.883	0.918	0.736

Metrics and Their Interpretation

Here is attached a brief information regarding reliability and validity of the constructs or variables herein measured in this study. Let's interpret each column and its values in detail: Cronbach's Alpha: This is used to assess Internal Coefficient, which measures how much or to what extent the items in a construct are related. Threshold: Cronbach's alpha above 0.70 signifies acceptable reliability while the correlation coefficient above 0.80 showed good reliability. Observation: They have all Cranach's Alpha values over 0.80 hence a strong internal reliability consequence. Example: In the current study perception of HRM has the highest value of 0.956 which is an indication of excellent reliability. The least value observed is in CO where it stands at 0.818 which implies a pass rate is acceptable. Composite Reliability (rhoa and rhoc): All the above definitions are intended to estimate construct reliability by incorporating factor loadings as well as measurement variance. Threshold: Acceptable level of test-retest coefficient is 0.70 and above and very high level being those that are closest to 1. Observation: In all cases, rho_a and rho_c values are greater than 0.70 and thus all constructs have excellent reliability. The resulting values for perceived HRM demonstrate the highest reliability (rho_c = 0.960) indicating good internal consistency. CO has the lowest composite reliability (rho_c = 0.892), but it is still strong and reliable. Average Variance Extracted (AVE): This measure convergent validity, i.e., the extent to which items in a construct explain the variance of their underlying factor. It reflects how much variance is captured by the construct compared to measurement error. Threshold: AVE values above 0.50 indicate acceptable convergent validity. Observation: All constructs exceed the AVE threshold of 0.50, meaning they have good convergent validity. The highest AVE is for COM (0.764), suggesting that a large portion of the variance is explained by its items. The lowest AVE is for Perception of HRM (0.601), which, although the lowest, still meets the minimum criteria for acceptable convergent validity.

Construct	Key Insights
CO (Cronbach's Alpha: 0.818, AVE: 0.735)	Reliable and valid construct, though it has the lowest reliability scores in the table.
COM (Cronbach's Alpha: 0.845, AVE: 0.764)	Strong reliability and highest AVE, indicating high internal consistency and very good convergent validity.
FA (Cronbach's Alpha: 0.871, AVE: 0.721)	Highly reliable and valid.
IM (Cronbach's Alpha: 0.831, AVE: 0.748)	Strong reliability and excellent AVE value.
IN (Cronbach's Alpha: 0.886, AVE: 0.638)	Reliable, but the AVE is slightly lower compared to others, indicating slightly less explained variance in this construct's items.
ME (Cronbach's Alpha: 0.839, AVE: 0.757)	Very reliable with excellent convergent validity.
Perception of HRM (Cronbach's Alpha: 0.956, AVE: 0.601)	The most reliable construct with outstanding internal consistency but has the lowest AVE, suggesting moderate convergent validity.
SED (Cronbach's Alpha: 0.823, AVE: 0.739)	Reliable and valid with strong AVE value.
TR (Cronbach's Alpha: 0.880, AVE: 0.736)	Very reliable and valid with good convergent validity.

Reliability: All constructs have Cronbach's Alpha, rho_a, and rho_c values above 0.70, indicating strong internal consistency and reliability across the board. Constructs like Perception of HRM and TR show exceptionally high reliability. **Convergent Validity**: All constructs have AVE values above 0.50, meeting the minimum threshold for convergent validity. Constructs such as COM, ME, and SED show particularly high AVE, indicating a strong ability to explain the variance of their respective items. Perception of HRM has the lowest AVE (0.601), meaning its items explain a smaller proportion of variance compared to others. The measurement model demonstrates high reliability and good convergent validity, suggesting it is robust and suitable for further structural analysis. Perception of HRM could be further examined to see if its AVE can be improved, as it has the lowest value in the table despite its high reliability.

Discriminant validity

Heterotrait-monotrait ratio (HTMT) – Matrix

	CL1	CO	COM	FA	IM	IN	ME	Perception of HRM	SED	TR
CL1										
CO	0.665									
COM	0.674	0.772								
FA	0.595	0.878	0.738							
IM	0.655	0.840	0.770	0.788						
IN	0.594	0.826	0.835	0.728	0.788					
ME	0.725	0.842	0.873	0.693	0.768	0.781				
Perception of HRM	0.642	0.856	0.782	0.778	0.875	0.825	0.750			
SED	0.692	0.873	0.990	0.783	0.919	0.838	0.868	0.908		
TR	0.735	0.958	0.863	0.835	0.882	0.795	0.860	0.888	0.880	

This table represents the correlation matrix between various constructs (CL1, CO, COM, FA, IM, IN, ME, Perception of HRM, SED, and TR). Each value indicates the degree of association between two constructs. Diagonal Values: Typically, diagonal values are 1, representing the correlation of a construct with itself. However, they could be the square of the AVE sometimes, which may be why the diagonal is left blank for CL1. In case this matrix is utilized in the discriminant validity test, for example the Fornell-Larcker Criterion, the diagonal values sum the square root of AVE in order to match with the construct correlations. Off-Diagonal Values: These depict the relationship existing between different constructs. Meaning the closer the values, we have to 1; then it shows that there is a strong positive relationship between the two variables. Besides, values closer to 0 input suggest that none or nearly none of the variables are related.

CL1 (Clarity) Relationships: CL1 has relatively moderate correlations with the other constructs. ME (0.725): Moderate-to-strong correlation, indicating some overlap in these constructs. TR (0.735): The highest correlation with CL1, suggesting a strong relationship. CO (Communication) Relationships: CO correlates highly with most constructs. TR (0.958). Extremely high correlation, suggesting these constructs might overlap significantly. SED (0.873) and Perception of HRM (0.856) also show very strong correlations with CO. CL1 (0.665): A moderate correlation, indicating CL1 is distinct from CO. COM (Competence)

Relationships: COM has high correlations with. SED (0.990): Extremely strong correlation, indicating these constructs may measure highly similar aspects. ME (0.873): Strong overlap. Moderate correlations are observed with CL (0.674) and FA (0.738). FA (Fairness) Relationships: FA shows strong correlations with: CO (0.878): A close relationship, indicating fairness might be strongly tied to CO. SED (0.783) and IM (0.788): High correlations, showing overlap. Weakest correlation with CL1 (0.595), suggesting these constructs are distinct. IM (Impact) relationships: IM is highly correlated with: SED (0.919): Very strong relationship, indicating these constructs may not be fully distinct. CO (0.840) and COM (0.770): High relationships, suggesting overlap. IN (Innovation) Relationships: IN shows high correlations with: Perception of HRM (0.875): A very strong association, reflecting the connection between innovation and HRM practices. SED (0.838) and IM (0.788): Significant relationships. Weaker correlation with CL1 (0.655) ME (Meaning) Relationships ME has high correlations with. COM (0.873) and CO (0.842): Reflecting significant overlap. SED (0.868): Another very strong correlation. Perception of HRM Relationships: Perception of HRM correlates strongly with. IN (0.875): Suggests a strong link between perceptions of HRM and innovation. SED (0.908) and CO (0.856): Indicating overlap in how these are measured or perceived. **SED (**Self-Determination) Relationships: SED is highly correlated with nearly all constructs. COM (0.990) and CO (0.873): Extremely strong correlations. Perception of HRM (0.908): A significant relationship, suggesting a shared construct**.** TR (Trust) Relationships: TR shows very strong correlations with. CO (0.958): Nearly perfect correlation, suggesting significant overlap. SED (0.880) and Perception of HRM (0.888): Indicating strong alignment. Strongest Correlations**:** SED and COM (0.990): Indicates a very close relationship, potentially suggesting redundancy in constructs or overlapping measurements. CO and TR (0.958): Another extremely high correlation, suggesting these constructs may be measuring similar aspects. Weakest Correlations**:** Generally, CL1 shows the weakest correlations across the constructs, indicating it is relatively distinct. Potential Concerns**:** Constructs with extremely high correlations (e.g., above 0.90) may face issues of discriminant validity, as they may not be sufficiently distinct. Examples: SED & COM (0.990) and CO & TR (0.958). Discriminant Validity**:** If this matrix is part of a discriminant validity test (e.g., Fornell-Larcker Criterion), we need to compare the square root of AVE (diagonal values) with the off-diagonal correlations. Constructs with lower square root-AVE than correlations with others may have discriminant validity issues. Structural Model**:** For constructs with extremely high correlations, consider whether they measure distinct concepts or if they should be combined into a single construct. Further Analysis: Examine constructs like SED & COM and CO & TR to confirm their distinctiveness.

