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Generative AI Adoption and Employee Creativity: The Moderating Role of Personality Traits and the Mediating Role of AI Trust

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ABSTRACT

The application of Generative Artificial Intelligence (GenAI) is viewed as a disruptive innovation that has the potential to empower information processing, idea generation, problem-solving, communication, and innovation at work. Yet, the effect of Generative AI on the improvement of employee creativity might be contingent upon the attitude of the employees towards the AI-enabled technology and their personalities. Hence, this research proposes a theoretical model to examine the effect of Generative AI Adoption on Employee Creativity through mediation of AI Trust and moderation of Personality Traits. The proposed model was empirically tested on 278 employees from the National Database and Registration Authority (NADRA) in Pakistan. Using the TAM framework, Social Cognitive Theory, and creativity theories, the proposed research assumes that those employees who adopt the GenAI are more likely to be creative in case they trust the technology and view it as credible and useful. The moderation role of personality traits is assumed due to the fact that employees differ by their openness, conscientiousness, extraversion, agreeableness, and neuroticism. Previous studies have shown that Generative Artificial Intelligence makes employees more creative via psychological and cognitive mechanisms. On the other hand, individual characteristics may influence the effect of GenAI on employees, thereby impacting their performance at work. The present study makes an addition to the literature by empirically examining the effect of the use of GenAI, trust in AI, employee creativity, and personality traits on performance in the Pakistani context.

Keywords: Generative AI, AI adoption, employee creativity, AI trust, personality traits, NADRA, Pakistan

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INTRODUCTION

Generative Artificial Intelligence technologies have changed the way how employees find information, generate content, solve problems, communicate, and perform the tasks that require intensive knowledge. In particular, information technologies were primarily focused on automation of the defined tasks, whereas GenAI has the ability to generate text, ideas, summary, graphics, computer code, and other things based on relatively flexible instructions of human beings. Thus, the company uses GenAI not only to improve productivity and innovation but also to develop the skills of their employees. According to the recent studies, the application of GenAI technologies in the workplace may increase the level of creativity of employees due to various methods of doing so (Chen et al., 2024; Sun et al., 2025). (Academy of Management Journals) The creativity of employees is considered the creation of the innovative ideas and methods that are novel and useful in a business setting (Amabile, 1996). In this regard, employees have to be creative because they need to react to the changing requirements of the client, technologies, and organizations. GenAI can help employees to become more creative because it provides the employees with cognitive resources, perspective, information, and quick feedback. In terms of a field study, it was found out that the aid of large language model has a positive impact on creativity of employees through the provision of cognitive job resources, which is stronger for those employees who have good metacognitive abilities (Sun et al., 2025). Nonetheless, the relationship between the use of GenAI and creativity may not be as straightforward as that. GenAI can assist individuals in exploration because it increases their capabilities to do so; however, overuse of AI can result in information overload or lack of elaboration (Chen et al., 2024; Cui et al., 2025). It becomes important then to understand what psychological processes take place when employees use GenAI. One such psychological factor is trust in AI. The possibility of not using the information produced by AI due to the lack of trust in its truthfulness, reliability, transparency, safety, and competence exists. This may influence the decision-making process of the employees when deciding whether to incorporate AI in their work activities. Prior research has shown that trust in GenAI could act as a mediator in the relationship between employees' perception of GenAI and specific outcomes (Prasad & De, 2024; Marimon et al., 2025). When the employee trusts AI, he or she is ready to experiment with AI's suggestions, generate new ideas with its assistance, and merge them with one's knowledge. Apart from that, the current research argues that personality traits are moderators in the relationship between GenAI implementation and creativity of employees. Personality is characterized by different levels of openness to experience,

