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**Title:** Digitalizing Performance Appraisal and Employee Performance: A Moderated Mediation Model of Employee Engagement and Manager Role

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## **Digitalizing Performance Appraisal and Employee Performance: A Moderated Mediation Model of Employee Engagement and Manager Role**

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### **Abstract**

Digital performance appraisals (DPA) have become an important tool in human resource management, playing a vital role to increase employee performance. However, appraisal systems are effective only when employees perceive them as fair, which determines whether they generate positive outcomes for employees and organizations. Drawing on social exchange theory, social identity theory and equity theory, this study develops and tests a model to examine the impact of DPA on employee job performance through employee engagement and Manager Role as a boundary condition. Survey data were collected from 251 employees in Pakistan's Telecom sector and their direct supervisors and analyzed using Partial Least Square structural equation modelling (PLS-SEM) in Smart PLS software. The findings reveal that DPA positively influence employee performance, employee engagement partially mediates the relationship between digital performance appraisals and job performance, while Manager Role moderates the link between employee engagement and employee performance. Overall, the findings highlight employee engagement as a key mechanism through which DPA have a major effect on workers' performance. The study contributes significantly by clarifying the process through which DPA shapes employees' outcomes and offers implications for both literature and managers, while addressing the limitations and direction for future research.

**Keywords:** *Appraisal, Employee, Engagement, Manager, Performance.*

### **Introduction**

In the constantly changing environment of today's workplaces, the integration of digital technology has become essential for achieving organizational success and sustainability. Central to this shift is the incorporation of Artificial Intelligence (AI) into various business functions, particularly within Human Resources (HR), which has experienced significant changes. The conventional systems of performance management, especially regarding employee evaluations, are undergoing a substantial transformation, fueled by the capabilities and insights provided by digital technologies (Nyathani, 2023). In the digital age, human resource management practices are carried out through digital methods, which involve leveraging the Internet and technological applications to execute HR functions. This paper investigates the complex dynamics of digital performance evaluations, highlighting how they are not merely improving but fundamentally altering the process in our digital era.

At the heart of human resource management, performance appraisal has evolved into a vital component of contemporary management techniques for organizations, and it is expected to significantly influence the achievement of organizational performance objectives. Numerous scholars in the past have confirmed that the effective enhancement of employee job performance is closely linked to the overall success of the organization (Lee, Idris, & Tuckey, 2019). More specifically, digital performance evaluations can have a direct impact on an employee's behavior at work, including their job performance and level of engagement (Poon, 2004).

According to social exchange theory, when employees believe they are treated equitably by an organization, they are likely to demonstrate more positive attitudes and behaviors as a way to reciprocate. Employee engagement, defined as a favorable state of employees at work, is likely enhanced through digital performance evaluations (Inam et al., 2021). In particular, fairness in performance appraisals can be seen as a specific instance and manifestation of organizational justice within the context of performance assessments. When employees perceive the organization's performance evaluation process as equitable, they tend to be more proactive and exhibit a heightened interest in their performance, which consequently results in increased work engagement (Rana & Singh, 2022). Therefore, the secondary objective of this study is to investigate how work engagement mediates the connection between digital performance appraisal and employee job performance.

In addition, social identity theory suggests that organizational transparency through digital performance appraisal can promote employees' identification with their organizations and thus positively affect their work attitude, behavior, and performance (Bednar et al., 2020). Organizational identification is a unique type of social identification that highlights the internal dynamics between employees and their organizations, as well as the extent to which employees acknowledge their organizations (Koçak & Kerse, 2022). Social identity theory, people perceive themselves as belonging to a social group. According to Ashforth and Mael (1989) an individual's self-evaluation and idea are also influenced by their membership in social organizations and the organization where they work. Additionally, people compare their group characteristics to those of other groups and individuals in an attempt to develop or strengthen their positive self-concept.

Prior research has established that digital performance appraisal serves as a tangible representation of organizational fairness within performance management, which can further strengthen employees' organizational identification. When employees exhibit a strong sense of organizational identification, they are more inclined to depend on and have confidence in the organization (Chang, Chen, & Lin, 2022), leading them to be more eager to contribute their own efforts and proactively enhance their job performance. Consequently, we propose that organizational identification can also serve as a mediator in the relationship between digital performance appraisal and employee job performance, which constitutes the third objective of this study.