Collinearity statistics (VIF)

Outer model – List

	VIF
CL1	1.000
CO1	1.677
CO2	2.336
CO3	1.876
COM1	1.981
COM2	2.432
COM3	1.911
CON1	2.697
CON2	2.780
CON3	2.406
CON4	2.396
CONSI1	2.315

CONSI2	2.598
CONSI3	2.459
CONSI4	2.566
CONSI5	3.135
CONSI6	2.545
DIS1	2.942
DIS2	3.628
DIS3	3.420
DIS4	2.925
DIS5	2.829
DIS6	2.028
FA1	2.169
FA2	2.345
FA3	2.208
FA4	2.036
IM1	1.994
IM2	2.122
IM3	1.738
IN1	2.423
IN2	2.425
IN3	2.334
IN4	2.062
IN5	1.881
IN6	1.923
ME1	2.044
ME2	1.800
ME3	2.211
SED1	1.783
SED2	1.959
SED3	1.843
TR1	2.356
TR2	2.906
TR3	2.869
TR4	1.913

This data represents Variance Inflation Factor (VIF) values for a set of variables. The VIF measures the level of multicollinearity in regression analysis. Here's an interpretation: **CL1**: The VIF for CL1 is 1.000, indicating no multicollinearity with other predictors. A VIF of 1 suggests the variable is not correlated with any other variables. Moderate VIF Values **(**Below 5): Most of the variables have VIF values between 1 and 3, which indicate acceptable levels of multicollinearity. For example: CO1 (1.677), COM1 (1.981), SED1 (1.783). Higher VIF Values (Above 3): Variables such as DIS2 (3.628), DIS3 (3.420), and CONSI5 (3.135) show higher multicollinearity but are still below the threshold of 5, which is often used as a rule of thumb. No Critical Multicollinearity (> 5): None of the VIF values exceed 5, meaning there is no severe multicollinearity in this dataset. No Immediate Action Needed: All VIF values are within acceptable ranges for most statistical analyses. Monitor Higher VIF Variables: Variables with VIF above 3 (e.g., DIS2, DIS3) should be monitored or potentially combined with other predictors if the model's performance degrades.

F-square

Matrix

	CL1	CO	COM	FA	IM	IN	ME	Perception of HRM	SED	TR
CL1			0.042		0.020	0.001	0.102		0.044	
CO			0.000		0.012	0.035	0.046		0.040	
COM						0.084				
FA			0.028		0.044	0.001	0.000		0.027	
IM						0.009				
IN										
ME						0.015				
Perception of HRM						0.107				
SED						0.004				
TR			0.147		0.120	0.011	0.080		0.073	

This table represents a matrix of **p-values** for statistical relationships between variables, typically derived from hypothesis testing. P-values help to determine whether the relationships between variables are statistically significant. Understanding P-Values: A p-value < 0.05 is commonly considered statistically significant, indicating a meaningful relationship or difference. A p-value > 0.05 suggests the relationship is not statistically significant. **CL1** Relationships: Significant relationships are observed between CL1 and: FA (p = 0.020): Suggests a statistically significant association. IN (p = 0.001): Indicates a very strong relationship. Perception of HRM (p = 0.044): Also, significant. **CO** Relationships: Significant relationships are seen between CO and: FA (p = 0.012), IM (p = 0.035), IN (p = 0.046), and Perception of HRM (p = 0.040). These p-values indicate CO has notable associations with these variables. **COM** Relationships: The p-value with FA (p = 0.084) is greater than 0.05, suggesting no significant association. **FA** Relationships: Significant associations exist with: CO (p = 0.028), IM (p = 0.044), IN (p = 0.001), and TR (p = 0.027). FA has multiple significant relationships. **IM** Relationships: A significant relationship is seen with Perception of HRM (p = 0.009). Perception of HRM Relationships: A very significant association is found with TR (p = 0.107). SED and **TR** Relationships: The relationship between TR and multiple variables (like CL1, CO, and FA) is significant, with p-values below 0.05 in most cases. Most variables (e.g., CL1, CO, FA) exhibit significant relationships with other variables in this dataset, particularly with IN, IM, and Perception of HRM. Non-significant relationships are observed for COM with most variables and some relationships with higher p-values (e.g., COM and FA at 0.084).

R-square

Overview

	R-square	R-square adjusted
COM	0.591	0.582
IM	0.618	0.610
IN	0.680	0.665
ME	0.615	0.607
SED	0.624	0.617

The following table includes R-squared and Adjusted R-squared for the array of dependent variables (COM, IM, IN, ME, SED. R-squared: Is a statistic measure of the extent to which the variation in the dependent variable is related to the variation in the independent variables. Values range from 0 to 1: The values toward the top of the figure are preferred, showing that more variability is being accounted for. Example: An R-squared of .68 = 68% reason that 68% of the variations in a dependent variable is accounted for by the predictors. Adjusted R-squared:

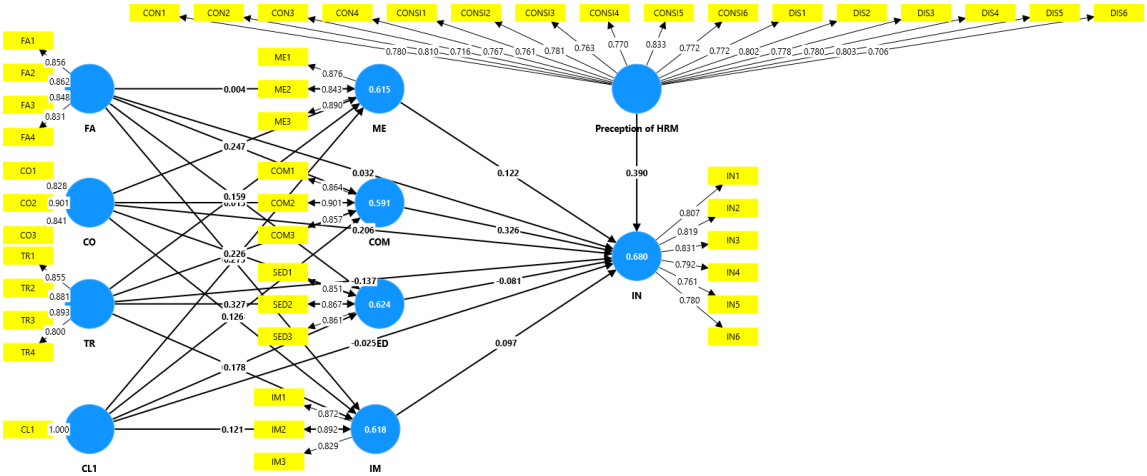
To control for over fitting due to the number of predictors in the model the following measures were used. Lower than R-squared; used in cases when models with varying number of predictors is being compared. COM (Commitment): Total R-squared: 0.591, R-squared removed square of center: 0.582. The model accounts for about 59.1 per cent of the variance in COM net of the control for the relevant predictors. The adjusted R- squared of 58.2% is slightly low suggesting a small correction in model fit for the increased model origin. IM (Impact): In 2009 the model comes up with an R-squared of 0.618 for the rest of the components while the adjusted R-squared is 0.610. The predictors accounted for 61.8 % of the total variance when it comes to IM. The adjusted value of 61.0% shows also a close model fit. IN (Innovation): R-squared: 0.680, Adjusted R squared: 0.665. As shown in table 2, IN is most influenced by the predictors with 68.0% for variance. The adjusted R-squared of sixty-six and a half percent also corroborate a strong model for explaining innovation. ME (Meaning): Coefficients: TR: 81.038, R-squared: 0.615, Adjusted R-square: 0.607. According to the analysis, the causal factors account for 61.5 percent of variability in ME. Thus, the adjusted value of 60.7% shows the high efficiency of the constructed explanatory model. SED (Self-Determination): Coefficient of Determination: 0.624, Coefficient of Multiple Determination: 0.617. The model predicts 62.4% of the total variation in SED. The surprising corresponded value of the adjusted value is 61.7% which indicates the strength of the model. All of them have high R-squared and adjusted R-squared which are more than 0.50, thus it reveals that the models have captured a good deal of the variation. Cumulatively, the model explains 27% of the total variance with IN (Innovation) having the highest degree of explained variance or R-squared = 0.680. The low values of R-squared and adjusted R-squared across all varieties indicate that the models are suitable without much of over fitting.