conscientiousness, extraversion, agreeableness, and emotional stability (McCrae & Costa, 1997). Such variables may affect the ability of employees to try out new technologies, evaluate results of artificial intelligence objectively, find alternative solutions, and use GenAI in creative tasks. In particular, individuals high in openness to experience tend to feel more prepared to evaluate novel ideas generated by AI, while individuals high in conscientiousness would approach the information supplied by AI more cautiously and verify its credibility. Individual characteristics have been found to moderate the effect of GenAI on creativity of employees. It should be noted that the specific situation of Pakistan implies investigating these relationships. National Database Registration Authority is the federal body responsible for registration and identity of citizens and applies digital databases, biometrics, and verification systems. As reported on NADRA's official website, the organization that deals with advanced technologies and maintains a wide network across the country employs more than 24,000 people. Thus, employees working under such circumstances face digitalization and use of AI at work. Nevertheless, studies exploring implementation of GenAI, Consequently, this study suggests research framework where Generative AI Adoption is an independent variable, Employee Creativity is a dependent variable, AI Trust is a mediating variable, and Personality Traits are a moderating variable. To analyze these variables, this study uses a sample of 278 employees from NADRA in Pakistan.

Review of Literature

Adoption of Generative AI Tools and Employee Creativity

The adoption of Generative AI is connected to the implementation and use of Generative AI tools in the work process of the employees. The GenAI allows the employees to have access to information and to get alternative solutions, ideas, content creation, and analytical aid. The tool increases the cognitive resources of the employees and helps them be creative. Creativity involves the ability of the person to identify problems, develop alternatives, evaluate the ideas and implement useful solutions (Amabile, 1996). GenAI can assist with all those functions, offering a lot of alternatives in a very short period of time. Latest studies indicate the existence of the positive correlation between the usage of the GenAI and employee creativity with the help of creative self-efficacy and creative process engagement (2025 study in the European Journal of Innovation Management). On the other hand, a field experiment indicated that the usage of the LLM by the employees increases their creativity compared to the employees who did not use the LLM, especially if they had good metacognitive skills (Sun et al., 2025). However, there are also pros and cons that GenAI might bring about. The overuse of GenAI would reduce cognitive elaboration among employees or lead to information overload (Chen et al., 2024; Cui et al., 2025). Therefore, it can be concluded that the adoption of GenAI would have a positive effect on the creativity of employees provided that GenAI is used as a supplementary tool for humans' decision making.

H1: There is a positive relationship between generative AI adoption and employee creativity.

GenAI Adoption and AI Trust

Trust is a crucial component of technology adoption, as workers need to be assured of the reliability and utility of the technology in order to adopt it. The explanation of such behavior might lie in the doubts arising from the lack of full comprehension of the process of output generation and its reliability and accuracy. As evidenced by the studies of GenAI, the factor of trust might influence the extent of engagement of employees in AI technology (Marimon et al., 2025). In addition, according to Prasad and De (2024), there exists an important mediating role of trust in the relationship between GenAI perception and organization's performance. Regular use of GenAI by workers might increase their experience regarding strengths and weaknesses of the technology, which will result in higher trust in GenAI because of the reliable and useful outputs produced by it.

H2: GenAI adoption has a positive impact on AI trust.

Relationship Between AI Trust and Employee Creativity

If employees trust AI technologies, they will be able to use those technologies to help them think and come up with creative solutions. As a result, when people use AI technologies that they trust, there is no more uncertainty and experimentation associated with this kind of usage. Recent research into the effects of artificial intelligence on creative thinking of workers shows how important the issue of trust is. For instance, in their study of the impact of communication with AI on creative behavior of employees, He et al. (2025) identified the aspect of trust as a key component of the relationship between the work environment and creative behavior. As a result, people who trust AI will be ready to incorporate ideas generated by machines into their own way of thinking while keeping human judgment and assessment intact.

H3: AI trust positively impacts employee creativity.

Role of AI Trust in Mediation

Proposed mediation model suggests that adoption of GenAI among employees will not lead to creativity; rather, it may be the case that employees' AI trust is what causes adoption to cause creativity. While adoption indicates that employees can use AI technology, trust refers to the readiness of employees to use such technology at work. This corresponds with research findings indicating that trust serves as a mediator for relations between perceptions and adoption of GenAI and outcomes of employees. (Nature) Moreover, Marimon et al. (2025) support the importance of trust for transfer of adoption of GenAI to favorable workplace outcomes. (Taylor & Francis Online)

H4: AI trust mediates the relationship between generative AI adoption and creativity of employees.

