

## RELATIONSHIP BETWEEN GENERATIVE AI USAGE AND WORK ENGAGEMENT AMONG UNIVERSITY TEACHERS

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### Abstract

The emergence of generative artificial intelligence (AI) has rapidly transformed teaching techniques, academic writing, and assessment processes in universities worldwide. The use of AI by university educators has become quite common for creating lessons, preparing content, and performing administrative activities, among others. The purpose of the present study was to investigate the connection between the use of generative AI and work engagement of university educators. A quantitative research design was employed, and data were collected through self-administered questionnaires from 200 university educators employed at public and private universities. Generative AI was measured using a custom-made scale consisting of questions assessing the frequency and usefulness of the use of generative AI. Work engagement was measured using the Utrecht Work Engagement Scale (UWES). Descriptive statistics, reliability, Pearson correlation, and regression analysis were done using IBM SPSS Statistics. It was found that there was a significant positive correlation between the use of generative AI and work engagement of university educators. Furthermore, it was found that the use of generative AI positively predicted work engagement of university educators.

### Introduction

Digital technology development has significantly impacted educational systems globally. One of the recently developed technologies impacting learning processes is generative artificial intelligence (AI). Generative AI refers to sophisticated AI tools capable of producing human-like content, such as text, presentations, lesson plans, and research summaries (Dwivedi et al., 2023; Kasneci et al., 2023). Nowadays, educational institutions widely use AI tools such as ChatGPT, Gemini, Copilot, and others for several educational and professional purposes. Educational institutions rapidly incorporate AI tools to improve educational practices and administrative processes and increase efficiency. Instructors use AI technologies for lecture preparation, assignment generation, literature review, academic paper writing, and other teaching tasks, as well as for administrative duties. These technologies enable fast access to

information while helping overcome difficulties associated with repetitive tasks (Kasneci et al., 2023).

Work engagement is considered a relevant factor in organizational psychology that impacts employees' psychological and physical well-being, motivation, and job performance. Such a construct is related to an intensely positive work-oriented psychological condition comprising three components: vigor, dedication, and absorption. Vigor can be viewed as the ability to generate energy and toughness; dedication includes a sense of passion and accomplishment; whereas absorption means being fully occupied in work.

Teachers who demonstrate work engagement show enthusiasm and excitement in their professional activities, and this positively impacts their productivity, organizational commitment, job satisfaction, and students' learning outcomes. Using generative AI can

positively affect the work engagement of university teachers in several ways. Such technologies may help instructors reduce excessive workload and stress while enhancing instructional planning, research, and teaching (Schaufeli et al., 2002; Bakker & Demerouti, 2007).

The concept of work engagement can be studied through the Job Demands-Resources (JD-R) model, in which AI technologies can be considered resources that positively affect employees' job engagement by increasing motivation and psychological involvement. While the use of such technologies reduces workload and increases efficiency, it also enhances teachers' professional and psychological engagement (Bakker & Demerouti, 2007).

Despite the growing prevalence of generative AI tools in universities worldwide, few studies have examined their relationship to teachers' work engagement, especially in Pakistani institutions. Previous studies focused on students' perceptions and acceptance of AI technologies, as well as the ethical issues they raise. Therefore, limited knowledge exists about teachers' experience with using generative AI technologies.

Thus, this research will investigate the relationship between the use of generative AI and teachers' work engagement at universities. Furthermore, it is necessary to determine whether the use of generative AI positively predicts teachers' work engagement. Such research will contribute to the fields of organizational psychology, educational psychology, and higher education.

### Generative AI in Higher Education

The development of AI technologies represents an innovative breakthrough in higher education. The technologies use machine learning and natural language processing algorithms in order to create human-like responses and academic content. Universities all over the world have embraced AI technologies to transform teaching methods, increase academic productivity and administrative efficiency (Dwivedi et al., 2023).

AI technologies are used in various ways by university teachers. The technologies help teachers to create lecture notes, design

examinations, develop curricula, generate academic writing materials and conduct research. Additionally, researchers have recommended using AI algorithms to summarize academic articles, gather information, and perform repetitive tasks. Therefore, AI usage helps to save time and provide efficient instructions.

The development of online learning and digital education explains the quick adoption of AI technologies. It is believed that generative AI technologies will revolutionize innovations in education and creativity and increase professional productivity. However, concerns regarding ethics, plagiarism, overreliance on technology, and a lack of critical thinking skills have been raised (Kasneci et al., 2023).