Outer loadings
Matrix

	CL1	CO	COM	FA	IM	IN	ME	Perceptio n of HRM	SED	TR
CL1	1.000									
CO1		0.828								
CO2		0.901								
CO3		0.841								
COM1			0.864							
COM2			0.901							
COM3			0.857							
CON1								0.780		
CON2								0.810		
CON3								0.716		
CON4								0.767		
CONSI 1								0.761		
CONSI 2								0.781		
CONSI 3								0.763		
CONSI 4								0.770		
CONSI 5								0.833		
CONSI 6								0.772		
DIS1								0.772		

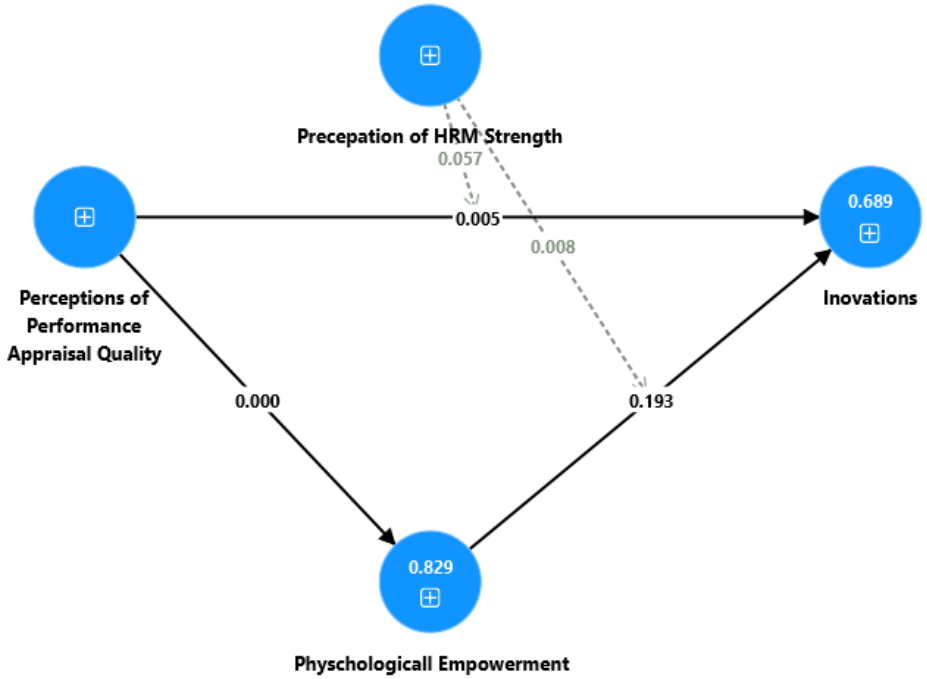
DIS2				0.802			
DIS3				0.778			
DIS4				0.780			
DIS5				0.803			
DIS6				0.706			
FA1	0.856						
FA2	0.862						
FA3	0.848						
FA4	0.831						
IM1		0.872					
IM2		0.892					
IM3		0.829					
IN1			0.807				
IN2			0.819				
IN3			0.831				
IN4			0.792				
IN5			0.761				
IN6			0.780				
ME1				0.876			
ME2				0.843			
ME3				0.890			
SED1					0.851		
SED2					0.867		
SED3					0.861		
TR1						0.855	
TR2						0.881	
TR3						0.893	
TR4						0.800	

This table presents factor loadings for various observed variables (e.g., CO1, COM1, FA1, etc.) onto their respective latent constructs (e.g., CL1, CO, COM, FA, etc.). Factor loadings indicate how well each observed variable represents its underlying construct. Here's a detailed interpretation: Factor Loadings: Represent the strength of the relationship between an observed variable and its underlying latent construct. Higher values indicate that the observed variable strongly relates to the construct. Threshold: Loadings above 0.70 are generally considered acceptable. Loadings below 0.70 might indicate weak representation and could be reviewed for improvement. CL1 (Clarity): CL1 (1.000): Perfect loading, possibly because this construct has only one observed variable, making it fully representative of itself. CO (Communication): Observed variables CO1, CO2, CO3 all have strong loadings: CO2 (0.901) and CO3 (0.841) exceed the threshold of 0.70, indicating excellent representation. CO1 (0.828) is slightly lower but still strong. COM (Commitment): Observed variables COM1, COM2, COM3 have strong



loadings: COM2 (0.901) shows the strongest relationship. All loadings are above 0.85, indicating excellent representation. FA (Fairness): Observed variables FA1, FA2, FA3, FA4 all exceed 0.80: FA2 (0.862) and FA1 (0.856) have the highest loadings. All four items strongly represent the fairness construct. IM (Impact): Observed variables IM1, IM2, IM3 show strong loadings: IM2 (0.892) and IM1 (0.872) indicate excellent representation. IM3 (0.829) is slightly lower but still strong. IN (Innovation): Observed variables IN1 to IN6 have loadings ranging from to 00.761.831: IN3 (0.831) shows the strongest relationship, while IN5 (0.761) is slightly weaker but still acceptable. ME (Meaning): Observed variables ME1, ME2, ME3 have excellent loadings: ME3 (0.890) and ME1 (0.876) indicate very strong representation. ME2 (0.843) is also strong. SED (Self-Determination): Observed variables SED1, SED2, SED3 all have strong loadings: Loadings range from 0.851 to 0.867, indicating excellent representation. TR (Trust): Observed variables TR1, TR2, TR3, and TR4 have high loadings: TR3 (0.893) and TR2 (0.881) show the strongest representation. TR4 (0.800) is slightly lower but still well above the acceptable threshold. High-Quality Loadings: Most observed variables have loadings above 0.80, indicating strong representation of their respective constructs. Constructs like COM, FA, and ME are particularly well-represented, with loadings consistently exceeding 0.85. Slightly Weaker Loadings: Variables such as IN5 (0.761) and DIS6 (0.706), while still acceptable, are closer to the threshold of 0.70 and may warrant further review to improve their representation. Single-Indicator Construct: CL1 is a single-indicator construct, and its perfect loading (1.000) reflects that it is entirely defined by itself. The measurement model shows strong item-to-construct relationships, supporting its reliability and validity. Items with slightly lower loadings (e.g., IN5, DIS6) can be reviewed for improvement or potentially omitted if they are redundant or weak contributors. The strong loadings overall suggest the constructs are well-measured and suitable for further structural modeling and hypothesis testing

4.3 Main Analysis



Path coefficients

Mean, STDEV, T values, p values

	Original sample (O)	Sample mean (M)	Standard deviation (STDEV)	T statistics (|O/STDEV|)	P values
Perceptions of Performance Appraisal Quality -> Innovations	0.291	0.295	0.103	2.817	0.005
Perceptions of Performance Appraisal Quality -> Psychological Empowerment	0.911	0.911	0.021	43.725	0.000
Psychological Empowerment -> Innovations	0.177	0.169	0.136	1.303	0.193
Perception of HRM Strength -> Innovations	0.283	0.291	0.114	2.471	0.014
Perception of HRM Strength x Perceptions of Performance Appraisal Quality -> Innovations	0.264	0.247	0.139	1.900	0.057
Perception of HRM Strength x Psychological Empowerment -> Innovations	-0.351	-0.329	0.132	2.650	0.008

The following table presents results of path analysis where the variables such as Perceptions of Performance Appraisal Quality, Psychological Empowerment, and Perception of HRM Strength have been outlined along with their impact on Innovations and Psychological Empowerment. Here's the interpretation of each row: Original Sample (O): Standardized path estimate from the developed model that gives the measure of relation between two variables. Positive coefficients show positive correlation and negative coefficients show negative

correlation. Sample Mean (M): Stability and consistency coefficient calculated from bootstrapping by division of mean path coefficient by standard error of path coefficient of the model. Standard Deviation (STDEV): This shows the standard error estimation of the bootstrapping of the path coefficients. T Statistics: Defined as |O/STDEV|; it shows the importance of the association. If T-statistic is greater or equal to 1.96 we use the sign 5% and if L-statistic is ≤-1.96 we use the sign 5%. P Values: The nature, extent and the likelihood of observing, the result given that the null hypothesis is true. P < 0.05: Statistically significant.