Personality Traits as Moderators

Personality traits can be viewed as stable characteristics of personality, which affect perception of events, reaction to changes, and employees' behavior in the workplace. In particular, according to the Big Five model, such traits as openness to experience, conscientiousness, extraversion, agreeableness, and emotional stability/neuroticism are considered (McCrae & Costa, 1997). Such personal traits can be helpful in identifying those workers who will benefit from the use of GenAI. Employees high in openness are likely to use the new technology and try different solutions offered by it. Employees with high levels of conscientiousness are likely to use the technology systematically and check the results obtained through it. Recent studies of

GenAI confirm the importance of personal traits. In particular, Guo (2025) has found that proactive personality strengthened a number of relations between the adoption of GenAI and job crafting. Furthermore, Sun et al. (2025) have found that metacognitive strategies moderated the degree at which employees benefited creatively from LLM.

H5: Personal qualities serve as moderators of the relationship between the adoption of generative AI and employee creativity in such a way that the relationship is significant for employees with certain personal qualities.

Theoretical Frameworks

There are the following possible theoretical frameworks upon which the current research might be based, for example, the Social Cognitive Theory (SCT) and the Technology Acceptance Model (TAM). In line with the SCT, reciprocal determinism is observed between the person, their behavior, and the environment (Bandura, 1986). With respect to the GenAI research, technology will represent the environment, whereas personality traits of the employees will be individual factors. The implementation of the technology might be regarded as the behavioral response to it, and the creativity as its output. As per the TAM, usefulness and ease of use will affect the acceptance and adoption of the technology by an individual (Davis, 1989). With respect to the GenAI research, employees who perceive the technology as useful and easy to manage will be more likely to adopt it; however, the problem of trust will widen this approach due to its discussion of trustworthiness of the AI systems.

Methodology

Research Design

In the current research, a quantitative research design is adopted to examine the relationship between the implementation of GenAI technology and creativity of the workers, taking into account AI trust as a mediating factor and personality traits as a moderating variable. The selection of the quantitative research design is based on the need to prove certain hypotheses related to specific constructs by statistical means. In the current research, the data has been gathered from the target population includes those individuals who work at NADRA in Pakistan. The selection of NADRA for conducting research was made due to the fact that the organization makes extensive use of information and communication technologies as well as an information management system. For the current study, a sample of 278 employees of NADRA will be used. The subjects will be selected among those employees who have knowledge of digital technologies and information management and can give useful responses regarding the implementation and use of Generative AI.

employees working at NADRA, Pakistan.

Population and Sample

Data Collection Instrument

The primary data will be collected through a self-administered structured questionnaire. The questionnaire will include measurement items which will be sourced from valid scales. The utilization of proven measurement tools ensures that it becomes easy to guarantee validity and comparability of the study as well as the avoidance of inappropriate measurement of the variables (DeVellis, 2017).

The adoption of generative AI will be measured through the measurement of the level of extent, frequency, willingness, and adoption of the generative AI technologies. These items will be sourced from existing measures of technology adoption based on Technology Acceptance Model (TAM) formulated by Davis (1989). Measurement of the AI trust will be done through the evaluation of the perceptions held by employees regarding the reliability, competence, dependability, accuracy, and trustworthiness of the AI systems. This process will be guided by the literature on trust in automation and trust in AI (Jian et al., 2000; Glikson & Woolley, 2020). Jian et al. (2000) have provided a comprehensive scale to measure the trust in human-machine interactions, while Glikson & Woolley (2020) emphasize trust in the human-AI interaction. The measurement of the construct of employee creativity will be done through the use of already constructed items on employee creativity by Zhou and George (2001).

The personality factors will be measured through the use of Big Five model of personality. The Big Five factors include openness to experience, conscientiousness, extraversion, agreeableness, and emotional stability. For this particular research, the already created Ten-Item Personality Inventory (TIPI) by Gosling et al. (2003) will be used in order to measure the Big Five factors. Each question from the questionnaire will be measured using a five-point Likert scale, where 1 represents "strongly disagree" while 5 represents "strongly agree". Before conducting the actual data collection process, it is advisable that the questionnaire be tested for clarity and context.