Some previous researches highlighted a gap in literature on employee related outcomes, such as work engagement and employee performance. According to a study by Harter, Schmidt, and Hayes (2002) companies with higher employee engagement levels also have superior work, motivation, and commitment cultures. In a similar vein, develops a link between DPA and work engagement that leads to corporate sustainability, but it ignores the function that work engagement plays as an intermediary effect of the relationship that leads to employee performance (Saratun, 2016). It is significant because improved worker performance has been shown to be a key component of organizational results.

This study aims to establish and validate a dual path model to analyze how digital performance appraisal affects employee job performance. Grounded in social exchange theory and social identity theory, this research identifies work engagement as mediators to investigate the internal mechanisms connecting performance appraisal and job performance. By examining data gathered from employees and their direct supervisors, this study evaluates whether these relationships are also present among employees in the telecom industry. As a result, this research enhances the existing literature on the connections between performance appraisal, job performance, work engagement, and the role of managers, particularly within the context of Pakistani culture. Furthermore, the findings of this study can serve as a reference for organizations aiming to continually boost employee work engagement through effective performance appraisal systems, ultimately leading to improved employee job performance.

## 2. Literature Review

### 2.1 Digital Performance Appraisal and Employee Performance

Digital performance Appraisal is an online application designed to evaluate job requirements, workloads of both organizational units and work groups as a foundation for assessing work performance and offering incentives. Digital performance serves as a practical application of human resource accounting theories integrated into a web-based platform. It can measure, identify, deliver, provide assessments, and offer rewards in the form of additional income; hence, through use of digital performance appraisal users anticipate that the application will effectively meet their needs based on their individual abilities, ensuring their satisfaction (Subari & Riady, 2015). To enable employees to utilize e-performance effectively, all staff members receive training on its use. Users are likely to feel satisfied if they believe that the training they undergo will enable them to operate the application successfully.

***Hypothesis 1:** Digital Performance appraisal justice is positively related to employee performance.*

### 2.2 Mediating Role of Employee Engagement

The idea of Employee engagement was initially introduced by Kahn (1990) as "the individuals' readiness to actively participate in their work roles through physical, cognitive, and emotional involvement in their daily tasks". Vandiver (2002) suggested that work engagement is fundamentally the condition where employees immerse themselves in their work, reflecting a positive outlook toward their responsibilities, marked by enthusiasm, commitment (Bakker, 2022), and concentration. As positive psychology has advanced, work engagement has increasingly emerged as a trending topic in psychology, human resource management, and organizational behavior viewed as a constructive work attitude (Karatepe & Olugbade, 2015). In other terms, when employees perceive the implementation of digital performance appraisals, they are likely to exhibit positive attitudes and behaviors towards their work, including higher levels of engagement (Fong & Ng, 2012). As a result, how employees significantly enhances their work engagement.

***Hypothesis 2:** Employee engagement mediates the relationship between Digital performance appraisal and employee performance.*

### 2.3 Employee Engagement and Employee Performance

The performance of an employee encompasses both their actions and inactions. Employee performance includes the quality and quantity of their work, attendance, willingness to assist others, and punctuality in delivering results. Findings from a study indicated that assessing individual performance is challenging. Supporting Yang's work, explored employee performance and found that the acknowledgment, recognition, and reward of employees significantly differentiate productivity levels (Bishop, 1987). Employee morale and productivity are greatly affected by how effectively an organization performs and how it manages rewards while companies strive hard to please their customers, they often overlook the importance of satisfying their employees.

According to equity theory Samuelson and Messick (1986) workers seek a fair workplace where their contributions are valued and yield results that are comparable to those of other employees. Employees' perceptions of fairness and trust cultivate a positive sense of self-identity and self-worth, which acts as a strong motivator for their participation at work. Because they are certain that their efforts will yield the intended outcomes and rewards, employees strive to achieve the goals (Aguinis & Pierce, 2008). The secret to their job engagement, which inspires them to do better at work, is their willingness to work hard. The theoretical framework for this study primarily includes four elements: Digital Performance Appraisal, Employee

Engagement as a mediating variable, Manager Role, and Employee Performance. These four elements will be examined using a questionnaire, and the author will clarify the connections between them.

