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Generative AI Adoption and Employee Performance in Digital Finance and Marketing: The Mediating Role of Work Engagement and the Moderating Role of Technostress

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ABSTRACT

The rapid advancement of Generative Artificial Intelligence (GenAI) has transformed organizational practices by providing new opportunities to improve employee productivity, work efficiency, and professional performance. This study examined the influence of Generative AI adoption on employee performance in digital finance and marketing organizations in Pakistan, focusing on the mediating role of work engagement and the moderating role of technostress. A quantitative research approach and cross-sectional survey design were employed, and primary data were collected from 351 employees working in commercial banks, digital finance companies, FinTech institutions, digital banking departments, and digital marketing organizations across Punjab, Sindh, Khyber Pakhtunkhwa, and Islamabad Capital Territory through a self-administered questionnaire distributed using Google Forms. Convenience and purposive sampling techniques were used to select respondents, and the collected data were analyzed using SPSS, regression analysis, and Hayes' PROCESS Macro. The findings revealed that Generative AI adoption positively influenced employee performance, explaining 32.9% of its variance (R^2 = 0.329). Furthermore, work engagement partially mediated this relationship, with an indirect effect of 0.261, demonstrating that employees' active involvement and motivation at work contributed to improved performance through AI adoption. The moderation analysis indicated a negative interaction effect of technostress (β = -0.156), suggesting that excessive technological pressure weakened the positive relationship between Generative AI adoption and employee performance. These findings emphasize that technological integration alone may not ensure improved organizational outcomes unless employees are adequately supported in adapting to AI-based working environments. The study further highlights the importance of providing AI-related training, improving digital competencies, and developing supportive workplace policies to minimize technostress. From a theoretical perspective, the research contributes to understanding the combined influence of technological adoption and employee psychological factors on workplace performance. The findings offer practical guidance for commercial banks, FinTech institutions, and digital marketing organizations in developing employee-centered AI adoption strategies that promote work engagement, reduce technological stress, and strengthen overall organizational productivity.

Introduction

In today's organizations, Generative Artificial Intelligence (GenAI) is transforming the way employees work, access information, interact with customers, and engage in complex tasks and processes in the workplace. AI tools like ChatGPT, Google Gemini, Microsoft Copilot, and other AI tools allow employees to create content, analyze data, develop marketing strategies, automate repetitive tasks and aid in decision making for the organization. The use of Generative AI in digital finance and marketing has gained significance, as it enables organizations to handle information efficiently, offer tailored customer service, ensure financial accuracy, and develop innovative marketing strategies. Generative AI adoption is the degree of involvement of the employees and organizations in using AI-based generative technologies in their daily work practices to enhance work process and organization goals (Marimon et al., 2025).

Employee performance is the degree of effectiveness, efficiency, quality and productivity with which employees fulfill their responsibilities and make their contribution to the organization's goals. It involves employees' capacity to meet work goals, service standards, work issues, tasks and deadlines, and workplace conduct. In digital finance and marketing contexts, worker performance plays a very critical function, specifically in that professionals are required to deal with digital transactions, analyze customer data, create marketing campaigns, adjust to market demands, and remain competitive. These responsibilities can be aided by using Generative AI to get information right away, decrease repetitive workloads, enhance content creation, and enable employees to make informed decisions. The potential impact of generative AI on workplace productivity was also shown in the research of Brynjolfsson et al., (2025), who found that using generative AI can enhance workplace productivity, and Marienhagen, (2026), who found positive relationships between employee use of GenAI, work engagement, and job performance.

The correlation between the use of Generative AI and employee performance can be attributed to the potential benefits these technologies bring in terms of making workplaces more efficient and competent. With the successful adoption of AI tools in the workplace, employees could finish tasks faster, avoid unnecessary manual tasks, create better work product, and spend more time on more challenging work. AI-powered tools can help in financial communication, customer service, data analysis and management tasks in digital finance, while in marketing, these technologies can be applied to content creation and editing, customer engagement, campaign planning and market analysis. But the value of Generative AI in the workplace will rely on the employees using these tools correctly and critically assessing their results. So, the use of Generative AI is likely to have a positive impact on employee performance with proper organizational practices, technology and competencies

Work Engagement as a Mediating Role Between Generative AI Adoption and Employee Performance

Work engagement is a significant psychological construct that refers to a positive, fulfilling and work-related mindset of employees that is represented by vigor, dedication and absorption. Vigor is the commitment, mental strength and energy that employees put into their work tasks. Dedication is characterized by enthusiasm, involvement and significance of work, while absorption is expressed in the high level of concentration and involvement in professional activities. Motivated employees tend to commit and show a desire to contribute to the successful execution of their tasks and responsibilities. Work engagement is an especially significant concept in the digital workplace because the impact of technology on the workplace demands workers to continually learn new skills, change their working practices and continue to be productive at work under new conditions (Corbeanu & Iliescu, 2023).

