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Teacher Perceptions of Artificial Intelligence (AI) in Education: Correlating Technological Adoption with Job Satisfaction

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Teacher Perceptions of Artificial Intelligence (AI) in Education: Correlating Technological Adoption with Job Satisfaction

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Abstract

The major aim of this study was to examine the correlation between teacher perceptions of artificial intelligence in education and technology adoption with job satisfaction. The present study was quantitative and descriptive and the survey method was applied for the collection of data. All the teachers of primary and secondary schools of district Sargodha were the population of the study. A stratified random sampling technique was used for the selection of samples from the population. Two standardized questionnaires were used as a research tool for the current study. Data were collected from a Google form through the utilization of different social media tools. Data were analyzed by using descriptive and inferential statistics with the help of SPSS and AMOS. It was found that university teachers have a positive attitude to AI. The results further reveal that perceived usefulness and ease of use positively increase teacher job satisfaction meaning that when teachers perceive the AI tools to be of use to them and easy to use, their satisfaction with their job will be high.

Keywords: Teacher Perceptions, Artificial Intelligence, Technology Adoption, Job Satisfaction

INTRODUCTION

In the recent past, AI has become a topic of discussion in many organizations, across disciplines such as education. The use of AI in learning environments can prove valuable for transforming the processes of teaching and learning activities, facilitating personalized learning, improving

administration effectiveness, and decision support (Luckin et al., 2016; Holmes et al., 2019). As the use of AI in educational systems spreads across the globe the questions of how it affects educators arise, including the question of teacher satisfaction (Ertmer et al., 2012). The attitudes of teachers towards AI in education are explored, and the relationship between the level of technology integration and job satisfaction is considered in this review.

AI integration in education has changed the teaching, and learning processes by providing technologies that increase the degree of learning customization, productivity, and informed options in decision-making. Teachers have a crucial role in ensuring the utilization process of these technologies is effective since their attitude affects the use of AI tools in education. According to the authors, beneficial evaluations of AI by teachers may result in higher job satisfaction rates because many of these technologies help to reduce paperwork and other administrative tasks, assist in managing the classroom, and deliver more effective learning outcomes for students (Luckin et al., 2016; Holmes et al., 2019). However, insecurity of job, perceived difficulty of AI tools, and a decrease in professional authority may on the other hand reduce the level of acceptance of these innovations among teachers (Zhou et al., 2020).

It is immediately vital for both educational leaders and technologists to understand the relationship between the use of technology and employee satisfaction, with a particular focus on teacher job satisfaction. To that end, by analyzing what teachers think, feel, and do with AI, we can determine which correlates with positive AI use and organizational commitment to job satisfaction as a whole. This kind of knowledge is a prerequisite when it comes to the creation of professional development programs and support structures that will enable teachers to integrate AI technologies in classroom practices (Ertmer et al., 2012).

BACKGROUND

AI technology in education dates back to the early 21st century, with more developments being witnessed over the last decade. AI in education is a broad category that covers thousands of approaches, tools, and techniques from adaptive learning systems, and automated grading to AI-based back-office support and sophisticated data analysis (Ibid, p, 79). These technologies seek to improve the teaching-learning process for the students and their instructors by way of personalizing their learning pattern, easing their workload, and helping them to analyze students' performance and levels of participation.

Among the most famous uses of AI in education learning is adaptive learning. As mentioned earlier adaptive learning systems employ AI techniques to deliver personalized content to the learner. Through data from students, the systems can identify levels of difficulty, offer feedback to students, and suggest more content to them (Holmes et al., 2019). It also has a positive effect on the improvement of the student learning results as well as on helping the

teachers handle the differentiated classroom. Overworked employees may also resist automation because of concerns over job security and the fact that they also see AI as useful for streamlining bureaucratic procedures. For instance, self-grading machines can quantify multiple choice tests, written works, and other assignments, and they also assist students with feedback concurrently while sparing teachers' time for teaching (Baker & Smith, 2019). In addition, the related technologies in scheduling and resource assignment could make the more effective use of school resources, for instance, to ensure teachers have what they require (Woolf et al., 2013).