**Hypothesis 3:** *Employee Engagement is positively related to employee performance.*

#### **2.4 Moderating Role of Manager Role**

Managers serve an essential function in moderating the link between employee engagement and their performance, affecting how engagement results in enhanced outcomes (Wang, Lu, & Siu, 2015). Their active participation and leadership styles greatly influence both the levels of engagement and the efficiency of performance management. Managers play a crucial role in employee engagement, as studies show they significantly influence team engagement levels. The personalized connections and daily interactions they have with employees are essential for driving motivation and empowerment (Kumar, Arasu, & Nagarajan, 2014). Successful managers create a workplace atmosphere where employees feel engaged and inspired, resulting in improved performance.

**Hypothesis 4:** *Manager Role moderates the relationship between Employee Engagement (EE) and employee performance (EP).*

Digital performance appraisal systems have increasingly transformed how organizations evaluate and manage employee performance by leveraging real-time feedback, data analytics, and transparency. Prior studies indicate that digital appraisal platforms enhance clarity of performance expectations, reduce appraisal bias, and promote timely feedback, which positively influences employee performance outcomes. Grounded in Social Exchange Theory, digital appraisal systems foster reciprocal relationships between employees and organizations by signaling organizational support, fairness, and investment in employee development. When employees perceive appraisal processes as transparent and supportive, they are more likely to reciprocate with higher levels of effort and performance. Furthermore, Equity Theory suggests that digitally enabled appraisals improve perceived fairness by standardizing evaluation criteria and minimizing subjectivity, thereby motivating employees to maintain or improve performance to restore equity within the workplace (Salsabil, Adam, & Chan, 2022).

Employee engagement plays a critical mediating role in the relationship between digital performance appraisal and employee performance, as engaged employees demonstrate higher commitment, vigor, and discretionary effort. Drawing on Social Identity Theory, digital appraisal systems can strengthen employees' identification with organizational goals by aligning individual performance metrics with collective objectives, thereby enhancing engagement (Bilal, Farooq, Waseem, & Ali, 2020). Engaged employees are more likely to internalize organizational values and translate performance feedback into improved work outcomes. Additionally, the role of the manager serves as an important moderating factor in this relationship. Managers who effectively communicate, support, and interpret digital appraisal outcomes can amplify employee engagement and performance, whereas ineffective managerial involvement may weaken these effects. Thus, the integration of digital performance appraisal systems, employee engagement, and managerial support collectively shapes employee performance through mechanisms explained by social exchange, social identity, and equity perspectives. Recent advances in digital human resource management (HRM) have fundamentally transformed performance appraisal systems from periodic, supervisor-driven evaluations into continuous, data-driven, and algorithmically supported processes. Digital performance appraisal systems are increasingly embedded within broader algorithmic management frameworks, where employee performance is monitored, evaluated, and sometimes rewarded through automated data analytics, dashboards, and decision rules (Kellogg, Valentine, & Christin, 2020). This shift represents a substantive departure from

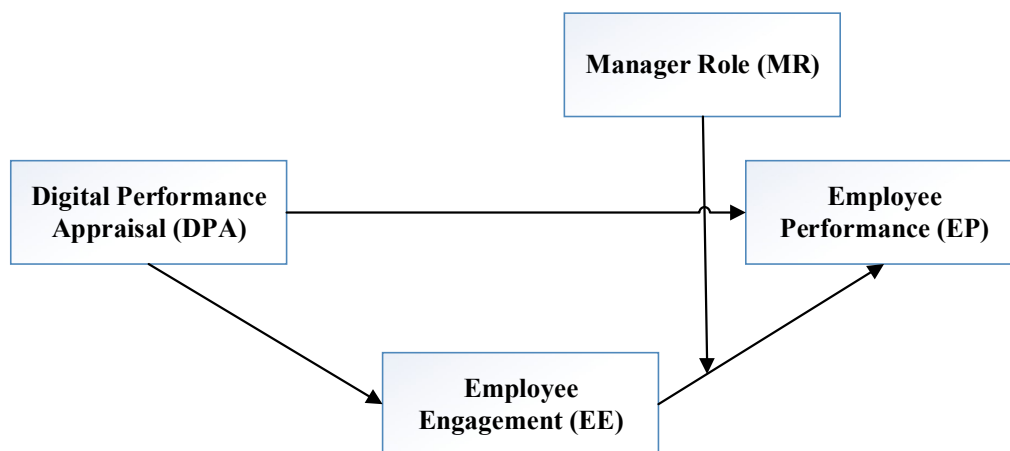
traditional appraisal practices, which relied heavily on managerial judgment, infrequent feedback cycles, and subjective assessment criteria