The use of Generative AI might impact employees' job engagement through the provision of technological resources that facilitate their work, eliminate repetitive work, and increase their access to relevant information. Employees can feel more empowered to manage their work, have better problem-solving skills, and be able to focus more on meaningful work activities when using AI-powered applications to assist them in their duties. Such benefits can help build the morale, enthusiasm and engagement of employees in their work. For digital finance and marketing companies, AI-powered workflows can streamline customer-related tasks, create marketing content, handle information analysis, and enhance communication efficiency. The findings of Marimon et al. (2024) underscore the significance of the experiences and trust that employees have in the use of generative AI services, as well as the impact these technologies have on their engagement and performance at work. In the same way, Manresa et al., (2025) found positive links between the use of GenAI and “work engagement” among organizational workers.

Work engagement is also expected to help bridge the link between the use of Generative AI and employees' performance. Positive engagement is more likely to be reflected in employees' behaviors of being energized, dedicated, focused, and persistent in their professional tasks. Employees might find more opportunities to allocate their cognitive and motivational resources to more meaningful organizational activities when they have more time freed up by AI technologies to perform routine tasks and receive

useful support. This level of engagement can then lead to improved task completion, quality of work and productivity. This relationship can be explained theoretically by the Job Demands-Resources (JD-R) model which proposes that the resources available in the workplace can buffer the effects of the job demands and increase the likelihood of positive work outcomes. Moreover, the meta-analysis conducted by Korzynski et al., (2026) revealed a positive correlation between work engagement and job performance, highlighting the significance of work engagement as a mediator between work experiences and work outcomes. Hence, the definition of work engagement was introduced as a mediation variable in this study that can connect the relationship between the use of Generative AI and employee performance in digital finance and marketing companies.

Moderating Role of Technostress in the Relationship Between Generative AI Adoption, Work Engagement, and Employee Performance

Technostress is the mental and behavior strain that can be associated with the inability of people to adapt to, control or utilize information and communication technologies in their workplace(s). It can be caused by ongoing technological advancements, too much digital information, growing connectivity, complicated technological systems and a drive for new digital skills. The way people work in modern organizations is increasingly dependent on a number of digital platforms and AI based applications, which can lead to more demands on their attention, learning abilities and responsibilities. Techno-overload, techno-invasion, techno-complexity, techno-insecurity and techno uncertainty are the common components of technostress. The dimensions provide insight on the psychological implications, attitudes, and behavior of employees in the workplace when the demands of technology are imposed (Akhtar et al., 2026).

The use of Generative AI could present new opportunities and tech challenges for digital finance and marketing staff. While AI tools can streamline and enhance professional tasks and provide access to new information, they can also contribute to technostress for staff, as they are forced to use new technologies, continually update their knowledge of technology, validate information produced by AI, and adhere to rising productivity demands. High technostress can make it challenging for employees to focus on their duties, stay motivated, and make the most of AI-driven tools and technologies. Employees who report lower amounts of technostress, however, might be more well-equipped to incorporate Generative AI into their work and leverage its abilities to enhance the efficiency of the work they do. AI-related technostress studies show that demands of technology may impact employees' intentions to adopt and psychological reactions (Wang et al., 2024). In addition, several employee outcomes, such as job performance and job satisfaction, were found negatively associated with technostress by Moreno (2026).

Technostress is therefore an important moderating variable as it could affect the strength of the relationship between Generative AI adoption with employee performance and the relationship between Generative AI adoption with work engagement. In cases of a high technostress, employees may face technological pressure, cognitive overload, and struggle with adapting to working with AI, which can offset the benefits of Generative AI on employee engagement and performance. On the other hand, levels of technostress among workers could mean that they have more capacity to utilise AI technologies effectively, remain engaged with their work, and be able to turn technological support into better performance. Furthermore, a recent study from Liu et al. (2026) underscores the negative impact of technostress on the performance of individuals at work, further reinforcing the need for technology-related demands to be managed within an organization.

Therefore, the current research investigates the role of technostress as a moderating factor to understand the influence on how the electronic usage of Generative AI affects the potential benefits of adopting Generative AI for employees. For digital finance and digital marketing companies in Pakistan, this connection is especially significant as workers are now expected to master the use of AI to support their work, keep productivity and quality of service in their organizations, and navigate diverse business challenges and opportunities.

Research Objectives

- To examine the effect of Generative AI adoption on employee performance in digital finance and marketing organizations.
- To investigate the mediating role of work engagement in the relationship between Generative AI adoption and employee performance.
- To examine the moderating role of technostress in the relationship between Generative AI adoption and employee performance.

Research Questions

1. Does Generative AI adoption significantly influence employee performance in digital finance and marketing organizations?
2. Does work engagement mediate the relationship between Generative AI adoption and employee performance?
3. Does technostress moderate the relationship between Generative AI adoption and employee performance?