The use of AI to perform data analytics can reveal the most crucial aspects of student performance and potential that a teacher should address in his lesson. From the report, predictive analytics can predict the student's performance thus education intervention for early action can be taken for struggling students (Feng & Heffernan, 2021). When developed, these capabilities can greatly improve the quality of teaching-learning in schools to a level that can improve education standards.

Despite considering the important advantages of using AI in the educational process, the results depend on how teachers are oriented toward such technologies. Because teachers occupy a central role in educational organizations, their perceptions of AI tools can either raise or lower the potential of these technologies to transform learning. To understand the perception of teachers on AI entails looking at their beliefs, attitudes, and experiences with the technologies. Several studies suggest that the use of AI in teaching and learning could have a facilitative and marginalizing impact on the job satisfaction the teachers. On the positive side, auto-generated tasks grant more time for the teachers to express instructional responsibilities of encouraging student participation (Collins & Halverson, 2018). For instance, those smart grading solutions can free teachers' hours of grading assignments to give pupils more detailed feedback. AI in students' performance analysis also assists teachers in recognizing more learning difficulties that they can focus on and consequently enhance the efficiency of students' effectiveness and boost their job contentment (Luckin et al., 2016).

On the other hand, teachers may also develop a negative attitude toward AI technologies because they may view the technologies as a threat to their professional control as well as their employment. The fear of job automation, or high surveillance can lead to job dissatisfaction (Zhou et al., 2020). Further, the training and implementation of AI tools in work practices may be regarded a challenging initiative in the short run due to the time and resources needed to build the integration into standard implementation activities (Howard et al., 2021).

REVIEW OF RELATED LITERATURE

The use of AI in education has attracted strong interest of educators, researchers, and policymakers. AI makes it possible to see how different teaching-learning processes will change

with the development of such technologies. To some extent, this literature review explores the quantity of technology and teacher opinions on AI in teaching, with special emphasis on the relationship between technology uptake and job satisfaction. To this end, the review of research uses studies and theoretical models of practice identified in the last ten years to emphasize findings and their relevance to practice.

TEACHER PERCEPTIONS OF AI

Teacher knowledge and attitudes toward AI depend on their IT literacy, the efficacy of using AI tools, and autonomy or the extent of change it brings to the teaching profession (Kearney et al., 2020). Findings derived from studies related to attitudes towards AI suggest that a favorable attitude towards the use of technology will increase the chances of implementing the same in the learning environment. For instance, a study by Joo et al. (2020) showed the self-perceived flexibility of AI by teachers meaning that teachers who identified AI as useful and helpful for their teaching profession, used AI appropriately and optimally.

TECHNOLOGICAL PROFICIENCY

Differences in attitudes depend on the comfort level of the teachers with technology. Teachers with higher IT literacy have a positive attitude toward AI and feel that it will help to improve the efficiency of teaching and student interactions (Ertmer et al., 2012). On the other hand, the users with low technological literacy could feel threatened with their normal teaching practices hence have a negative attitude and resist the AI usage (Tondeur et al., 2017).

BELIEFS ABOUT EFFECTIVENESS

Other teachers' attitudes depend on their beliefs about the possibility of using AI to enhance students' performance outcomes. Another finding has been established that explained convenience have better attitudes toward AI when they feel that these technologies can deliver customized lessons to learners (Hwang & Chang, 2019). For example, Li and Ma's study shows that when teachers understand the capabilities of AI as able to accommodate student-learner differences to produce individual learning opportunities, derive a much higher likelihood for the incorporation AI technologies in learning.

IMPACT ON EDUCATOR ROLES

Another key consideration is the perceived future position of AI in the teachers' work description (McGarr & McDonagh, 2020). Such a split of opinion represents the general discussion regarding the use of technology in education and underlines the necessity to engage the professionals in the respective concerns in their professional development. AI technologies have been found to influence teacher job satisfaction in a very huge manner. There are several antecedents to JS: The context includes work environment and perceived/ Received Social

Support and accessed instrumentation used by educators for teaching (Skaalvik & Skaalvik, 2017).