Unlike traditional appraisal, digital appraisal emphasizes real-time data capture, standardized performance metrics, and reduced managerial discretion. While these features enhance efficiency, consistency, and transparency, they also introduce new challenges related to surveillance, perceived fairness, and reduced human judgment. Existing digital HRM literature has predominantly focused on operational efficiency and organizational control, offering limited insight into employees' psychological and behavioral responses to digitally mediated appraisal systems (Bondarouk, Parry, & Furtmueller, 2017).

To address this gap, the present study integrates employee engagement theory to explain how digital appraisal systems influence performance outcomes indirectly. Employee engagement reflects employees' cognitive, emotional, and behavioral investment in their work roles (Kahn, 1990). Digitally enabled appraisal systems can shape engagement by influencing employees' perceptions of fairness, autonomy, feedback quality, and developmental support. However, prior studies have rarely theorized engagement as a mediating mechanism linking digital HR practices to performance-related outcomes, leaving an important explanatory gap in the literature.

Furthermore, algorithmic management research often portrays technology as displacing managerial authority, thereby underestimating the continuing importance of human managers in interpreting, contextualizing, and implementing digital HR systems. Recent studies suggest that managers play a critical augmentation role by translating algorithmic outputs, providing sense-making, and buffering potential negative effects of automation (Saks, 2019). Building on this perspective, the present study conceptualizes managerial role as a moderating mechanism that conditions the effectiveness of digital appraisal systems. Specifically, supportive and interpretive managerial involvement can strengthen the positive effects of digital appraisal on employee engagement, whereas weak managerial intervention may exacerbate disengagement and resistance.

By integrating digital HRM, algorithmic management, and engagement theory, this study explicitly addresses a key theoretical gap in the literature: the lack of understanding of how digital performance appraisal systems influence employee outcomes through psychological mechanisms and under what managerial conditions these effects are strengthened or weakened. The proposed mediation of employee engagement and moderation of managerial role thus provide a theoretically grounded and timely contribution to digital HRM research.



**Figure 1.** Research Framework and Hypotheses

### **3. Methodology**

#### **3.1 Sample and Procedure**

The data was gathered from private sector employees using a convenience sampling technique. Most of the study's participants are from Rawalpindi/Islamabad. 251 of the 266 responses that were gathered from the 286 questionnaires that were given were usable, while the remaining responses were either incomplete or unusable. The overall response rate was 82%. To ensure the logic of their comments, all participants were assured secrecy and anonymity as part of the request for voluntary participation. The majority of the data is gathered from workers in Pakistan's private sector in Rawalpindi and Islamabad. The participants were told that their answers would only be used for academic purposes in order to reduce the impact of social desirability bias.

#### **3.2 Sample Characteristics**

The majority of participants, who were between the ages of 25 and 35 (76%) and 36 and 45 (24%), were male (83.4%) and female (16.6%). The majority were assistants (63.2%), with daily earnings (22.1%) and contractual employment (68.1%), followed by managers (18.4%), officers (8.3%), chiefs (2.1%), and others (8.0%). The majority of responders (65.3%) have an M.B.A., and an average of 48.8% have worked for their respective companies for three to five years. For a variety of factors, fewer women answered to the survey. First, most private sector workers in Rawalpindi and Islamabad are men. Second, organizational access and cultural norms may limit female engagement. Third, work-life constraints and survey accessibility had an impact on the discrepancy. Female employees are less likely to be available or eager to conduct research during working hours since they often have greater work-family responsibilities.