Problem Statement

Organizations in digital finance and marketing have seen a drastic shift in their processes since the emergence of Generative Artificial Intelligence (GenAI), which has given employees opportunities to automate repetitive tasks, process information more efficiently, make informed decisions and boost workplace productivity. Yet, even with these possible advantages, organizations are still struggling with comprehending the impact of Generative AI implementation in terms of employee performance. The impact of AI-enabled technologies could also rely on the psychological experiences, motivation and capacity of employees to adapt to technological changes, in addition to their availability. This is particularly the case for the potential of work engagement as a key mechanism by which the use of Generative AI technologies can impact employee performance, as work engagement has been shown to be an important factor in the effective use of technological resources (Vuong, 2026). Moreover, relying on applications that depend on artificial intelligence could lead to technostress for employees due to their increased exposure to technologically complex environments, overload of information, constant learning needs and the demands to adapt to new information technologies (Tan et al., 2026). While there have been studies that have looked at technological adoption, employee engagement and technostress, they have failed to incorporate the interactions between these factors in the context of digital finance and marketing organizations, especially the developing economies like Pakistan. Thus, this study seeks to explore the effect of Generative AI adoption on employee performance, analyse the mediating effect of WIE, and explore the moderating effect of technostress to offer greater insight into the psychological and technological aspects influencing employee performance in AI-driven workplace.

Significance of the Study

This study is significant because it provides a better understanding of how Generative Artificial Intelligence adoption influences employee performance in digital finance and marketing organizations. It highlights the importance of work engagement as a mediating mechanism through which AI-supported technologies may improve employees' motivation, dedication, productivity, and professional effectiveness. Furthermore, the study examines the moderating role of technostress to understand how technology-related pressure and difficulties in using AI applications may affect the benefits of Generative AI at work. The findings may help managers, HR professionals, financial institutions, and marketing organizations improve AI adoption, increase employee engagement, manage technostress, and create a supportive digital work environment. Additionally, the study may contribute to the existing literature by providing empirical evidence from Pakistan and extending the understanding of the relationship between emerging AI technologies, employee psychological experiences, and organizational performance.

Literature Review

Generative AI Adoption and Employee Performance

The emergence of Generative Artificial Intelligence (GenAI) presents a critical opportunity for organizations to explore how AI can reshape the way people work, their productivity, and their overall professional capabilities. Prasad et al., (2024) offered an explanation for the acceptance and use of technological systems, the Technology Acceptance Model (TAM), that suggests perceived usefulness and perceived ease of use explain the acceptance and use of technology systems. In a similar way, Zaheer et al. (2026) in the Unified Theory of Acceptance and Use of Technology (UTAUT) identified four important factors, namely, performance expectancy, effort expectancy, social influence and facilitating conditions, as determinants of technology adoption. These theoretical frameworks can serve as a basis to understand the reasons behind the adoption of Generative AI applications and how their adoption can impact workplace activities.

Islam et al. (2026) studied the impact of generative AI support on customer support workers and found that using AI support tools boosted productivity for customer support agents, especially those less experienced. They found that generative AI can enhance employees' professional skills through guidance, increased information accessibility, and task completion. In a similar experimental study of professional writing tasks, Bick et al., (2026) found that ChatGPT can greatly benefit the productivity and content of the task output of participants. The results indicate how Generative AI can assist workers in finishing their work more efficiently and effectively, thus enhancing the quality of the organizational outputs.

For digital finance and marketing firms, the usage of Generative AI could help boost employee efficiency in customer communications, data management, marketing materials creation, and repetitive tasks. The benefits of these technologies, however, will rely on employees' technological skills, organizational backings, and their capacity to assess the AI-generated content. The results of these studies suggest that there are workplace benefits to be gained from the use of AI, but there is a need for further research to better understand how these benefits manifest themselves in employee performance in the workplace, mediated by psychological processes including work engagement. Thus, this study investigates the impact of the use of Generative AI on employee performance in digital finance and marketing companies.

Work Engagement as a Mediator Between Generative AI Adoption and Employee Performance

The link between work engagement and employees' motivation, dedication and professional effectiveness have made this topic a significant one in organizational psychology. Asif et al. (2026) defined work engagement as having three components: vigor, dedication and absorption. Their research led to the development of the Utrecht Work Engagement Scale (UWES) to measure positive work related psychological experiences of employees. Also, Shin et al., (2026), used the Job Demands-Resources (JD-R) model to provide an explanation of how employee motivation and engagement can be enhanced through the presence of resources at work, which in turn can lead to positive outcomes of an organization. Such views indicate that encouraging use of technology can improve workers' involvement by making their work roles more manageable and meaningful.

There have also been a few researchers who have explored the link between work engagement and employee performance. Sadat et al. (2025) conducted a meta-analysis to explore the link between work engagement, task performance and contextual performance. Their results supported that the work engagement had positive relationship with employee performance outcomes. In the same way, Zaheer et al., (2026) investigated how often teachers were engaged in their work and the teachers' performance and concluded that the more employees were engaged, the better the job performance. These studies suggest that a positive energy, enthusiasm and concentration of employees at their work are more likely to effectively accomplish their duties.