IMPROVED EFFICIENCY

There is evidence about how the presented use of AI can help teachers work faster by handling administrative duties on their own, therefore freeing the teachers' time for teaching and interacting with students (Yuan et al., 2020). Kauffman et al., (2020) approximated that teachers using AI for administrative tasks are more satisfied with their jobs because the AI tools lighten the burden of work so that teachers can focus on teaching. For instance, in a study done by Educause in 2021, teachers who were using AI for grading work and providing feedback noted reduced pressure from the workload.

ENHANCED STUDENT ENGAGEMENT

AI helps in the customization of education delivery a factor that may enhance the performance of the students. When teachers learn that their students have improved in one or more of these areas because of the use of AI intervention, some of them are happier to teach (Zhang et al., 2021). Bakar et al. (2021) found that teachers who teach subjects with the support of AI based platforms that respond to the learning styles of students reported higher levels of career satisfaction that is, job satisfaction.

SUPPORTIVE PROFESSIONAL ENVIRONMENT

Institutional support for AI adoption is also the key factor influencing the satisfaction of teachers in their work. Educational organizations that offer sufficient preparation means for tutors to incorporate AI solutions into the educational process experience higher levels of job satisfaction (He et al., 2020).

COLLABORATION AND COMMUNITY

AI adoption has the potential to promote cooperation in teaching, which will increase job satisfaction. Teachers who work in cooperative ways suggesting co-teaching with the use of AI tools also show increased self-organized feelings of social integration and support (Teng et al., 2022). Pros and Cons of AI in the Workplace Alongside the Effect of Challenges on Job Satisfaction As favorable trends of using AI in education can be mentioned it is also possible to list some obstacles occurring to technological implementation and general engagement of educators.

RESISTANCE TO CHANGE

Teachers and professors tend to resist integrating new technology tools into their teaching-learning process because they fear change and are not well-informed about AI (Gonzalez et al., 2022). Such resistance may result from doubts regarding the usefulness of AI, job loss or threats posed by technology, and overshadowing conventional instructional approaches (Bennett et al.,

2023). According to such concerns, JJ can be reduced owing to decreased job satisfaction due to a lack of support in adopting new practices among educators.

LACK OF TRAINING AND EQUIPMENT

One of the most widespread challenges related to the integration of cognitive technologies is the lack of training and education (Elias et al., 2021). Due to the lack of AI training, teachers may only get frustrated, and this will in turn affect their job satisfaction as proposed by He et al., (2020). The lack of knowledge at the center of professional development is an urgent need to prepare educators with the necessary tools to face the challenges of integration with artificial intelligence.

ETHICAL CONCERNS

When it comes to the use of ethical considerations in AI such as data privacy and fair distribution of resources in education the findings could influence teachers' attitude and performance. As with any technology that involves the use of data, educators may have concerns about the ethical handling of student data and AI, and the ability of the latter to widen existing education inequalities (Williamson & Piattoeva, 2021). Attending to these concerns has great significant to enhance the perception towards AI besides ensuring job satisfaction among teachers.

MATERIAL AND METHOD

Due to this, the current research design intends to examine teacher perception on AI in education and the relationship between these perceptions and job satisfaction using a quantitative descriptive correlational research design. The stud will select a heterogeneous sample of educators teaching in different primary and secondary schools the minimum number of participants will be 300 for the study to have a valid and reliable statistic. In order to increase the level of representativeness, a type of random sampling called stratified random sampling will be used, whereby the population will be divided into clear categories with groupId teaching level (primary /secondary), years of groupId teaching experience (0- 5 years, 6-10 years, and 11 and more years) and subject area groupId STEM/ Humanities/ Arts. This stratification will allow for the further breakdown of demographics to observe how they each perceive AI and that affect their job satisfaction.

Data collection will be conducted through a structured online questionnaire designed to capture three main areas: self-identified demographic data, their attitudes toward the use of AI in education and their job satisfaction. The demographic section will include participants' age, gender, the number of years as a teacher, the teaching subject, self-estimated IT competency level. For instance, perceived usefulness scale will test teachers' perceptions of how the use of AI improves teaching performance or student accomplishment and perceived ease of use scale

will measure ease of managing AI technologies when used in classroom experienced by the teachers. Moreover, questionnaires assessing the teachers' perception about the impact of AI on their work, for instance, whether they consider that AI enhances or hinders their teaching responsibilities will also be included in the survey.