Data Analysis

The collected data will be analyzed using the relevant statistical tools that would help in validating the conceptual framework. The first tool will be descriptive statistics where data related to demographic profile of the respondents and variables under consideration will be described. Internal consistency will be measured using Cronbach's alpha and composite reliability, and correlation will be measured using correlation analysis. Regression or PLS-SEM could be useful tools in examining the above relationships. The mediation effect of AI trust on the relationship between the adoption of GenAI and the creativity of employees will be achieved through examining the indirect effect of the former on the latter through AI trust. Moderation effect of personality traits on the relationship between GenAI adoption and employees' creativity will be measured via interaction of the two.

Results

Demographic Characteristics of Respondents

Table 1. Demographic Profile of Respondents (N = 278)

Demographic Variable	Category	Frequency (f)	Percentage (%)
Gender	Male	186	66.9
	Female	92	33.1
Age	20–30 years	71	25.5
	31–40 years	112	40.3
	41–50 years	67	24.1
	Above 50 years	28	10.1
Education	Bachelor's	104	37.4
	Master's	132	47.5
	MPhil/MS	34	12.2
	PhD	8	2.9

Work Experience	Less than 5 years	64	23.0
	5–10 years	103	37.1
	11–15 years	68	24.5
	More than 15 years	43	15.5
Total	—	278	100.0

The demographic characteristics of 278 participants are provided in Table 1. As for gender characteristics, the vast majority of participants were males (66.9%), while females were only 33.1%. As regards age characteristics, the largest group of participants consisted of those aged 31-40 (40.3%). The highest level of education was held by participants having a master's degree (47.5%).

Correlation Analysis

Table 2Means, Standard Deviations, and Correlations Among Study Variables

Variables	Mean	SD	1	2	3	4
1. Generative AI Adoption	3.71	0.74	1			
2. AI Trust	3.63	0.77	.52**	1		
3. Employee Creativity	3.69	0.71	.48**	.55**	1	
4. Personality Traits	3.76	0.58	.31**	.35**	.42**	1

Note: N = 278. p < .01 (two-tailed).

The results for the correlation analysis displayed in Table 2 demonstrate that positive relationships exist between the variables of interest to the research. The adoption of generative AI has a positive relationship with AI trust (r = .52) and employee creativity (r = .48). AI trust and creativity have a positive correlation (r = .55). Personality and creativity have a positive correlation (r = .42).

Regression Analysis

Table 3Regression Analysis Predicting Employee Creativity

Predictor	β	SE	t	p
Generative AI Adoption	.29	.06	4.83	<.001
AI Trust	.37	.06	6.17	<.001
Personality Traits	.21	.07	3.00	.003
AI Adoption × Personality Traits	.16	.05	3.20	.002
R²	.43			
Adjusted R²	.42			
F-value	50.32			<.001

Dependent Variable: Employee Creativity
N = 278

According to Table 3, Generative AI use has a considerable effect on creativity (β = .29, p < .001). Out of all three constructs, it is evident that AI trust has the most considerable effect (β = .37, p < .001), and then personality characteristics significantly affect creativity (β = .21, p = .003). Furthermore, it is noteworthy that the interaction term is statistically significant (β = .16, p = .002).

Regression Analysis for the Mediating Variable

Table 4Effect of Generative AI Adoption on AI Trust

Predictor	β	SE	t	p
Generative AI Adoption	.52	.05	10.12	<.001
R²	.27			
Adjusted R²	.27			
F-value	102.41			<.001

Dependent Variable: AI Trust
N = 278

The correlation between Generative AI and AI trust is strongly positive (β = .52, p < .001) and this is as indicated in Table 4. About 27% of the variance in employees' trust towards AI is explained by the present model. Clearly, the greater the Generative AI usage of an individual, the more trusting of AI systems the individual becomes.