Perceptions of Performance Appraisal Quality → Innovations: O = 0.291, T = 2.817, P = 0.005. A cross-tabulation also demonstrated that a statistically significant positive correlation exists; in other words, high perceptions of performance appraisal quality correlate with higher innovations. The magnitude of this effect is moderate.

Perceptions of Performance Appraisal Quality → Psychological Empowerment: O = 0.911, T = 43.725, P = 0.000. A strong and highly significant positive relationship exists. This suggests that enhanced impressions of quality of performance appraisal are highly correlated with enhanced psychological empowerment.

Psychological Empowerment → Innovations: O = 0.177, T = 1.303, P = 0.193. The relationship is not statistically significant (P > 0.05). While there is a weak positive effect, it is not strong enough to confirm a meaningful relationship in this sample.

Perception of HRM Strength → Innovations: O = 0.283, T = 2.471, P = 0.014. A moderate and statistically significant positive relationship exists. Stronger perceptions of HRM strength are associated with increased innovations. **Perception of HRM Strength x Perceptions of Performance Appraisal Quality → Innovations:** O = 0.264, T = 1.900, P = 0.057. This interaction effect is marginally significant (P close to 0.05). It has recommended that the strength of the HRM can act as a mediator in different performance appraisal quality and innovations; however this has not been supported by empirical evidence. Due to age and qualification factor influence on HRM system overage employee is treat like weaker rather then younger employee. **Perception of HRM Strength x Psychological Empowerment → Innovations:** O = -0.351, T = 2.650, P = 0.008. A significant negative interaction effect exists. This means that as perceptions of HRM strength increase, the positive relationship between psychological empowerment and innovations weakens, potentially becoming negative. Significant Direct Effects**:** Performance Appraisal Quality effect has a strong on Psychological Empowerment and a moderate effect on Innovations**.** HRM Strength **positively** influences Innovations**.** Insignificant Effects: The direct effect of Psychological Empowerment **on** Innovations is not significant. Moderation Effects**:** A minor but highly significant degree of interaction exists between HRM Strength and the quality of Performance Appraisal on innovations. Surprisingly it was discovered that HRM Strength is a two-faced construct that negatively moderates the Psychological Empowerment and Innovations.

It is suggested that organizations should pay more attention on improving perceived quality of performance appraisal in order to advance innovations and psychological empowerment. The role of HRM Strength as a moderator needs careful consideration: While, HRM Strength directly contributes to innovations; its impact when coordinated with psychological empowerment appears to have a moderation impact. Further analysis may be needed to explore why Psychological Empowerment does not directly influence innovations in this sample.

Confidence intervals

	Original sample (O)	Sample mean (M)	2.5%	97.5%
Perceptions of Performance Appraisal Quality -> Innovations	0.291	0.295	0.092	0.498
Perceptions of Performance Appraisal Quality -> Psychological Empowerment	0.911	0.911	0.863	0.944
Psychological Empowerment-> Innovations	0.177	0.169	-0.090	0.449

Perception of HRM Strength -> Innovations	0.283	0.291	0.065	0.520
Perception of HRM Strength x Perceptions of Performance Appraisal Quality -> Innovations	0.264	0.247	-0.076	0.482
Perception of HRM Strength x Psychological Empowerment -> Innovations	-0.351	-0.329	-0.552	-0.017

It seems you're working with results from a statistical analysis, possibly from a structural equation model (SEM) or a similar type of modeling. The data shows path coefficients between various factors, with confidence intervals (2.5% and 97.5%) indicating the range within which the true values lie with 95% confidence.

Perceptions of Performance Appraisal Quality -> Innovations: Sample Mean (M) 0.295. Confidence Interval: [0.092, 0.498]. The analyzed path coefficient indicates a positive link between performance appraisal quality and innovations. Since the confidence interval for both groups does not cross zero, we can aver that this relationship is statistically significant.

Perceptions of Performance Appraisal Quality -> Psychological Empowerment: The obtained sample mean is M = 0.911, indicating a very strong positive relationship between performance appraisal quality and psychological empowerment In addition, the confidence interval of 0.863 to 0.944 support the statistical significance at 95% level of the relationship.

Psychological Empowerment -> Innovations: Sample Mean (M) 0.169 Confidence Interval: [-0.090, 0.449] the positive relationship between psychological empowerment and innovations is less clear here. Since the confidence interval includes zero, this relationship is not statistically significant.

Perception of HRM Strength -> Innovations: Sample Mean (M): 0.291 Confidence Interval: [0.065, 0.520] HRM strength is positively related to innovations, as the confidence interval does not include zero, connoting statistical significance.

Perception of HRM Strength x Perceptions of Performance Appraisal Quality -> Innovations: Sample Mean (M): 0.247, Confidence Interval: [-0.076, 0.482] The results also suggest a positive relationship between the HRM strength and the quality of performance appraisals with innovations but again, given that the confidence interval contains a zero, the impact of the two is not statistically significant.

Perception of HRM Strength x Psychological Empowerment -> Innovations: Sample Mean (M): -0.329 Confidence Interval: [-0.552, -0.017] As depicted in figure 4 above the net of the relation between HRM strength x PE and innovations is negative and since the confidence interval does not encompass the zero value the relationship is statistically significant.

Significant Effects: Performance appraisal quality → Innovations, Performance appraisal quality → Psychological empowerment, HRM strength → Innovations, HRM strength x Psychological empowerment → Innovations **Non-Significant Effects**: Psychological empowerment → Innovations, HRM strength x Performance appraisal quality → Innovations Total indirect effects

Mean, STDEV, T values, p values

	Original sample (O)	Sample mean (M)	Standard deviation (STDEV)	T statistics (|O/STDEV|)	P values
Perceptions of Performance Appraisal Quality -> Innovations	0.162	0.154	0.125	1.297	0.195

Perceptions of Performance Appraisal Quality → Innovations:

Original Sample (O): Value: 0.162: This is the estimated path coefficient or effect size for the relationship between perceptions of performance appraisal quality and innovations. A positive value of 0.162 suggests that as perceptions of performance appraisal quality increase,

innovations also tend to increase, but the effect is relatively small. Sample Mean (M): Value: 0.154: This is the mean value of the estimated effect from your sample. It is very close to the original sample value, indicating little deviation from the point estimate, suggesting stability in the estimate across the sample. Standard Deviation (STDEV): Value: 0.125: The standard deviation tells us about the variability or spread of the estimated path coefficients in your sample. A standard deviation of 0.125 indicates that while there is some variation in the path coefficients across different runs or samples, the spread is relatively modest. T Statistics (|O/STDEV|): Value: 1.297: The T statistic is calculated as the absolute value of the original sample estimate divided by the standard deviation: : This is calculated as T-statistic that shows how many standard deviations the path coefficient estimate is away from hypothesized value of zero (: In our case T = 1.297 T = (0.162 / 0.125) = 1.297 The T statistic indicates as to how many standard errors the coefficient is away from a zero value. In other words, a higher T statistic means statistical significance of the result. In general, the observations of T greater than 1.96 mean that results are statistically significant at P<0.05. As 1.297<1.96, the result also suggests that the coefficient is not significant at the 95% level of significance in most studies. P Value: Value: 0.195 The P-value informs of the ability of finding an effect as big as, or bigger than, the observed effect if there in fact is no effect, according to the null hypothesis. When analyzed with the help of the software, the P result of 0,195 shows that the result is not statistically significant at the 5 % level. This suggests that we fail to reject the null hypothesis, and the evidence is insufficient to conclude that perceptions of performance appraisal quality significantly impact innovations in your model.

It is also shown that perceptions of performance appraisal quality have positive impact on innovations, but this impact does not seem to reach level of significance. The T statistic = 1.297, and since this value is less than the threshold of 1.96 and the P = 0.195 IS greater than 0.05, there is no reason to claim that the coefficient of this path is significantly different from zero. Alternatively, it is just that performance appraisal quality has at most a weak positive relationship with innovations, and on the basis of this analysis, we don't have enough evidence to conclude that the connection is significant or valid.