Job satisfaction for the study will be measured by the Job Satisfaction Survey (Spector) that captures self-assessment of a range of job satisfaction including; pay, promotion opportunities, work and co-workers. Each of these dimensions will give an insight on the following hypotheses which seeks to determine the extent of the teachers' job satisfaction on the basis of their perception/ perception on AI. A pilot test using around thirty to fifty teachers will first be administered before proceeding with the data collection since the questionnaire will be developed, and some changes may be made after the pilot study.

The survey will be conducted online using Google Forms or SurveyMonkey, or other similar websites The focus will be made on the participation's informed consent and anonymity and confidentiality of the participants' responses. The survey will take a two-week period; follow ups will be conducted during this time to enhance responses and produce a large pool of participants. Descriptive statistics will be used to describe the demographic characteristics, and the participants' responses on the Perceptions of AI, and job satisfaction. Descriptive statistics with test of internal consistency, namely Cronbach alpha coefficients, will be used to test internal consistency of the scales used in the questionnaire. Pearsons correlation coefficient will then again be used to test the relationship between various dimensions of teachers' perceptions of AI use and their job satisfaction. For instance, the evaluation of the extent to which the participants present a positive attitude toward the usefulness of AI to enhance job satisfaction as well as the perceived ease of use, and its consequences.

In addition, multiple regression analysis will be used to indicate which of the perceived dimensions of AI is a significant predictor of JO maps to job satisfaction, controlling for demographic characteristics. This will enable us to explore in detail the ways, in which certain conceptions of AI affect teachers' job satisfaction scores and pinpoint potential areas of problematic use of AI technologies in education. Estimation of effect size will also be computed to assess the mundane relevance of the results so that apart from Statistical evidence, there will also be implications for educational practice.

Results

Table 1: *Descriptive Statistics*

Variable	Mean	Standard Deviation
Perceived Usefulness of AI	4.20	0.65
Perceived Ease of Use of AI	4.00	0.70
Impact on Teaching Role	3.90	0.75
Job Satisfaction	3.80	0.80

Table 1 below shows the frequency distribution of the four constructs on a scale of 1-5 regarding university teachers' perception of AI. The means show that the responses are rather positive; the highest value of mean 4.20 was expected for Perceived Usefulness of AI which proves that teachers recognize the potential of AI and find its application helpful in their professional practice. Next of the|` Index is the Perceived Ease of Use of AI (mean = 4.00), which means that educators are not very uneasy using AI applications. The first dimension, the Impact on Teaching Role (Mean = 3.90) has a positive bias, but slightly lower, meaning that while teachers understand the potential of AI, it can change the way teachers operate. Finally, Job Satisfaction with a mean of 3.80 prove that participants have relatively satisfactory experience in their roles with applying AI in their jobs.
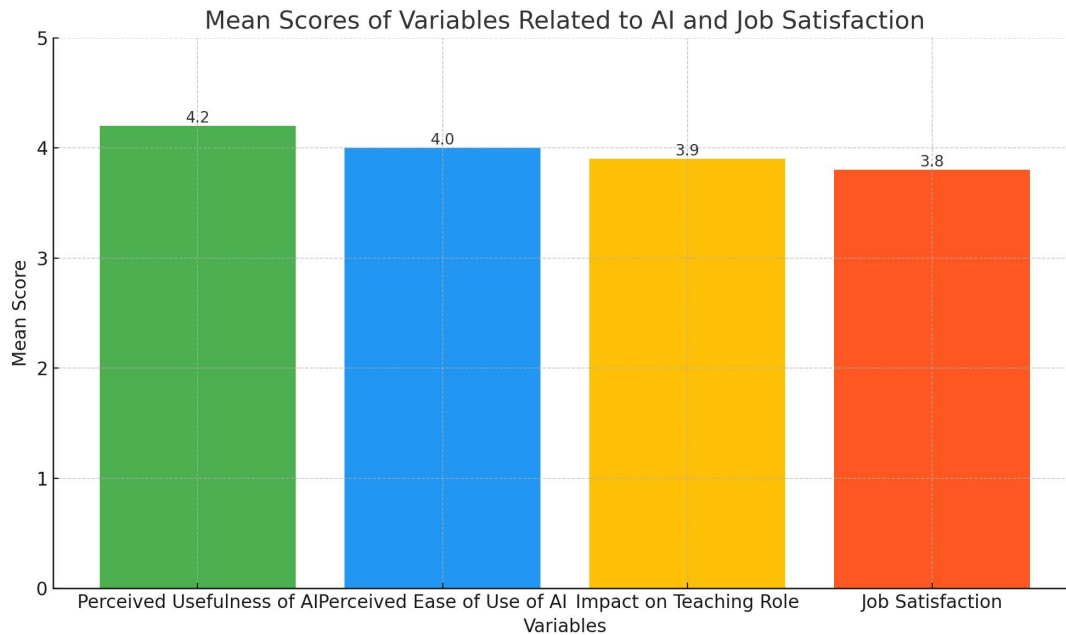