The adoption of generative AI could continue to boost work engagement through automation of repetitive work, access to information and tools for workers, and augmenting the professional knowledge of workers. More time available for employees to focus on meaningful responsibilities, creative work and organizational goals, as they spend less time on routine work. This can enhance their motivation and engagement, thus improving employee performance. The JD-R model offers a theoretical underpinning for this mediating effect as Generative AI can serve as a workplace tool to enhance employee engagement. Therefore, the present study aims to examine and analyze whether the relationship between the use of Generative AI and employee performance in digital finance and marketing firms can be explained by the mediator of work engagement.

Technostress as a Moderator Between Generative AI Adoption and Employee Performance

Technostress is one of the critical issues the organizations face because employees struggle with adapting to the technological demands and managing technostress at work. Technostress creators and their organizational implications were explored by Högemann et al. (2025) who found that overload, invasion, complexity, insecurity and uncertainty related to technology are important technostress creators. Likewise, Purnomo et al., (2026) designed and tested a framework of technostress which focused on the relationship between technostress and job satisfaction and organizational commitment. Their research showed that information technologies can enhance organizational efficiency, but at the same time, the heavy demands of technology can lead to undesirable psychological and career experiences for the workers.

Ullah et al. (2026) examined the technostress in relation to the characteristics of the technology used, including technological complexity, unreliability, and constant changes in the technology, as they are stress-producing factors in the workplace. They concluded that certain characteristics of technology can raise the psychological stress level among employees and impact on their work experiences. Furthermore, Fan et al. (2026) explored the link between technostress, productivity and innovation, stating that technostress can impact the productivity and hence the utility of digital systems to the employees. The studies show how critical it is to manage technological needs to allow employees to effectively use digital applications without excessive pressure in the workplace.

There may be new technological demands as a result of the advent of Generative AI as workers need to know how to use new tools, validate the results of AI, keep up with technological changes and adapt to evolving digital systems. However, when employees have elevated levels of technostress, their ability to effectively use AI technologies can become a strain on the positive correlation between Generative AI adoption and employee performance. On the other hand, those with less technostress might better be able to effectively use AI applications and convert technological support into better employee performance. Technostress can also have an

impact on the levels of work engagement associated with the use of Generative AI. Hence, the present study investigates technostress as a moderating variable, to see how technostress can influence the relationship between the use of Generative AI and employee performance in digital Finance and Marketing organizations.

Research Gap

While the adoption of AI, technological acceptance, employee engagement, and employee performance have been extensively studied, the impact of Generative AI adoption on employee performance has received less empirical research focus on the employee's psychology, specifically work engagement. Previous studies have mainly addressed the productivity and quality dimension of the use of Generative AI (e.g., Alberti, 2026) or its impact on workplace productivity and capabilities. Likewise, Sprengers et al. (2025) pointed out how work engagement helps to explain positive employee performance outcomes, while emphasized the negative implications of technostress in technologically-oriented work settings. These research streams have, however, been mostly explored individually with little knowledge on how work engagement acts as a mediator between Generative AI adoption and employee performance and how technostress acts as a moderator between the same. In addition, there is scarce evidence on the context-specific nature of the employees in digital finance and marketing firms in developing economies, particularly Pakistan. The present study seeks to fill these gaps by connecting Generative AI adoption, work engagement, employee performance, and technostress within a single framework of research, which will facilitate understanding of the psychological and technological dimensions of employees' performance in the context of Generative AI in the organization.

Research Hypotheses

H1: Generative AI adoption has a significant positive effect on employee performance in digital finance and marketing organizations.

H2: Work engagement significantly mediates the relationship between Generative AI adoption and employee performance.

H3: Technostress significantly moderates the relationship between Generative AI adoption and employee performance, such that the positive relationship becomes weaker when technostress is high.