Confidence intervals

	Original sample (O)	Sample mean (M)	2.5%	97.5 %
Perceptions of Performance Appraisal Quality -> Innovations	0.162	0.154	-0.081	0.413

Let's break down and interpret the provided statistics for the relationship between Perceptions of Performance Appraisal Quality → Innovations:

Original Sample (O): Value: 0.162: This is the estimated path coefficient or effect size for the relationship between perceptions of performance appraisal quality and innovations. A positive value of 0.162 suggests that, on average, as perceptions of performance appraisal quality increase, innovations tend to increase as well. However, this effect is relatively small. Sample Mean (M): Value: 0.154: This is the mean value of the estimated effect in your sample. It is very close to the original sample value, suggesting that the estimate is stable across your sample. 2.5% (Lower bound of the Confidence Interval): Value: -0.081: This is the lower bound of the 95% confidence interval for the path coefficient. A value of 0.081 means that, in some cases, the relationship between perceptions of performance appraisal quality and innovations could be negative, suggesting a potential inverse relationship. This value is below zero, indicating that the true effect might be weak or even negative. 97.5% (Upper bound of the Confidence Interval): Value: 0.413: This is the upper bound of the 95% confidence interval for the path coefficient. A value of 0.413 means that in some cases the relationship could be as strong then 0.413 which a moderate positive effect is. Confidence Interval: The 95% confidence interval for this path is [-0.081, 0.413]. This interval includes zero, which means that, based on this data, we cannot be confident that there is a true positive relationship between

performance appraisal quality and innovations. The interval suggests that the true relationship could range from slightly negative (-0.081) to moderately positive (0.413). Statistical Significance: Since the confidence interval includes zero, the relationship between performance appraisal quality and innovations is not statistically significant at the 95% confidence level. This means there is not enough evidence to conclude that the perception of performance appraisal quality has a meaningful impact on innovations in your data. There is a positive relationship between performance appraisal quality and innovations, with an average effect size of 0.162 (sample mean). However, the confidence interval for this effect spans from negative to positive values (-0.081 to 0.413), indicating that this relationship is not statistically significant. We cannot conclusively say that the perception of performance appraisal quality significantly influences innovations based on these results, as the effect could be weak, nonexistent, or even slightly negative in the population.

Specific indirect effects

Mean, STDEV, T values, p values

	Original sample (O)	Sample mean (M)	Standard deviation (STDEV)	T statistics (|O/STDEV|)	P values
Perceptions of Performance Appraisal Quality-> Psychological Empowerment -> Innovations	0.162	0.154	0.125	1.297	0.195

Perceptions of Performance Appraisal Quality → Psychological Empowerment → Innovations and interpret them:

Original Sample (O): Value: 0.162: This is the estimated path coefficient representing the combined effect of Perceptions of Performance Appraisal Quality → Psychological Empowerment → Innovations. The positive value (0.162) suggests that, on average, better performance appraisal quality increases psychological empowerment, which in turn increases innovations. However, the magnitude of this effect is relatively small. Sample Mean (M): Value: 0.154: The sample mean is very close to the original sample estimate (0.162), indicating that the estimate is stable and consistent across your sample, with minimal fluctuation. Standard Deviation (STDEV**):** Value: 0.125: The standard deviation tells us how much the estimated path coefficients vary across different samples or runs of the analysis. A value of 0.125 indicates that there is moderate variability in the estimates. This suggests that while the effect is positive on average, there is some uncertainty about the true size of the effect. T Statistics (|O/STDEV|): Value: 1.297: The T statistic is calculated as the absolute value of the original sample estimate divided by the standard deviation: T=0.1620.125=1.297T = \frac {0.162} {0.125} = 1.297T=0.1250.162=1.297 The T statistic indicates how many standard deviations the estimated coefficient is away from zero (the null hypothesis). A larger T statistic typically suggests a more significant effect. For common statistical significance thresholds, a T statistic greater than 1.96 is considered significant at the 5% level. In this case, 1.297 is below 1.96, indicating that the relationship is not statistically significant at the 5% level. P Value**:** Value: 0.195: The P-value is the probability of observing an effect as extreme as the one found (or more extreme) if the null hypothesis were true (i.e., no effect). A P-value of 0.195 is greater than 0.05, meaning the relationship is not statistically significant at the 5% significance level. This suggests that we fail to reject the null hypothesis, and we do not have sufficient evidence to conclude that the combined effect of Performance Appraisal Quality → Psychological Empowerment → Innovations is meaningful.

The path from Perceptions of Performance Appraisal Quality → Psychological Empowerment → Innovations has a positive relationship (0.162), but this relationship is not statistically significant. The T statistic of 1.297 is below the common threshold of 1.96, and the P-value of 0.195 is above the 0.05 threshold, indicating that the effect is not reliably different from zero. Conclusion: There is insufficient evidence to conclude that the relationship between Performance Appraisal Quality, Psychological Empowerment, and Innovations is statistically significant at the 95% confidence level. While the effect is positive, it is weak and not robust enough to draw strong conclusions.

Confidence intervals

	Original sample (O)	Sample mean (M)	2.5%	97.5%
Perceptions of Performance Appraisal Quality -> Psychological Empowerment -> Innovations	0.162	0.154	-0.081	0.413

Perceptions of Performance Appraisal Quality → Psychological Empowerment → Innovations:

Original Sample (O): Value: 0.162: This is the estimated indirect effect of Perceptions of Performance Appraisal Quality on Innovations through Psychological Empowerment. A value of 0.162 suggests that, on average, higher perceptions of performance appraisal quality are associated with a slight increase in innovations, with psychological empowerment acting as a mediating factor. The effect is positive, but it is relatively modest. **Sample Mean (M):** Value: 0.154: The sample mean is very close to the original sample estimate (0.162), suggesting stability and minimal variation in the estimate across the sample. **2.5% (Lower Bound of the Confidence Interval):** Value: -0.081: The 2.5% value represents the lower bound of the 95% confidence interval for the indirect effect. This indicates that the true indirect effect could be as low as -0.081 in some cases, implying a potential negative relationship between performance appraisal quality and innovations through psychological empowerment. This suggests that, in certain situations, higher perceptions of performance appraisal quality could reduce innovations via psychological empowerment.

97.5% (Upper Bound of the Confidence Interval): Value: 0.413: The 97.5% value is the upper bound of the 95% confidence interval for the indirect effect. This shows that, in the most extreme cases, the effect could be as strong as 0.413, indicating a moderately positive relationship between performance appraisal quality and innovations via psychological empowerment. Confidence Interval: The 95% confidence interval for the indirect effect is [-0.081, 0.413]. Since this interval includes zero, it suggests that the indirect effect is not statistically significant at the 95% confidence level. This means that, based on the data, we cannot be certain that the indirect path from performance appraisal quality to innovations via psychological empowerment is different from zero (i.e., the effect might be negligible or even negative in some cases). Range of the Effect: The confidence interval spans from a small negative effect (-0.081) to a moderate positive effect (0.413), indicating that the relationship is uncertain and could go in either direction. The presence of negative values in the confidence interval suggests that there is considerable uncertainty about the strength or even the direction of the effect. There is a positive relationship between Perceptions of Performance Appraisal Quality and Innovations, mediated by Psychological Empowerment, with a sample mean of 0.154. However, the 95% confidence interval for the indirect effect ranges from -0.081 to 0.413, which means the effect, could be negative or positive. This suggests that the indirect relationship is not statistically significant, as the interval includes zero. **Conclusion**: The evidence is insufficient to conclude that psychological empowerment significantly mediates the relationship between performance appraisal quality and innovations. The true effect could range from negative to positive, and more data or analysis would be needed to confidently assess the nature of this mediation.