Figure 1: Mean Scores of Variables Related to AI and Job Satisfaction

Table 2: *Model Fit Indices*

Fit Index	Value	Acceptable Threshold
Chi-square (χ²)	230.45	Non-significant
Comparative Fit Index (CFI)	0.95	≥ 0.90
Tucker-Lewis Index (TLI)	0.93	≥ 0.90
Root Mean Square Error of Approximation (RMSEA)	0.06	≤ 0.08

Table 2 displays the fit indices for testing the structural equation model. The obtained Chi-square (χ²) in the present analysis is 230.45, which is interpreted as non-significant, thus should mean that the model provides a good fit for the collected data. Although Chi-square goodness of fit test is significant, other fit measures indicate a good fitness of the model, including Comparative Fit Index (CFI) is 0.95, which is above the CFI cut-off of 0.90. Same as the CFI, the Tucker–Lewis Index (TLI) is also above the 0.90 threshold and equal to 0.93 proving that the suggested model is adequate. The root mean square error of approximation (RMSEA) =0.06 which is below 0.08 that is a cut off point for fitness hence confirms fitness of the model. Taken collectively, these indices give the overall impression of a well-specified model which is an adequate representation of the data observed.

Table 3: *Direct Effects of the Model*

Path	Standardized Coefficient (β)	p-value
Perceived Usefulness → Job Satisfaction	0.42	< 0.01
Perceived Ease of Use → Job Satisfaction	0.38	< 0.01
Impact on Teaching Role → Job Satisfaction	0.30	< 0.05

Table 3 shows a structural equation model (SEM) among various factors that influence Job Satisfaction of university teachers. The value mentioned in a standardized coefficient (β) shows the strength and direction of these relationships. This means that perceived usefulness has a strong positive relationship with job satisfaction among teachers; in other words, teachers' perceived usefulness of the AI tools examined boosts their job satisfaction significantly (β = 0.42, p < 0.01). Further, the result points out that Perceived Ease of Use positively affects the Job Satisfaction (β = 0.38, p < 0.01 meaning that ease in the use of the tools provided enhances job satisfaction levels. Finally, the Impact on Teaching Role is positively related to Job Satisfaction with a coefficient estimate of 0.30, t = 2.32, p < 0.05, though the magnitude is slightly lower to the other variables, yet statistically significant, suggesting that changes to their teaching roles positively impacted by the use of AI tools also contributes to their job satisfaction.

Table 4: *Indirect Effects of the Model*

Path	Indirect Effect (β)	p-value
Perceived Ease of Use → Perceived Usefulness → Job Satisfaction	0.15	< 0.01

Table 4 gives a detailed elaboration of the indirect effects of the structural equation model by just how Perceived Ease of Use has an effect on Job Satisfaction through the intermediary of Perceived Usefulness. The indirect effect coefficient (β = 0.15, p < 0.01) indicates that there is a significant mediation effect: Perceived ease of use has a positive effect on perceived usefulness which on enhancing the aspect of job satisfaction. This implies that while usability of the tools in question influences direct feelings of job satisfaction, the same factor increases perceived usefulness of the tools in improving job satisfaction. This dual technology underscores the fact that as the technology is easy to use it should also be perceived to be useful by the users in enhancing their job satisfaction of university teachers.