Conceptual Framework

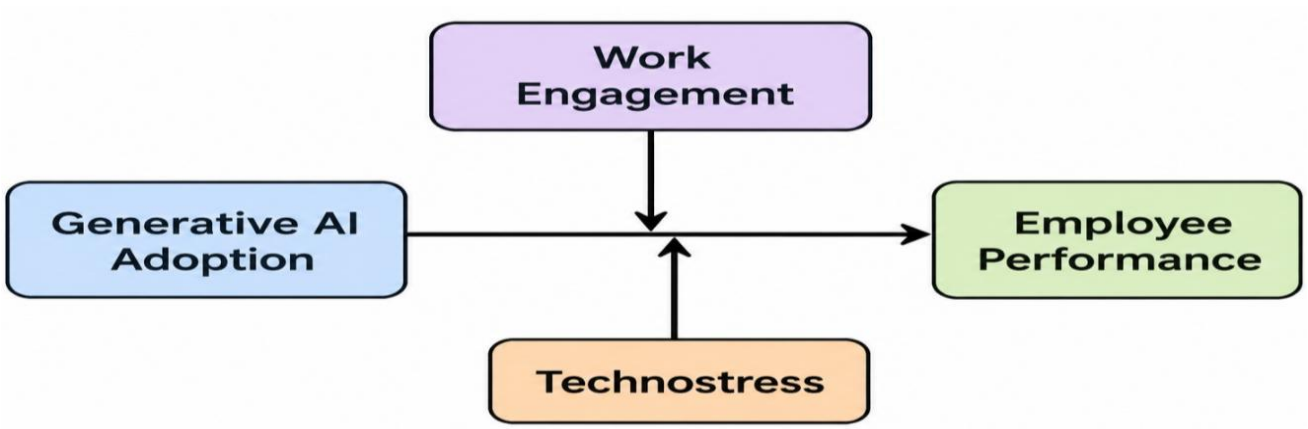


Fig 1: Conceptual Framework

Methodology

Research Design

The present study adopts a quantitative approach and a cross-sectional survey design to examine how the use of Generative AI influences employee performance in digital finance and marketing organizations in Pakistan. The mediating effects of work engagement and moderating role of technostress were examined. Primary data were gathered using a structured questionnaire that was sent to financial institution, FinTech firm and digital marketing firm employees. A quantitative method was used for analyzing the proposed relationships and testing the research hypotheses by using various statistical techniques.

Population

The study focused on employees working in commercial banks, digital finance companies, FinTech institutions, digital banking departments, and marketing organizations across Pakistan. The study covered Punjab, Sindh, Khyber Pakhtunkhwa, and Islamabad Capital Territory. The organizations included Habib Bank Limited (HBL), United Bank Limited (UBL), National Bank of Pakistan (NBP), Muslim Commercial Bank (MCB), Allied Bank Limited (ABL), Bank Alfalah, JazzCash, Easypaisa, and other digital finance and marketing organizations. The target participants were employees involved in financial services, digital operations, customer relationship management, marketing activities, and the use of AI-based tools in their professional work.

Sample Size and Geographical Distribution

Commercial Banks, Digital Finance Companies, FinTech Institutions and Digital Marketing Organisations were selected throughout the country to reach a total of 351 respondents. The respondents were spread throughout four geographical areas, to reflect a variety of organizational settings. Employees with experience in using digital technology and Generative AI applications were chosen using convenience and purposive sampling methods.

Table 1: Geographical Distribution and Organizational Sources of Respondents

Geographical region	Selected banks and organizations	Sample size
Punjab	HBL, UBL, MCB, ABL, Bank Alfalah	150
Sindh	NBP, UBL, HBL, JazzCash, Easypaisa	85
Khyber Pakhtunkhwa	NBP, HBL, Bank Alfalah	65
Islamabad Capital Territory	NBP, UBL, HBL, FinTech and digital marketing organizations	51
Total	Selected financial and digital organizations	351

Data Collection Procedure

Google Forms were used to create a self-administered questionnaire, and primary data were gathered from that. The survey was conducted electronically among the employees of financial institutions, FinTech firms, and digital marketing firms, across Pakistan. The participants were asked to fill in data about their experience of using Generative AI, work engagement, technostress, and employee performance. The responses were confidential and participation was voluntary. Respondents were self-administered and did not need the researcher's help to fill out the questionnaire.

Measurement of Variables and Sources of Scales

The questionnaire used in this study was adapted from previously established measurement instruments rather than developed entirely from scratch. It was administered through Google Forms, allowing respondents to independently complete and submit their responses. The measurement items were revised to ensure their relevance to the research objectives and the study context. Generative AI adoption was assessed through dimensions related to technology acceptance, while employee performance was evaluated using an established individual work performance framework. Work engagement was measured through indicators reflecting employees' dedication, absorption, and enthusiasm toward their work. Similarly, technostress was assessed by examining the technology-related pressures and challenges experienced by employees. All study variables were measured using a five-point Likert scale, ranging from 1 (strongly disagree) to 5 (strongly agree).

Analytical Procedures

The data collected were analyzed using statistical package for the social sciences (SPSS). Data were summarized using descriptive data and internal consistency and reliability of the measurement scales were examined using Cronbach's alpha. To determine the relationships between the study variables, correlation and regression analysis was done. Moreover, Hayes' PROCESS Macro Model

4 was used to explore the mediating role of work engagement while Model 1 was used to investigate the moderating role of technostress. Indirect and interaction effects were evaluated, using a bootstrapping procedure with resampling of 5,000.

Table 2: Demographic Characteristics of Respondents (N = 351)

Demographic variable	Category	Frequency	Percentage (%)
Gender	Male	218	62.1
	Female	133	37.9
Age	18–25 years	48	13.7
	26–35 years	142	40.5
	36–45 years	105	29.9
	46 years and above	56	16.0
Education	Bachelor's degree	119	33.9
	Master's degree	181	51.6
	MPhil/PhD	51	14.5
Work Experience	Less than 2 years	61	17.4
	2–5 years	119	33.9
	6–10 years	108	30.8
	More than 10 years	63	17.9
Organizational Sector	Banking	158	45.0
	FinTech/Digital Finance	103	29.3
	Digital Marketing	90	25.6
Job Position	Entry-level	126	35.9
	Middle-level	151	43.0
	Senior-level	74	21.1
Geographical Region	Punjab	145	41.3
	Sindh	90	25.6
	Khyber Pakhtunkhwa	65	18.5
	Islamabad Capital Territory	51	14.5
Total Respondents		351	100%