#### **3.3 Measurement Instrument**

A 5-point Likert scale was used in the poll to gauge the different constructions for this investigation; responses ranged from 1 ("Strongly Disagree") to 5 ("Strongly Agree"). The Likert scale was appropriate for this study since it is widely and successfully used to measure attitudes, views, and behavior.

### **4. Results**

#### **4.1 Measurement Model Analysis**

To determine the construct's validity and reliability, the measurement methodology was evaluated (table 1). First, every item in the model has a factor loading that is higher than the minimum acceptable value of 0.50 (Peterson, 2000) with factor loading more than 0.7 is preferred in social science. Items with outer loading between 0.40 and 0.70 are often only taken into consideration for removal if doing so raises composite reliability (CR) or average variance extracted (AVE) above the suggested threshold. Additionally, an analysis of the current loading's confidence interval showed that none of the items' outside loadings included a zero. Therefore, nothing was eliminated from the investigation for additional examination.

The study result shows that average variance extracted (AVE) of DPA, EE, EP and MR 0.595, 0.599, 0.615, 0.634. Together, these results show that the model has a good level of composite reliability and average variance extracted, above of 0.5. Cronbach's Alpha and composite reliability (CR) were used to assess reliability; both statistics above the then-recommended threshold of 0.700 (Christmann & Van Aelst, 2006). Additionally, it was discovered that the CR was over 0.70, indicating strong reliability (Jr et al., 2017). Because the AVE was more than 0.500, convergent validity was deemed acceptable. By comparing the correlations between the latent variables with the source root of AVE and the Heterotrait-monotrait ratio of correlations (HTMT) with values below the (conservative) threshold of 0.85 (Henseler, Ringle, & Sarstedt, 2015), discriminant validity was determined. Discriminant validity is therefore proven (see table 1).

**Table 1. Reliability and Convergent Validity**

Construct	Item	Loading	Alpha	CR	AVE
Digital Performance (DPA)	DPA1	0.767	0.924	0.927	0.595
	DPA2	0.794			
	DPA3	0.766			
	DPA4	0.807			
	DPA5	0.808			
	DPA6	0.727			
	DPA7	0.783			
	DPA8	0.725			
	DPA9	0.788			
	DPA10	0.74			
Employee Engagement (EE)	EE1	0.743	0.926	0.927	0.599
	EE2	0.779			
	EE3	0.749			
	EE4	0.797			
	EE5	0.778			
	EE6	0.793			
	EE7	0.803			
	EE8	0.778			
	EE9	0.777			
	EE10	0.739			
Employee Performance (EP)	EP1	0.817	0.930	0.935	0.615
	EP2	0.789			
	EP3	0.719			
	EP4	0.815			
	EP5	0.809			
	EP6	0.776			
	EP7	0.779			
	EP8	0.791			
	EP9	0.724			
	EP10	0.815			
Manager Role (MR)	MR1	0.706	0.936	0.945	0.634
	MR2	0.78			
	MR3	0.798			
	MR4	0.851			
	MR5	0.807			
	MR6	0.801			
	MR7	0.815			
	MR8	0.786			
	MR9	0.800			
	MR10	0.809			

Note: DPA: Digital Performance Appraisal, EE: Employee Engagement, EP: Employee Performance, MR: Manager Role; AVE = Average Variance Extracted

#### 4.1.1 Discriminant Validity

The amount which measures of several ideas are different is known as discriminant validity. According to Bagozzi, Yi, and Phillips (1991), if two or more concepts are distinct, there shouldn't be a large correlation between valid measures of each. In order to verify discriminant validity, the HTMT values should preferably fall below a threshold of 0.85 (Hair & Alamer, 2022). To satisfy the recommended standards, the HTMT value must be less than 0.85 or 0.9. This result demonstrates that the study's measures for the several constructs DPA, EE, EP, and MR have stronger correlations with their respective constructs (see Table 2).