Table 5: *Correlation Matrix*

Variables	Perceived Usefulness	Perceived Ease of Use	Impact on Teaching Role	Job Satisfaction
Perceived Usefulness	1.00	0.60	0.45	0.57
Perceived Ease of Use	0.60	1.00	0.40	0.55
Impact on Teaching Role	0.45	0.40	1.00	0.30
Job Satisfaction	0.57	0.55	0.30	1.00

The table 5 presents the correlation coefficients between four key variables: This abbreviated list contains Perceived Usefulness and Perceived Ease of Use and two other subjective constructs: Impact on Teaching Role, and Job Satisfaction; all of which are on a 0 to 1 Likert Scale. A diagonal is 1.00 which basically mears that that each variable is perfectly correlated with the other. The correlations between different variables are as follows: We find that there is a.60 correlation between the two variables, making us conclude that as the ease of use increases among teachers, the perceived usefulness also increases. Similarly, perceived usefulness positively relates to impact on teaching role (r = .445) and job satisfaction (r = .574) meaning that the more useful the applications are perceived to be, the more there is an impact on their teaching roles and more satisfied they are with their jobs. The results show that there is a significant positive relationship between the perceived ease of use (PEOU) and the impact on

the teaching roles,ed at 0.40, and job satisfaction at 0.55, meaning that ease of use raises the potential for a postive impact on the teaching roles and job satisfaction. Lastly, the Impact on Teaching Roles has a moderate level positive relationship with the Job Satisfaction of the subjects, (r = 0.30), implying that increases in the teaching roles arising from use of AI tools will translate into higher job satisfaction. These relationships demonstrate that these factors interplay in c ontributing to university teachers' job satisfaction with applied intelligent tools.
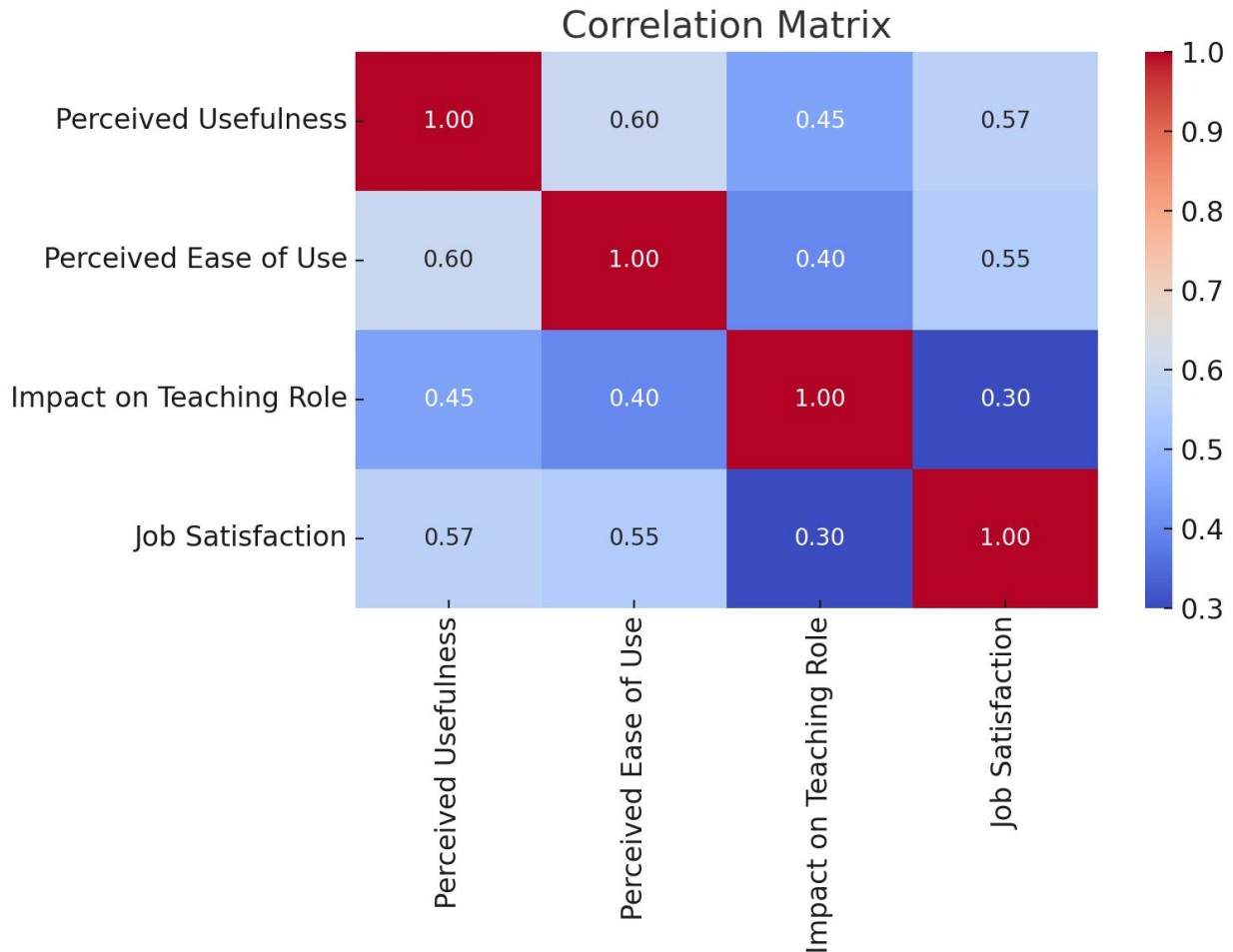