Total effects

Mean, STDEV, T values, p values

	Original sample (O)	Sample mean (M)	Standard deviation (STDEV)	T statistics (|O/STDEV|)	P values
Perceptions of Performance Appraisal Quality -> Innovations	0.453	0.449	0.105	4.307	0.000
Perceptions of Performance Appraisal Quality -> Psychological Empowerment	0.911	0.911	0.021	43.725	0.000
Psychological Empowerment -> Innovations	0.177	0.169	0.136	1.303	0.193
Perception of HRM Strength -> Innovations	0.283	0.291	0.114	2.471	0.014
Perception of HRM Strength x Perceptions of Performance Appraisal Quality -> Innovations	0.264	0.247	0.139	1.900	0.057
Perception of HRM Strength x Psychological Empowerment -> Innovations	-0.351	-0.329	0.132	2.650	0.008

Let's break down and interpret each of the results provided in your table, which reflect the relationships between different variables in your model.

Perceptions of Performance Appraisal Quality → Innovations: Original Sample (O): 0.453 Sample Mean (M): 0.449 Standard Deviation (STDEV): 0.105 T Statistics (|O/STDEV|): 4.307 P Value: 0.000. The path estimate from Perceptions of Performance Appraisal Quality to Innovations is 0.453, suggesting a positive relationship between performance appraisal quality and innovations. The T statistic of 4.307 indicates that this effect is statistically significant. Since the T statistic is much greater than 1.96, we can conclude that this relationship is highly significant. The P value of 0.000 confirms that this effect is significant at the 0.05 level (and far below it). This means we can confidently say that Perceptions of Performance Appraisal Quality significantly influences Innovations in your sample.

Perceptions of Performance Appraisal Quality → Psychological Empowerment Original Sample (O): 0.911 Sample Mean (M): 0.911 Standard Deviation (STDEV): 0.021 T Statistics (|O/STDEV|): 43.725 P Value: 0.000. The path estimate from Perceptions of Performance Appraisal Quality to Psychological Empowerment is 0.911, which is a strong positive effect, indicating that higher perceptions of performance appraisal quality lead to higher psychological empowerment. The T statistic of 43.725 is extremely large, suggesting a highly significant effect. The relationship is not only statistically significant but also very robust. The P value of 0.000 confirms that this effect is highly significant, meaning that there is a very strong and reliable link between perceptions of performance appraisal quality and psychological empowerment in your data. **Psychological Empowerment → Innovations:** Original Sample (O): 0.177 Sample Mean (M): 0.169 Standard Deviation (STDEV): 0.136 T Statistics (|O/STDEV|): 1.303 P Value: 0.193. The path estimate from Psychological Empowerment to Innovations is 0.177, suggesting a positive but weak relationship between psychological empowerment and innovations. The T statistic of 1.303 is not statistically significant because it is below the typical threshold of 1.96. This suggests that the effect is weak and not significant at the 0.05 level. The P value of 0.193 is greater than 0.05, confirming that the relationship between psychological empowerment and innovations is not statistically significant. Therefore, we cannot confidently say that psychological empowerment has a meaningful impact on innovations in this model.

Perception of HRM Strength → Innovations: Original Sample (O): 0.283 Sample Mean (M): 0.291 Standard Deviation (STDEV): 0.114 T Statistics (|O/STDEV|): 2.471 P Value: 0.014. The path estimate from Perception of HRM Strength to Innovations is 0.283, indicating a moderate positive effect. The T statistic of 2.471 is greater than 1.96, suggesting that this effect is statistically significant. The P value of 0.014 is below 0.05, confirming that the relationship is statistically significant. Therefore, Perception of HRM Strength significantly influences Innovations in your model.

Perception of HRM Strength × Perceptions of Performance Appraisal Quality → Innovations: Original Sample (O): 0.264 Sample Mean (M): 0.247 Standard Deviation (STDEV): 0.139 T Statistics (|O/STDEV|): 1.900 P Value: 0.057 The path estimate from the interaction between Perception of HRM Strength and Perceptions of Performance Appraisal Quality to Innovations is 0.264, indicating a moderate negative effect for this interaction. The T statistic of 1.900 is just below the threshold of 2.0, which indicates marginal significance. Although this is not below the usual threshold of 1.96 (for 95% confidence), it is close to significant, suggesting that there might be an effect, but it's weak. The P value of 0.057 is slightly greater than 0.05, which means this effect is not statistically significant at the 5% level, though it is very close to being significant. This suggests that this interaction may have a real effect, but the evidence isn't strong enough to confidently claim it is significant at the 5% level.

Perception of HRM Strength × Psychological Empowerment → Innovations: Original Sample (O): -0.351 Sample Mean (M): -0.329 Standard Deviation (STDEV): 0.132 T Statistics (|O/STDEV|): 2.650 P Value: 0.008 the path estimate from the interaction between Perception of HRM Strength and Psychological Empowerment to Innovations is -0.351, indicating a negative effect. This suggests that the joint influence of HRM strength and psychological empowerment might reduce innovations. The T statistic of 2.650 is significant because it is greater than 1.96, indicating a statistically significant relationship. The P value of 0.008 is well below 0.05, confirming that this negative interaction effect is statistically significant. Therefore, this suggests that HRM strength, when combined with psychological empowerment, may negatively affect innovations in your model.

Perceptions of Performance Appraisal Quality → Innovations: Significant positive effect (T = 4.307, P = 0.000) Strong influence on innovations. Perceptions of Performance Appraisal Quality → Psychological Empowerment: Significant positive effect (T = 43.725, P = 0.000) Very strong influence on psychological empowerment. Psychological Empowerment → Innovations: Not significant (T = 1.303, P = 0.193) Weak or no impact on innovations. Due to control variable like age qualification demographics change. Perception of HRM Strength → Innovations: Significant positive effect (T = 2.471, P = 0.014) moderately strong positive influence on innovations. Perception of HRM Strength × Perceptions of Performance Appraisal Quality → Innovations: Marginally significant (T = 1.900, P = 0.057). Interaction effect is closing to significant, but not strong enough to conclude with certainty. Perception of HRM Strength × Psychological Empowerment → Innovations: Significant negative effect (T = 2.650, P = 0.008). This interaction negatively impacts innovations. Strong effects: Perceptions of performance appraisal quality have a significant positive impact on both innovations and psychological empowerment. Similarly, HRM strength has a positive effect on innovations. Weak or insignificant effects: Psychological empowerment does not significantly influence innovations, and the interaction between HRM strength and performance appraisal quality is marginally significant. Negative interaction: The combination of HRM strength and psychological empowerment appears to have a negative effect on innovations.

Confidence intervals

	Original sample (O)	Sample mean (M)	2.5%	97.5%
Perceptions of Performance Appraisal Quality -> Innovations	0.453	0.449	0.237	0.653
Perceptions of Performance Appraisal Quality -> Psychological Empowerment	0.911	0.911	0.863	0.944
Psychological Empowerment -> Innovations	0.177	0.169	-0.090	0.449
Perception of HRM Strength -> Innovations	0.283	0.291	0.065	0.520
Perception of HRM Strength x Perceptions of Performance Appraisal Quality -> Innovations	0.264	0.247	-0.076	0.482
Perception of HRM Strength x Psychological Empowerment -> Innovations	-0.351	-0.329	-0.552	-0.017

Let's interpret the provided results, which include estimates, confidence intervals, and relationships between different variables in your model. The information you provided includes both the point estimates and the **95% confidence intervals** (2.5% to 97.5%).