Nevertheless, generative AI is widely accepted in higher education due to its efficiency in academic and professional settings.

### Work Engagement among University Teachers

Work engagement is defined as an empowering and enjoyable psychological state regarding work characteristics, which comprises vigor, dedication, and absorption (Schaufeli et al., 2002). Vigor includes energy and persistence when performing work, dedication implies passion for one's profession, and absorption means concentrated involvement in tasks related to one's job.

Work engagement is especially important for university teachers because engaged teachers are associated with high-quality teaching, increased student motivation, and better university performance. University teachers who are engaged show more commitment and professionalism.

Among many determinants of work engagement are organizational support, workload, leadership, autonomy, and technology. Technology can be viewed as a job resource that helps teachers work faster and reduces their workload.

Previous studies have shown that technology has a positive impact on workers' engagement and their occupational well-being. Those workers who view technology as a supporting resource show more motivation, productivity, and job satisfaction (Bakker & Demerouti, 2007).

### Relationship between Generative AI Usage and Work Engagement

The Job Demands-Resources (JD-R) theory can be an appropriate theoretical framework for examining the relationship between generative AI deployment and work engagement. The JD-R model posits that job resources, such as technological, self-sufficiency, and organizational resources, positively affect workers' motivation and engagement (Bakker & Demerouti, 2007).

Generative AI can serve as a source of technological resources, helping reduce the volume of tasks and increase the professional efficiency of university instructors. University lecturers who use AI technologies to prepare classes, conduct research, and manage academic affairs will likely experience lower stress and higher productivity. Thus, their vigor, dedication, and absorption will be increased.

Previous studies show that technological advancements enhance employees' motivation, flexibility, and performance in task accomplishment, and reduce their workload (Dwivedi et al., 2023). Likewise, AI-based instruction will boost teachers' confidence and enthusiasm for their professional duties.

However, overreliance on technology may lead to ethical problems, reduced social interaction, and technological apprehension. That is why educational organizations should examine the relationship between AI implementation and work engagement.

### Objectives of the Study

To examine the relationship between generative AI usage and work engagement among university teachers.

To determine whether generative AI usage predicts work engagement among university teachers.

### Hypotheses

There is a significant positive relationship between generative AI usage and work engagement among university teachers.

The use of generative AI significantly predicts work engagement among university teachers.

### Methodology

#### Research Design

This study employed a quantitative cross-sectional design to examine the relationship between Generative AI use and Work Engagement among university teachers.

#### Participants

A total of 200 university teachers were included in the study. The participants were male and female university teachers working at both public and private universities.

#### Sampling Technique

A convenience sampling technique was used to collect data from participants who were readily accessible to the researcher.

#### Instruments

##### Generative AI Usage Scale

Generative AI usage was assessed using a self-developed 10-item scale designed to evaluate the extent to which university teachers adopt generative AI applications for instruction, learning, lesson preparation, content generation, and administration. The answers were collected expending a 5-point Likert scale, from 1 (strongly disagree) to 5 (strongly agree). The scale had great reliability in this study (Cronbach's  $\alpha$  .88).

##### Work Engagement Scale

Work engagement was measured using the UWES-9 test, introduced by Wilmer Schaufeli et al. (2006). The test includes 9 questions about vigor, dedication, and absorption. Respondents were asked to indicate their opinion using a 5-point Likert scale, where 1 is Strongly Disagree and 5 is Strongly Agree. The higher rating the individual gives, the higher level of his or her work engagement. The test proved to be highly reliable (Cronbach's  $\alpha$  = .91).

#### Procedure

Following institutional approval, the surveys were administered to university lecturers via both offline and online modes. The respondents were informed about issues such as confidentiality, voluntariness, and the purpose of the research.

**Statistical Analysis:** Data collected was analysed using descriptive statistics, reliability analysis, Pearson correlation and linear regression.

**Results**

**Table 1**

**Demographic characteristics of participants (N = 200)**

Variable	Category	N	%
Gender	Male Faculty	110	55.0
	Female Faculty	90	45.0
University Type	Public	120	60.0
	Private	80	40.0
Qualification	MS/MPhil	128	64.0
	PhD	72	36.0
Teaching Experience	1 - 5 years	60	30.0
	6 - 10 years	84	42.0
	Above 10 years	56	28.0

Note: N = frequency, % percentage

Demographic data of the respondents are provided in Table 1. The sample comprised 200 university teachers; 55% were male, and 45% were female. Of the total sample, 60% were from public universities, while the remaining 40%

were from private universities. A significant number of the sample (64%) held MS/MPhil degrees. Most participants had 6-10 years of teaching experience.