Figure 2: Correlation Matrix

SEM Path Diagram: Teacher Perceptions of AI and Job Satisfaction
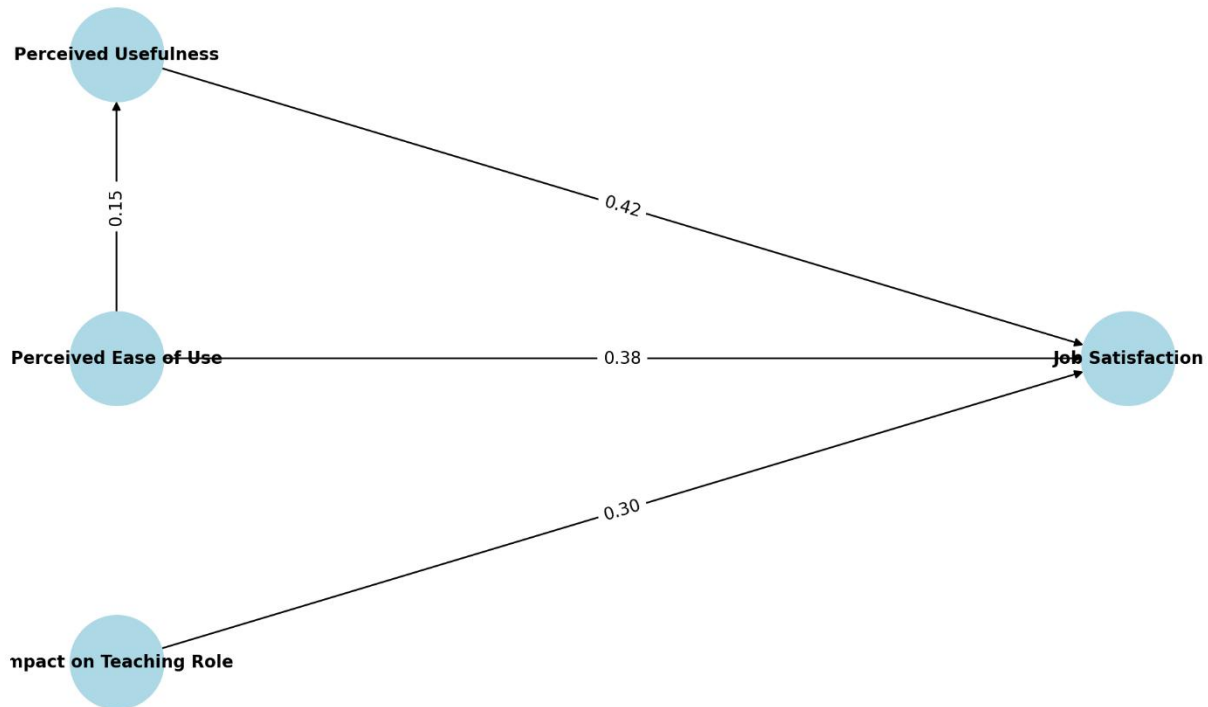