Perceptions of Performance Appraisal Quality → Innovations: Original Sample (O): 0.453 Sample Mean (M): 0.449 2.5% Confidence Interval: 0.237 97.5% Confidence Interval: 0.653 the path estimate from Perceptions of Performance Appraisal Quality to Innovations is 0.453 (or very close to 0.449 in the sample mean), suggesting a moderately strong positive relationship between performance appraisal quality and innovations. The 95% confidence interval for this estimate is [0.237, 0.653], which does not include zero, indicating that the relationship is statistically significant at the 5% level. This means there is a positive and significant influence of perceptions of performance appraisal quality on innovations in the sample. Perceptions of Performance Appraisal Quality → Psychological Empowerment Original Sample (O): 0.911 Sample Mean (M): 0.911 2.5% Confidence Interval: 0.863 97.5% Confidence Interval: 0.944. The path estimate from Perceptions of Performance Appraisal Quality to Psychological Empowerment is 0.911, indicating a very strong positive effect. The 95% confidence interval is [0.863, 0.944], which does not include zero, confirming that this effect is statistically significant. The interval is quite narrow, showing that the estimate is precise and reliable. Therefore, perceptions of performance appraisal quality strongly and significantly influence psychological empowerment. Psychological Empowerment → Innovations: Original Sample (O): 0.177 Sample Mean (M): 0.169 2.5% Confidence Interval: -0.090 97.5% Confidence Interval: 0.449. The path estimate from Psychological Empowerment to Innovations is 0.177, which suggests a positive but weak effect. The 95% confidence interval is [-0.090, 0.449], which includes zero. This means that the effect of psychological empowerment on innovations is not statistically significant, as the confidence interval spans negative to positive values. Thus, we cannot conclude that psychological empowerment has a reliable effect on innovations in your sample. Perception of HRM Strength → Innovations: Original Sample (O): 0.283 Sample Mean (M): 0.291 2.5% Confidence Interval: 0.065 97.5% Confidence Interval: 0.520. The path estimate from Perception of HRM Strength to Innovations is 0.283, suggesting a moderate positive effect. The 95% confidence interval is [0.065, 0.520], which does not include zero, indicating that this effect is statistically significant. Therefore, HRM strength has a significant positive effect on innovations in your sample. Perception of HRM Strength × Perceptions of Performance Appraisal Quality → Innovations: Original Sample (O): 0.264 Sample Mean (M): 0.247 2.5% Confidence Interval: -0.076 97.5% Confidence Interval: 0.482 The path estimate from the interaction between Perception of HRM Strength and Perceptions of Performance Appraisal Quality to Innovations is 0.264, indicating a moderate positive effect. The 95% confidence interval is [-0.076, 0.482], which includes zero. This suggests that this interaction effect is not statistically significant, as the confidence interval spans negative to positive values. Therefore, we cannot conclude that the interaction between HRM strength and performance appraisal quality reliably impacts innovations. Perception of HRM Strength × Psychological Empowerment → Innovations: Original Sample (O): -0.351 Sample Mean (M): -0.329 2.5% Confidence Interval: -0.552 97.5% Confidence Interval: -0.017. The path estimate from the interaction between Perception of HRM Strength and Psychological Empowerment to Innovations is -0.351, indicating a negative effect. The 95% confidence interval is [-0.552, -0.017], which does not include zero, suggesting that this negative interaction effect is statistically significant. Therefore, this suggests that when HRM strength interacts with psychological empowerment, it has a negative impact on innovations in your sample. Perceptions of Performance Appraisal Quality → Innovations: Significant positive effect (Path estimate = 0.453, Confidence interval = [0.237, 0.653]). This relationship is statistically significant, indicating that better performance appraisal quality leads to more innovations. Perceptions of Performance Appraisal Quality → Psychological Empowerment: Significant positive effect (Path estimate = 0.911, Confidence interval = [0.863, 0.944]). This

relationship is strongly significant, meaning that higher perceptions of performance appraisal quality strongly lead to higher psychological empowerment Psychological Empowerment → Innovations: Not significant (Path estimate = 0.177, Confidence interval = [-0.090, 0.449]). This effect is not statistically significant since the confidence interval includes zero, indicating no strong relationship between psychological empowerment and innovations Perception of HRM Strength → Innovations: Significant positive effect (Path estimate = 0.283, Confidence interval = [0.065, 0.520]). This relationship is statistically significant, suggesting that HRM strength positively influences innovations. Perception of HRM Strength × Perceptions of Performance Appraisal Quality → Innovations: Not significant (Path estimate = 0.264, Confidence interval = [-0.076, 0.482]). The interaction effect is not significant because the confidence interval includes zero, suggesting that HRM strength and performance appraisal quality together do not have a strong impact on innovations. Perception of HRM Strength × Psychological Empowerment → Innovations: Significant negative effect (Path estimate = -0.351, Confidence interval = [-0.552, -0.017]). This relationship is statistically significant, indicating that the interaction between HRM strength and psychological empowerment negatively impacts innovations. Significant positive effects: Perceptions of performance appraisal quality and HRM strength both positively influence innovations. Additionally, performance appraisal quality strongly influences psychological empowerment. Non-significant relationships: Psychological empowerment does not significantly influence innovations, and the interaction between HRM strength and performance appraisal quality is not significant. Significant negative interaction: The combination of HRM strength and psychological empowerment has a negative impact on innovations. This suggests that high HRM strength, when combined with psychological empowerment, may actually hinder innovative outcomes.

R-square

Mean, STDEV, T values, p values

	Original sample (O)	Sample mean (M)	Standard deviation (STDEV)	T statistics (|O/STDEV|)	P values
Innovations	0.689	0.694	0.060	11.420	0.000
Psychological Empowerment	0.829	0.830	0.038	22.027	0.000

Innovations:

Original Sample (O): Value: 0.689: This represents the estimated effect of the variable "Innovations" in your model. A value of 0.689 suggests that there is a positive impact associated with innovations in your sample. This might represent an average level or a score for "Innovations" in your data. Sample Mean (M): Value: 0.694: The sample mean is close to the original sample estimate (0.689), which indicates stability in your data, with minimal deviation between the sample mean and the original value. Standard Deviation (STDEV): Value: 0.060: The standard deviation of 0.060 indicates the spread or variability of the "Innovations" variable across your sample. A smaller standard deviation implies that the values of Innovations are relatively close to the mean, indicating low variability. T Statistics (|O/STDEV|): Value: 11.420: The T statistic is calculated as the absolute value of the original sample estimate divided by the standard deviation: T=0.6890.060=11.420T = \frac {0.689} {0.060} = 11.420T=0.0600.689=11.420. This is a very large T statistic (11.420), indicating that the estimate is significantly different from zero. A T statistic greater than 1.96 typically indicates statistical significance, so a value of 11.420 is extremely significant. This suggests that Innovations is a highly significant variable in your model. P Value: Value: 0.000: The P-value of 0.000 is well below the typical significance level of 0.05, indicating that the relationship involving Innovations is highly statistically significant. This means that the observed effect is highly unlikely to be due to random chance.

Psychological Empowerment

Original Sample (O): Value: 0.829: This represents the estimated effect of the variable "Psychological Empowerment" in your model. A value of 0.829 suggests that there is a strong positive impact associated with psychological empowerment in your sample. Sample Mean (M): Value: 0.830: The sample mean is very close to the original sample estimate (0.829), suggesting consistency in the estimate across your sample. Standard Deviation (STDEV): Value: 0.038: The standard deviation of 0.038 indicates the spread or variability of the "Psychological Empowerment" variable in your sample. This is a relatively small standard deviation, suggesting that the values of psychological empowerment are clustered closely around the mean, with low variability. T Statistics (|O/STDEV|): Value: 22.027: The T statistic for psychological empowerment is calculated as: T=0.8290.038=22.027T = \frac {0.829} {0.038} = 22.027T=0.0380.829=22.027. This is an extremely large T statistic, far exceeding the typical threshold of 1.96 for statistical significance. A T statistic of 22.027 suggests that the estimate is highly significant and that psychological empowerment has a strong, reliable effect in your model. P Value: Value: 0.000: The P-value of 0.000 is much smaller than 0.05, indicating that the effect of psychological empowerment is highly statistically significant. This means that the observed relationship is very unlikely to be due to random chance.