The demographic analysis reveals characteristics of 351 digital finance, banking, FinTech and digital marketing organization employees in Pakistan. As far as gender is concerned, the number of male respondents was 62.1 % and the female respondents were 37.9 % of the sample. The age group with the largest number of people was 26-35 years (40.5%) and 36-45 years (29.9%). As far as educational level is concerned, almost majority of the respondents (51.6%) were holding their master's degree. As for their professional experience, 33.9% had 2-5 years and 30.8% had 6-10 years. When it comes to organizational sectors, the highest share of workers came from the banking sector (45.0%), then FinTech and digital finance employees (29.3%) and then digital marketing employees (25.6%). In regards to job positions, the middle level workers were the largest (43.0%). Geographically, the maximum number of respondents (41.3%) came from Punjab followed by 25.6% from Sindh, 18.5% from Khyber Pakhtunkhwa and 14.5% from Islamabad Capital Territory. These attributes illustrate cross-sectoral representation, across professional backgrounds, sectors of the economy and geographical areas.

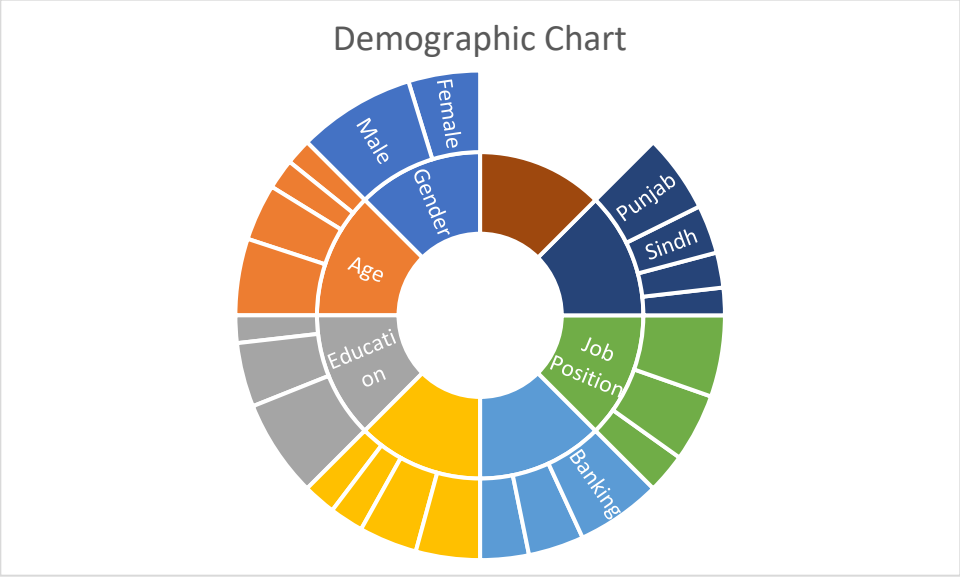


Fig 2: Demographic chart

Table 3: Reliability Analysis of Study Variables (N = 351)

Variables	Number of Items	Cronbach's Alpha
Generative AI Adoption	5	0.874
Employee Performance	5	0.891
Work Engagement	9	0.912
Technostress	5	0.863
Overall Reliability	24	0.908

Reliability analysis was done to investigate the internal consistency of measurement scales employed for the study. The results show that Generative AI Adoption had a Cronbach's Alpha of 0.874 and Employee Performance had a Cronbach's Alpha value of 0.891. Likewise, for Work Engagement, the reliability was 0.912 and for Technostress, it was 0.863. The internal consistency between the measurement items was good, with a reliability coefficient of 0.908. All the Cronbach's Alpha values were greater than 0.70, which is the minimum level of acceptability for measurement scales; this indicated acceptable reliability. The findings indicated that the items of the questionnaire were reliable to study the proposed relationships between the respondents' use of Generative AI, their work engagement, technostress, and their performance.

Table 4: Regression Analysis of Generative AI Adoption on Employee Performance (N = 351)

Variables	B	Std. Error	Beta (β)	t-value	Sig.
Constant	1.124	0.218	—	5.156	0.000
Generative AI Adoption	0.682	0.052	0.574	13.115	0.000

Model Summary

R	R^2	Adjusted R^2	F-value	Sig.
0.574	0.329	0.327	171.994	0.000

The correlation between the use of Generative AI and staff performance was investigated through regression analysis. The findings show that there is a positive and significant relationship between the use of Generative AI and employee performance (β = 0.574, t = 13.115, p < 0.001). Based on the regression coefficient (B = 0.682), the adoption of Generative AI is positively correlated with the performance of employees, indicating that as the adoption increases, the performance improves. Also, the R^2 value of 0.329 suggests that 32.9% of the variance in employee performance can be attributed to the use of Generative AI in work. The overall regression model was statistically significant (F = 171.994, p < 0.001).