**Table 2**

**Descriptive statistics and reliability analysis (N = 200)**

Variables	N	M	SD	A
Generative AI usage	200	3.84	0.67	.88
Work Engagement	200	3.96	0.72	.91

The descriptive statistics and reliability coefficients of the study variables are offered in Table 2. The average score of generative AI technology use is 3.84 (SD = 0.67). This score suggests that university teachers use AI

technologies at a moderate-to-high level. Regarding work engagement, the average score was 3.96 (SD = 0.72), indicating that university teachers were highly engaged at work.

**Table 3**

**Pearson Correlation between Generative AI Usage and Work Engagement (N = 200)**

Variables	1	2
Generative AI usage	---	.55**
Work Engagement	.55**	---

Note: \*\*p < .01

Table 3 shows a significant positive relationship between the use of generative AI tools and university teachers' work engagement (r = .55, p

< .01). This suggests that teachers who use generative AI tools more often exhibit greater work engagement.

**Table 4**  
**Linear Regression Analysis Predicting Work Engagement from Generative AI Usage (N = 200)**

Predictor	B	SE	$\beta$	t	p
Constant	1.40	.30	---	4.67	.000
Generative AI usage	.67	.08	.55	8.51	.000

**Model Summary**

R	R <sup>2</sup>	Adjusted R <sup>2</sup>	F	P
.55	.30	.29	72.45	.000

The findings of the regression analysis measuring the ability of generative AI usage to predict work engagement are shown in Table 4. As the results show, the use of generative AI significantly influenced university lecturers' work engagement ( $\beta = .55$ ,  $p < .001$ ).

**Discussion**

In the current study, the influence of using generative AI on the work engagement of university teachers was examined. As noted earlier, the results revealed a strong, significant positive relationship between generative AI usage and work engagement of university teachers ( $r = .55$ ,  $p < .01$ ). Additionally, regression analysis confirmed that generative AI usage significantly predicts work engagement among university teachers.

Based on the findings of the current study, the high frequency of generative AI use among university teachers is linked to high levels of vigor, dedication, and absorption in their work. The results of the study show that AI technologies may act as important job resources and motivate employees.

The results of the current study are consistent with the theoretical perspective offered by Bakker and Demerouti (2007). According to the JD-R model proposed by Bakker and Demerouti (2007), job resources help reduce work-related demands and achieve goals, thereby increasing employee engagement.

The results obtained in the current study are consistent with those of Dwivedi et al. (2023), who found that generative AI technologies improve productivity, efficiency, and professional performance in various work settings. In addition, according to Kasneci et al. (2023), the use of AI technologies in education improves instructional effectiveness and

supports the professional work of educational staff.

The positive correlation observed in the current study can be attributed to AI technologies assisting teachers in preparing lessons, developing content, conducting research, and performing administrative duties. All these factors can contribute to increased teacher confidence, reduced overload-related stress, and greater psychological engagement.

However, the issue of ethics, academic integrity, overreliance on technology, and lack of human interaction should be taken into consideration. Therefore, universities should properly manage the use of AI technologies within HEIs.

**Conclusion**

The results of the present study indicate a positive relationship between the use of generative AI and lecturers' work engagement at universities. Staff members who use AI technology display high enthusiasm and vigor in their work. Generative AI appears capable of improving academic efficiency and assisting teachers in managing educational duties.

This study emphasizes the need to introduce AI technology in higher education institutions with ethical implementation. Educators and universities need to encourage the appropriate use of AI to improve university lecturers' work engagement.

**Limitations**

There are numerous limitations in the present research that should be acknowledged. Firstly, the research design is cross-sectional. Hence, it does not allow us to make any assumptions about causal relations between the use of generative AI and work engagement. Secondly, the research data were collected via self-report

questionnaires, which may be subject to social desirability and response bias. Thirdly, the sample of participants in the research was obtained through convenience sampling. Therefore, it cannot be generalized to all university teachers. Fourthly, the present research was limited to a single variable, work engagement.

**Recommendations**

Universities should provide training courses on the proper use of generative AI tools.

Educational institutions need to adopt AI technology within their learning frameworks to enhance teacher efficiency.

Policymakers need to develop ethical standards for the use of AI technology in higher education. Other variables that could influence the use of generative AI include job satisfaction, stress, creativity, and burnout.

Longitudinal studies can be performed to evaluate the consequences of AI adoption on teacher professionalism over time.

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