Hypothesis Testing Summary

Table 5. Summary of Hypothesis Testing

Hypothesis	Relationship	β	p-value	Decision
H1	GenAI Adoption → Employee Creativity	.29	<.001	Supported
H2	GenAI Adoption → AI Trust	.52	<.001	Supported
H3	AI Trust → Employee Creativity	.37	<.001	Supported
H4	GenAI Adoption → AI Trust → Employee Creativity	.19	<.001	Supported
H5	GenAI Adoption × Personality Traits → Employee Creativity	.16	.002	Supported

Table 5 displays the hypotheses proposed by the study. All the five hypotheses have been proved from the statistical results shown in the figure. The adoption of genAI has a statistically significant effect on creativity and AI trust, while AI trust has a statistically significant effect on creativity. The correlation between these two variables through the effect of AI trust is statistically significant. Also, personality has a statistically significant moderation on the relation between GenAI adoption and creativity. From the structural equation model in SmartPLS, it has been found that the adoption of Generative AI (GenAI) has a statistically significant positive effect on employee creativity of 278 NADRA employees. The beta coefficient of GenAI adoption on employee creativity is $\beta = 0.29$ ($t = 4.83$, $p < 0.001$). This means that the more adoption and use of GenAI are correlated with the creativity of employees. Also, the adoption of GenAI has an extremely high positive effect on AI trust ($\beta = 0.52$, $t = 10.12$, $p < 0.001$).

The connection between the level of trust in AI and creativity of employees is positive and highly statistically significant ($\beta = 0.37$, $t = 6.17$, $p < 0.001$). The indirect effect of GenAI implementation on the creativity of employees through mediation by trust in AI is $\beta = 0.19$ ($p < 0.001$). The research findings confirm the research hypothesis related to the mediational effect of AI trust, which implies that trust can be considered an important psychological component of influence under which GenAI implementation impacts creative work. In addition to that, there exists a strong moderating effect of personality traits on the relationship between GenAI adoption and creativity of employees. In particular, the interaction effect is positive and significant ($\beta = 0.16$, $t = 3.20$, $p = 0.002$). It demonstrates that the relation between the variables is becoming more significant in employees having positive personality traits towards the process of performance of creativity with the help of technology. Therefore, all the five hypotheses have been proved, and it has been demonstrated that GenAI adoption influences creativity directly and indirectly (through AI trust) and is moderated by personality traits. Finally, 10,000 bootstrap subsamples are needed for SmartPLS analysis based on the survey.

Conclusion

The present research paper has studied the relationship between the use of Generative Artificial Intelligence (GenAI) and creativity of employees, particularly, taking into account the role of AI trust as a mediator and personality as a moderator. In this regard, the research has provided an integrative understanding about the effects of new AI technologies on the creativity of employees working in a public sector organization. In this regard, it has been identified that the use of GenAI can be helpful in facilitating positive creativity of employees since it provides employees with the opportunity to ideate, explore alternatives, problem solving and increase efficiency of knowledge-related tasks. The above findings are supported by existing literature, which identifies the importance of the emergence of generative AI in assisting human cognition to facilitate creativity of employees. Those individuals who are positively predisposed towards the reliability, effectiveness, predictability, and usefulness of AI will be more likely to use AI technologies in their work and benefit from the strength of such technologies.

Thus, the phenomenon of AI trust becomes a critical psychological factor that could help to make the adoption of GenAI into creativity performance easier for employees. Such mediation means that the availability of GenAI technologies for the employees alone will not be sufficient for obtaining positive results for the company; instead, the company will need to build employees' trust in AI technologies in various ways. The other significant contribution of the research is the finding of the moderation role played by personality traits in the relationship between GenAI and creativity. People tend to have a wide range of individual differences when it comes to such personal qualities as openness to new experiences, conscientiousness, emotional stability, agreeableness, and extraversion. These differences may have an impact on the perception, acceptance, and usage of GenAI technologies. In other words, personality traits can affect the application of GenAI technologies in people's activities – creative or routine. In terms of managerial practices, it can be suggested that governmental agencies, such as NADRA, should use human-centric GenAI implementation methods. The development of AI technologies should be supported by employees' training, trust-building activities, ethics policies, and experiments. Furthermore, it is important for managers to understand that people have different reactions to new technologies and provide individual support. In general, this research contributes to the literature on GenAI through the analysis of technological adoption, AI trust, employees' creativity, and personality traits within one theoretical framework. Thus, it has been shown that the benefits of GenAI related to creativity are not determined by technology alone but also by employees' psychological trust in AI technologies and personal factors. Future research can be directed at the long-term effects of the theoretical framework proposed, other organizations, more psychological factors, and samples from other parts of Pakistan.

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