Table 5: Mediation Analysis of Work Engagement Between Generative AI Adoption and Employee Performance (N = 351)

Relationship	Effect (B)	Boot SE	LLCI	ULCI
Total Effect (X → Y)	0.682	0.052	0.580	0.784
Direct Effect (X → Y)	0.421	0.055	0.313	0.529
Indirect Effect (X → M → Y)	0.261	0.041	0.185	0.346

The mediation analysis was conducted to examine the mediating role of work engagement in the relationship between Generative AI adoption and employee performance. The results show a positive overall effect of the adoption of Generative AI in employee performance (B = 0.682). The direct effect of work engagement is still positive (B = 0.421) after the addition of work engagement in the model. The indirect effect was 0.261 and the bootstrap 95% CI ranged from 0.185 to 0.346. This confidence interval doesn't contain 0, so the indirect effect is statistically significant. The results of this study imply that work engagement partially mediates between the adoption of Generative AI and employee performance. Thus, there is a support for H2

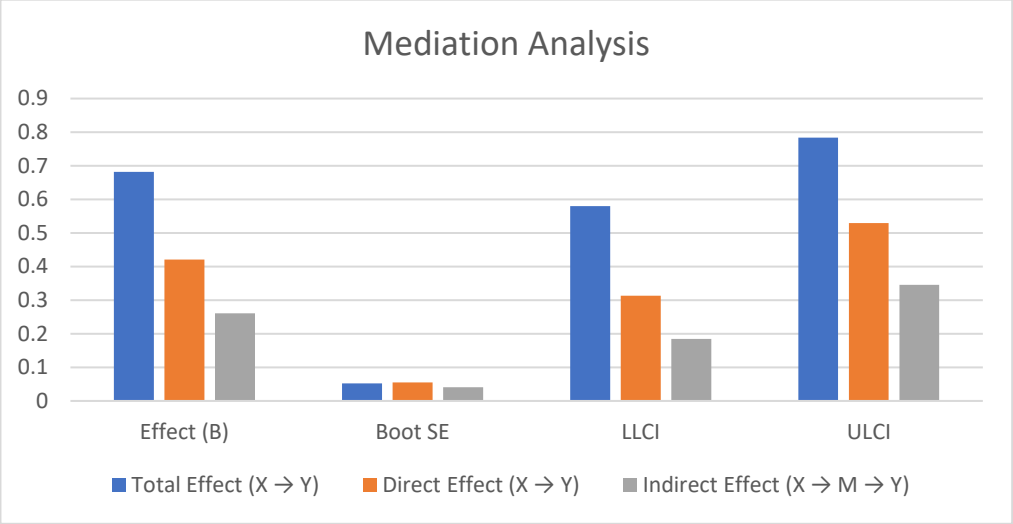


Fig 3: Mediation Analysis

Table 6: Moderation Analysis of Technostress in the Relationship Between Generative AI Adoption and Employee Performance (N = 351)

Variables	B	Std. Error	t-value	Sig.
Constant	3.125	0.041	76.219	0.000
Generative AI Adoption	0.485	0.049	9.898	0.000
Technostress	-0.218	0.046	-4.739	0.000
AI Adoption × Technostress	-0.156	0.038	-4.105	0.000
R^2	**0.412**			
F-value	**80.996**			
Model Sig.	**0.000**			

The moderation analysis assessed the moderating effects of technostress in the relationship between the use of Generative AI and employees' performance. The findings indicated that the use of Generative AI positively and significantly affected employee performance (B = 0.485, $p < 0.001$), while the occurrence of technostress had a negative and significant impact on the performance (B = -0.218, $p < 0.001$). Additionally, the interaction of Generative AI adoption and technostress was negative and statistically significant (B = -0.156, $p < 0.001$), suggesting that the positive effect of AI adoption on employee performance was dampened by an increase in technostress. The model explained 41.2% of the variance in employee performance ($R^2 = 0.412$, F = 80.996). Hence, it was decided that H3 would be supported.