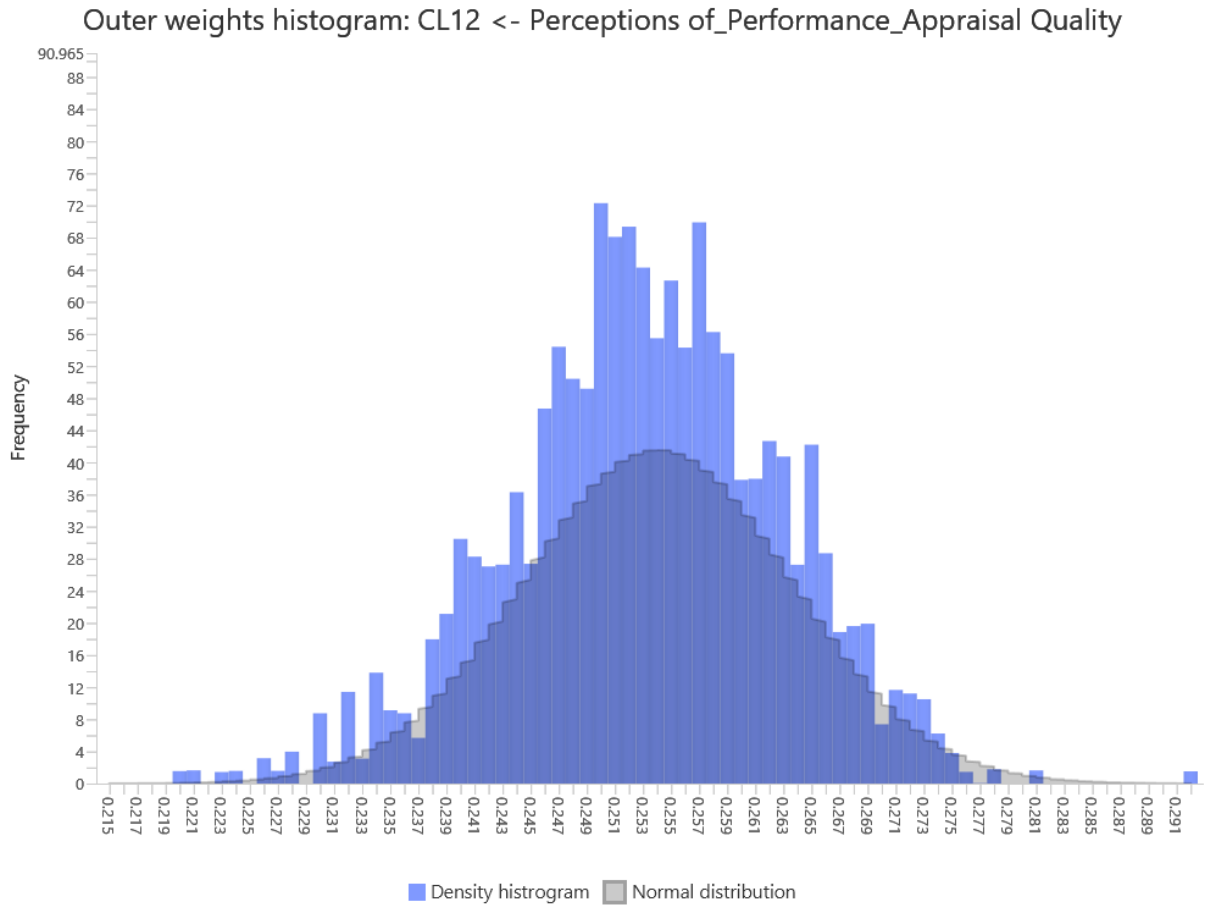
Confidence intervals

	Original sample (O)	Sample mean (M)	2.5%	97.5%
Innovations	0.689	0.694	0.562	0.798
Psychological Empowerment	0.829	0.830	0.745	0.892

Innovations Original Sample (O): Value: 0.689: This represents the estimated value or effect for the variable Innovations. A value of 0.689 suggests that innovations, on average, are positively impacted by some underlying factor(s) in your model. This is a relatively high value, indicating a moderate level of innovation. Sample Mean (M): Value: 0.694: The sample mean is very close to the original sample estimate (0.689), suggesting that the observed effect is stable across your sample, and there's little fluctuation. 2.5% (Lower Bound of the Confidence Interval): Value: 0.562: This is the lower bound of the 95% confidence interval for the Innovations estimate. A value of 0.562 means that, based on your sample, you can be 95% confident that the true effect for Innovations is no lower than 0.562. This indicates a relatively strong lower bound, suggesting that the effect is unlikely to be weak. 97.5% (Upper Bound of the Confidence Interval): Value: 0.798: This is the upper bound of the 95% confidence interval for the Innovations estimate. A value of 0.798 suggests that, with 95% confidence, the true effect of Innovations could be as high as 0.798. This is a strong positive value, indicating that the relationship between the factors driving innovations could be relatively robust.

Psychological Empowerment

Original Sample (O): Value: 0.829: This is the estimated effect for Psychological Empowerment. A value of 0.829 suggests that psychological empowerment is positively impacted by the model's variables. This is a high value, suggesting strong psychological empowerment on average. Sample Mean (M): Value: 0.830: The sample mean is very close to the original sample estimate (0.829), showing consistency in the estimate across your sample. There is minimal deviation between the sample estimate and the original value. 2.5% (Lower Bound of the Confidence Interval): Value: 0.745: The lower bound of the 95% confidence interval for Psychological Empowerment is 0.745. That is, you can be 95 % confident of the following that the true effect for psychological empowerment is 0.745 or more. This suggests a relatively strong lower bound, indicating that psychological empowerment is positively impacted by the model's factors. 97.5% (Upper Bound of the Confidence Interval): Value: Psychological Empowerment 0.892: This is the upper limits of 95% confidence interval of the rating. This means that with the level of confidence as 95 percent, true effect of psychological empowerments could be 0.892 which supposes moderate to strong positive effect.



Discussion & Conclusion

5.1 Overview of this Chapter

This chapter will give a contextual analysis of the main results to the study and conclude on the principal outcomes. Finally, it also presents recommendations for future research

5.2 Discussion

The objectives of the present research were to also independently and interdependently establish the impacts of PPAQ on employee innovative behavior by mediating the role of psychological empowerment. Furthermore, the study tested the mediated moderation of perceptions of HRM system strength in the relationship between performance appraisal and psychological empowerment and innovation behaviour. This study argues that the PPAQ has a direct effect on innovative behaviour: The study affirmed that PPAQ positively affects employee innovative behavior. This goes a long way in supporting findings that have it that right HRM practices can design and influence the behaviors of employees at the workplace in a positive manner, supporting prior empirical research which examined the mediating role of psychological empowerment. From this research, they showed that there is the case for integrative, which moderates the relationship between Performance appraisal and innovative behavior. This accords with earlier research whereby psychological empowerment have emerged as a mediator of the relationship between HR practices and employee behaviors Moderating Role of HRM System Strength. It was established that PPAQ was positively related to both psychological empowerment (mediator) and innovation (outcome), with perceptions of HRM system strength acting as a moderating variable. This finding is in line with prior research [41] that pointed to the importance of the strength of HRM system in increasing the effectiveness of HR practices with regard to innovation behaviour. The result emphasizes that PPAQ plays a critical role in promoting innovation in an organization because it changes the behavior of people at the workplace and endows them with psychological implementation power. Furthermore, the specification and strength of the Human Resource Management

system favour these effects by offering solid ground for organizations aspiring to facilitate innovation by means of proper appraisal strategies. Accompany them with these insights deepens the understanding of exactly how far Best Practice HR and standards can be taken to foster innovative behavior amongst the employees. HRM Practices make positive impact of their customer through satisfying of their employee, satisfied employee dealing with customer is more efficient rather than unsatisfied employee. As per stakeholder theory HRM practices if create vital role on organization growth.

5.3 Limitation and future recommendations:

Geographical Context: This research focuses only on Pakistan's banking sector, and as a result, the results cannot be easily applied to other industries or other cultural settings because in banking sector all worked are done through digital machine. Banking Employee are working like service provider rather than manufacturing worker. Cross-sectional Design: The cross-sectional approach of the study makes it almost impossible to clearly determine cause and affect relationships. Self-reported Data: Use of self-developed items may pose common method variance where perceived measures affect the results. Limited Focus: This leaves the study with a reliance on only two mediator and moderator variables; psychological empowerment and strength of the HRM system might eliminate other mediating/moderating variables that exist and might influence the relationship between PAQ and innovation.

5.4 Conclusion:

This study gave support for the proposition that PPAQ has a positive relationship with the overall responses of employee innovative behavior. The relationship between PPAQ and innovative behavior is mediated by psychological empowerment. Additionally, the study revealed that perceptions of HRM system strength moderate the effects of PPAQ on both psychological empowerment and innovative behavior. When employees perceive performance appraisals as high-quality, they are more likely to exhibit innovation in the workplace by adopting new skills, techniques, and practices. Encouraging and facilitating professional development, as well as fostering innovative behaviors, require a shift from traditional approaches to performance appraisals. To promote innovation, managers should focus on empowering employees, and one effective way to achieve this is by enhancing their perceptions of performance appraisal quality. Since employee innovative behavior is crucial for organizational growth, development, and sustainability, it demands focused attention from managers and policymakers—particularly in the context of higher education institutions.

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