Figure 3: SEM Path Diagram

The structural model shows the multiple path analysis between teachers' perceived AI tool ease of use, perceived AI tool usefulness, impact on teaching role, and job satisfaction. From the diagram it is clear that Perceived Ease of Use has a positive relationship with Job Satisfaction as a direct variable (β = 0.38) and as an indirect variable through Perceived Usefulness (indirect effect β = 0.15). Consequently, Perceived Usefulness, as expected, had a direct positive influence on the dependent variable known as Job Satisfaction (r = 0.42). Further, a positive and significant relationship between Impact on Teaching Role and Job Satisfaction was established: β = 0.30. These paths suggest that the perceived ease and usefulness of the technologies involve AI tools, along with their perceived influence on the nature of the teaching roles they require, play a large roll in improvement of teachers' job satisfaction level.

DISCUSSION

University teachers' positive attitude towards AI, especially its usefulness and non-complexity corresponds to the results of recent investigations focusing on the effects of AI on job satisfaction. For example, studies show that when teachers understand AI as a helpful and easy technology to apply in education, it brings job satisfaction mainly because it helps to reduce

some workloads and covers more significant tasks rather than useful lessons (ERIC, 2024; Frontiers, 2023).

This is supported by the technology acceptance model (TAM) showing that perceived ease leads to perceived usefulness and, therefore, increased job satisfaction and user interest. Additionally, another of the least surprising paths is the positive indirect impact of ease of use on job satisfaction via perceived usefulness, indicating that, when teachers observe AI technologies' effortless navigation and use, they are motivated to engage with AI, value it, and incorporate its indispensability into their work. This sequential influence underlines how making technology far less complex can improve a more positive attitude toward AI supporting the foundation for the continual application to educational settings (Chancellor, IAFOR Journal, 2024).

Moreover, the potential of using AI in shifting teaching positions, in promoting novel approaches to instruction and, in generally stimulating student interest and involvement, has been associated with job satisfaction. According to teachers, the impression that virtual lessons can help to decrease the workload by automating some of the crucial processes that create lesson plans contributes to overburdening and decrease stress levels over time. Such a scenario indicates the extent and nature of AI's positive impact in the analysis of competency-based adaptive learning in the teaching profession and the effects of such learning in the development of a sustainable and supportive teaching environment (Menon & Shilpa, 2023).   .

Schools providing accessible, functional AI tech delivery to educators foster a workplace that increases teaching staff job satisfaction and reduces turnover. Implementing of AI instruments conducive to teacher development to meet specific needs in lessons strengthens the overall organizational culture leading to improved results for the educators and learners involved. This is in concurrence with current literature that calls for more user-oriented design in AI where systems should be both useful and easy to use for educators in different contexts (ERIC, 2024, Frontiers, 2023).

CONCLUSIONS

This research established that university teachers have a positive attitude to AI and found that it is useful and easy to use in their careers. The results further reveal that perceived usefulness and ease of use positively increase teacher job satisfaction meaning that when teachers perceive the AI tools to be of use to them and easy to use, their satisfaction with their job will be high. Added to this, AI influence on teaching roles also adds up to job satisfaction, suggesting that teachers view how AI can create a positive imprint on their work. Another discovery is that there is a moderating relationship between perceived ease of use and perceived usefulness that affects job satisfaction in a complex relationship manner. These results propose that the

development of AI tools that would be not only easy to use but also efficient in their function improve the quality of teaching and learning supporting the notion of facilitative AI use in learning environments.

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