**Table 2.** Construct Discriminant Validity – HTMT

	DPA	EE	EP	MR	MR x EE
DPA	<b>0.77</b>				
EE	0.245	<b>0.77</b>			
EP	0.403	0.624	<b>0.78</b>		
MR	0.219	0.262	0.353	<b>0.79</b>	
MR x EE	0.082	0.079	0.183	0.030	

Note. DPA: Digital Performance Appraisal, EE: Employee Engagement, EP: Employee Performance, MR: Manager Role, Diagonal and Italicized are the square root of AVE

**4.1.2 Fornell-Larcker Criterion**

Fornell Larcker's criterion states that discriminant validity is recognized when square root of AVE is higher than its correlation with every other construct (Fornell & Larcker, 1981). In this study, a construct's square root of AVE in bold and italics was found to be higher than its connection with other constructs (table 3). Consequently, the creation of discriminant validity is strongly supported.

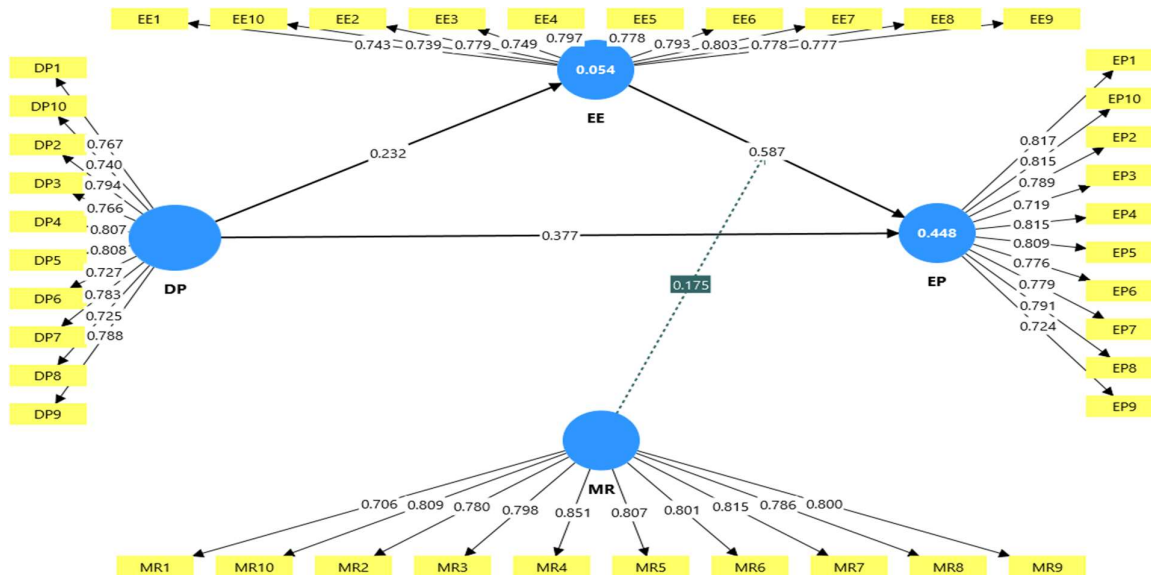
**Table 3. Construct Discriminant Validity – Fornell-Larcker Criterion**

	DPA	EE	EP	MR
DPA	0.771			
EE	0.232	0.774		
EP	0.377	0.587	0.784	
MR	-0.205	-0.250	-0.340	0.796

Note. DPA: Digital Performance Appraisal, EE: Employee Engagement, EP: Employee Performance, MR: Manager Role

**4.2 Structural Model**

The structural model in above Figure demonstrates how Digital Performance Appraisal (DP) influences Employee performance (EP) in a positive way. The relationship shows that DP positively impacts on EP with Mediating role of Employee Engagement (EE) and moderating Role of Manager (MR). The value of MR\*EE=0.129 which shows that there is significant interaction effect of managerial role within employee engagement and employee performance.