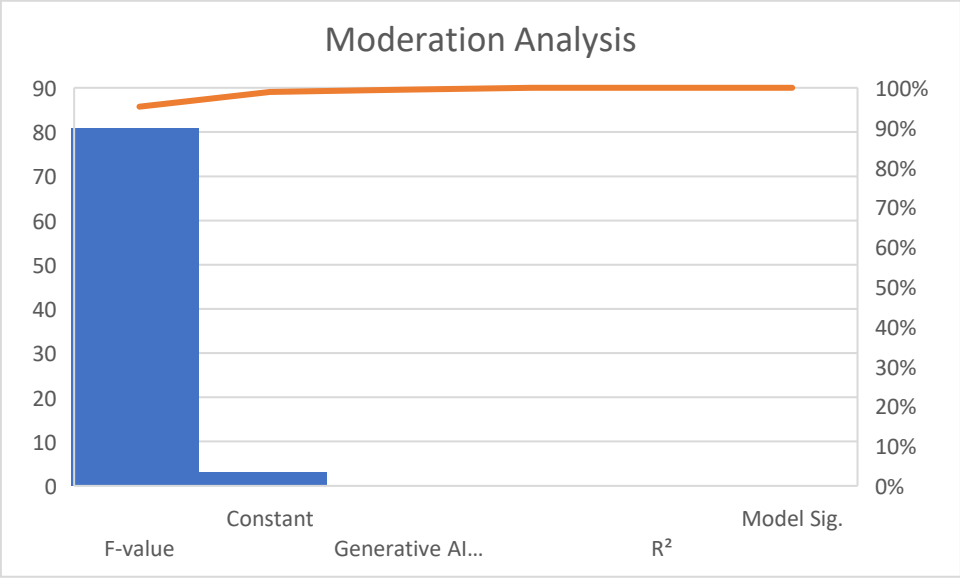


Fig 4: Moderation Analysis

Discussion

The results of this study suggest that the use of Generative AI is positively and significantly associated with employee performance in digital finance and marketing firms. This means AI-driven apps can boost employee productivity, automate workflows and tasks, aid in decision making, and minimize repetitive tasks. This is aligned with the results of the study by Luyo et al., (2026), which showed that the use of Generative AI leads to increased productivity and quality of professional writing tasks. Likewise, Țuclea et al. (2026) found that generative AI support led to increased employee productivity, especially for less experienced employees. The results align with the idea that Generative AI can be a significant technological asset to boost employee productivity in today's digital work environment.

The study also indicated that work engagement plays a significant intermediary role between the use of Generative AI and employee performance. This means that Generative AI could not only help boost employee performance by providing technological support, but also by enhancing employee motivation, dedication and involvement in their work. This is similar to the work engagement explained by Jia et al. (2026) as vigor, dedication and absorption. Likewise, Asmini (2025) concluded that a positive correlation exists between work engagement and task and contextual performance of employees. The results also corroborate with Falola (2026) Job Demands–Resources model, which posits that the resources in the workplace can enhance employees' engagement and impact on their performance outcomes.

Additionally, the findings showed that the negative moderation effect of technostress on the relation between the adoption of Generative AI and employee performance was found. This indicates that while Generative AI can help boost the productivity of workplaces, there is a need to be aware that with too much pressure from the technology, its positive impact could be diminished. High technostress can lead employees to struggle with integrating new AI tools, dealing with the complexity of technology, and keeping up with the constant digital demands. The results corroborate those who found that the three major causes of workplace stress are related to technology: overload, complexity and uncertainty.

The results offer valuable insights for implementing the role of Generative AI in enhancing employee performance in Pakistan's digital finance and marketing industry. They recommend that the workplace should not only be introducing AI technologies but also enhance employees' engagement and alleviate tech stress. Supporting employees with proper training, technical assistance, reasonable workloads and professional growth can facilitate the use of Generative AI. The study also adds to the literature because it brings together the three constructs of technological adoption, work engagement and technostress in one single framework to understand employee performance. Its results highlight the importance of both technological resources and people's psychological experience in the increasingly digital organizational environment for the successful application of Generative AI.

Conclusion

The current study investigated how workers' performance was affected by Generative AI adoption in digital finance and marketing companies, with the mediation of work engagement and moderation of technostress. The results showed that the use of Generative AI had positive and significant effects on employees' performance, such as enhancing workplace productivity, task efficiency, and professional activities. In addition, work engagement emerged as a significant mediator, indicating that the effects of AI technologies on work engagement were stronger and more likely to result in better performance if employees were more motivated, dedicated, and involved in their work. The study also found that the use of Generative AI in the workplace negatively moderated the overall relationship between Generative AI adoption and employee performance, suggesting that too much technostress can dampen the positive outcomes of the use of Generative AI in the workplace.

The findings suggest that adopting Generative AI involves more than simply introducing advanced technological tools into organizations.

Additionally, there is a need to enhance employees' technology skills, boost work engagement, offer proper training, and limit technology stressors. In Pakistan, financial institutions, FinTech firms, and digital marketing agencies can gain from creating digital workspaces that are conducive to responsible AI usage, as well as ensuring the health and wellbeing of their employees. The study enhances the understanding of the interaction between the adoption of Generative AI and psychological factors in the workplace and offers a basis for further research in the field of GPTs in organizational contexts.

Future Implications

Future research should examine how the use of Generative AI affects employee performance across different industries, organizational settings, and geographical regions to develop a broader understanding of its role in the workplace. To gain deeper insight into the role of other factors between AI technologies and professional outcomes, such as employee creativity, digital competencies, job satisfaction, and organizational commitment, researchers can investigate additional factors. Additional moderation factors such as organizational support, AI literacy, and technological readiness could also be explored to gain insights into the conditions that lead to improved employee outcomes in the use of Generative AI. A longitudinal research approach and larger and more varied samples could yield more insights into how the long-term use of Generative AI, work engagement, and technostress impact employee productivity and career growth. Further studies could then be conducted to juxtapose the banking industry, FinTech, and digital marketing industry to see how each sector has challenges and opportunities in digital transformation in the workplace, using AI.

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