**Figure 2.** Final Structural Model Estimated through Smart PLS, showing path coefficients and measurement items (DP, EE, MR, and EP)

**Table 4. Summary of Hypothesis Testing Results**

The following table summarizes the results of hypothesis testing based on the data analysis:

Hypothesis	Decision
<b>H1:</b> Digital Performance appraisal justice is positively related to employee performance.	Supported
<b>H2:</b> Employee engagement mediates the relationship between Digital performance appraisal and employee performance.	Supported
<b>H3:</b> Employee Engagement is positively related to employee performance.	Supported
<b>H4:</b> Manager Role moderates the relationship between Employee Engagement and employee performance.	Supported

## 5. Discussion

The purpose and objective of the study is to provide evidence that DPA has a positive and significant contribution toward enhancing employee's performance in the Pakistani telecom sector. Pakistan's commercial telecom industry has implemented a number of HR rules and is well ahead of the governmental sector in terms of both financial results and policy implementation. The head offices formulate and oversee these policies centrally, and they are applied consistently throughout the nation. Still, research and development is a need that, if filled, might help businesses make better decisions, particularly when it comes to human resources, results are consistent with previous research (Ahmad & Allen, 2015; Karatepe & Olugbade, 2016).

The literature indicates that an employee's job performance is significantly influenced by their managerial role (Parker, 2007). It's interesting to note that prior research revealed a negligible direct correlation between job performance and managerial role. Open communication, frequent interaction, asking questions, respecting employees' opinions, encouraging a team approach within the company, demonstrating concern for individual needs, and fostering employee development through relationships with subordinates all support the manager's role as a mediator of engagement (Suknunan & Bhana, 2022). Enhanced positive attitudes at work are a result of enhanced work engagement. The worker exhibits dedication, enthusiasm, and a passion for their work, and they feel vigorous or energetic at work.

The study's findings demonstrate that Digital Performance Appraisal (DPA) has a significant and favorable contributes to improving EP in Pakistan's private telecom industry (Ullah et al., 2021). Additionally, the study confirms positive correlation between EP and DPA, suggesting its crucial because digital performance management is thought to be a useful tool for employee motivation through reward systems, participatory planning, and decision-making. Additionally, managerial role (MR) was used as a moderator variable in the study to improve the system's overall efficacy. Employees in the sector not only perceive DPA as a necessary and beneficial component of PA, but also associated with productivity and engagement at work. To put it another way, one of the main drawbacks of the current PA models is the lack of MR in DPA. In other words, a key limitation of conventional appraisal models is insufficient integration of MR within digital performance. A major contribution of study is its emphasis on employee engagement as a mediator. The findings show that EE positively affects EP. According to Schleicher, Baumann, Sullivan, and Yim (2019), prior research has not well understood the components contributing to PA's success; the current study was an effort to fill this gap. Therefore, The Digital Performance Appraisal (DPA) model was revalidated in the current study, and its significant aspects were justified using PLS-SEM. In particular, not enough study has been done on the employee perspective of the digital performance

management system so far (Audenaert, Decramer, George, Verschuere, & Van Waeyenberg, 2019). The current study examined DPA in relation to employee-related outcomes like MR and work engagement. While some researchers have made an effort to identify such connections, they have not observed a thorough DPA model that incorporates fairness as a component, as the current work does (Baird, Su, & Nuhu, 2022). This makes the study unique and adds significantly to the body of knowledge on DP appraisal.

## **5.2 Implications of the Study**

### **5.2.1 Theoretical Implications**

In the Pakistani setting, this study has expanded and reaffirmed work engagement and digital performance appraisal theories. According to the (Locke, 1968), setting clear, challenging goals increases employee motivation, which in turn improves performance. The current study expanded on its validity and clarified that goal-setting, in conjunction with other DP components, favorably influences EE and EP. Additionally, the study expanded the validity of work engagement theory and its associated ideas of organizational commitment and job satisfaction (Kahn, 1990). Additionally, the study expanded the validity of equity theory and its associated ideas of organizational commitment and job satisfaction (Meyer, Allen, & Smith, 1993; Riketta, 2002). According to the Equity Theory Adams (1963), workers want an equitable workplace where their efforts are recognized and yield results that are comparable to those of others in the company. These findings offer strong foundations for equality theory and testing in various settings with various drivers, correlates, and outcomes.

Thus, the transition from a traditional system to a digital assessment involves a process of functional extension. By promoting higher levels of employee engagement, improving fairness perceptions and increasing social exchange ties, modern digital performance appraisal systems greatly boost employee performance when compared to conventional, paper-based or annual appraisal systems (Bashir, Wright, & Hassan, 2023; Ghani, Hyder, Yoo, & Han, 2023). Conventional assessment systems are frequently criticized for their lack of openness, subjectivity, and infrequent feedback, all of which can erode motivation and erode trust. On the other hand, constant feedback, real-time performance tracking, data-driven assessments, and interactive communication are all made possible by digital appraisal systems, which together foster a more encouraging and reciprocal workplace. Furthermore, digital appraisal systems enhance employee performance through employee engagement (Colquitt, Conlon, Wesson, Porter, & Ng, 2001; Rupp, Shapiro, Folger, Skarlicki, & Shao, 2017).

### **5.2.2 Practical Implications**

In order to achieve the intended outcomes, this study may help firms create an efficient digital performance appraisal system and increase the possibility that employees will accept it. Additionally, the study gives managers the chance to recognize problems and constraints with the system and make well-informed choices to address them. The telecom industry is most affected by the findings. In order to guarantee that employee-related results (engagement and performance) are acceptable to both employees and management at the same time, the study would be useful for these businesses in designing a thorough and more efficient appraisal system. The studied organizations' HRM policies were centrally managed, and the variations between them were negligible. As a result, the study's distinctive strength with regard to the Pakistani context is that the findings may be applied to the private telecom industry throughout the country. Because of this, the study's unique strength in relation to the Pakistani setting is that its conclusions may be applicable to the private telecom sector across the nation.

Organizations may encounter some difficulties when implementing the Digital Appraisal System, such as managerial proficiency in data interpretation. Managers may misinterpret data if they are not properly trained. Inaccurate feedback and unfair evaluations can result from poor

data interpretation, which lowers employee engagement and erodes system trust. Transparency in algorithmic decision-making is another crucial concern. Perceptions of procedural injustice may arise when employees are unaware of how algorithms affect assessment results or how performance ratings are determined. Finally, employee involvement in system design and implementation is another important issue. When digital assessment systems are implemented without employee participation, they frequently encounter low acceptability and low engagement.

### 5.3 Limitations and Future Directions

The study has a number of drawbacks. For instance, the study is limited because Pakistan's private telecom industry does not use Digital Performance Appraisal as a comprehensive methodology. Performance appraisals are considered holy by Pakistani organizations, and researchers are unwillingly given access to this material. Causal and experimental research designs are seen to be the most effective for examining the efficacy of any intervention, such as DPA, within the organization. However, they are subject to administrative and legal authorizations and demand significant financial and material resources. The researchers had no direct influence on these needs.

Instead of focusing only on evaluation, HR should present digital appraisal methods as transparent and developmental. This starts throughout the hiring process, when HR can evaluate candidates' digital flexibility and receptivity to criticism. Employee loyalty, engagement, and performance are more likely to increase when they see that the company is investing in their growth through equitable and technologically advanced appraisal procedures. Another crucial HR intervention to optimize the efficacy of digital performance appraisal systems is training and development programs. HR should create organized training courses for managers and staff that cover goal alignment, performance coaching, and feedback quality in addition to the technical application of digital assessment technologies. According to equity theory, teaching managers how to consistently use appraisal criteria and clearly communicate performance outcomes lowers perceptions of prejudice and favoritism and increases employees' sense of fairness.

Policy makers may build an enabling ecosystem where digital performance appraisal systems support long-term employee engagement and organizational performance by defining clear norms, defending employee rights, and improving managerial competence. These regulations guarantee that HR technology developments are in line with moral values, equity, and long-term worker development. Future studies should test the concept across industries and cultural contexts, refine digital appraisal variables, and use longitudinal designs.

### 5.4 Conclusion

Studies conducted in Pakistan's four commercial telecom sectors showed a connection between DPA, EE, and all employee-related outcomes of the Digital Performance Appraisal. DPA was found to have a beneficial and significant impact on EE and its EP. Furthermore, it is found that EE has a positive and significant impact on worker performance. The most important finding of the study is the investigation of the mediating relationship of work engagement between DPA and EP. This relationship also demonstrates a complimentary mediation in both circumstances.

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