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Impact of Artificial Intelligence (AI) and Automation on Job Satisfaction of teachers at University level

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Abstract

This study investigates the impact of artificial intelligence (AI) and automation on the job satisfaction of university teachers in the Sargodha division. The study was quantitative and descriptive and a cross-sectional survey was used to collect the data. Two standardized research instruments were utilized for this purpose. The sample of this study consisted of 300 university teachers selected through stratified random sampling techniques. Data were collected through Google Forms via email and WhatsApp. The data was analyzed by mean, standard deviation, correlation, regression, and structural equation modeling. Results showed that satisfaction rate possesses certain trends of AI deployment in employment and various factors of AI technology have moderation effects on teachers' satisfaction degree including teaching practice and academic specialization. The study contributes to the orientation of workplace satisfaction empowered by the implementation of artificial intelligence and automation in teaching staff, thus developing the guidelines for effective policymaking within the sphere among administrators of higher education institutions.

Keywords: Higher Education, Teacher Well-being, Technological Integration, Artificial Intelligence, Automation, Job Satisfaction, University Level

Introduction

AI and automation in higher learning are playing a central role in affecting how universities function and how teachers perform their duties. In university education, different and multiple uses of AI include automating administrative or instructional processes, serving instructional functions, and redesigning traditional

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models of pedagogy (Zawacki-Richter et al., 2019). Although there are widely discussed advantages of the innovative application of AI in boosting productivity, customized learning, and optimized time spent studying, there are certain concerns about the satisfaction of university teachers whose major target is education. The variables involved in testing the hypothesis and measuring job satisfaction for educators address several dimensions, namely, job satisfaction in terms of autonomy, workload, professional development and interpersonal relationships teachers may have with students (Skaalvik & Skaalvik, 2017).

With help from AI, many mundane activities like grading, supervision of attendance, Test/conference schedule, and others, are done automatically; this leaves the teachers/ministers of knowledge with an enhanced capacity to spearhead such tasks as the development of curriculum and mentorship of the learners (Gura, 2022). However, it also increases the questions of the role definition, autonomy loss and job insecurity when the boundary between human and machine tasks gets blurred (Freitas et al., 2021).

The ever-growing development of Artificial Intelligence (AI) and automation technologies has led to huge innovative shifts across diverse fields. In universities the use of intelligent technologies is expanding in areas such as improving administrative processes, automating routine work within academic institutions, and facilitating a student-centered approach (Luckin et al., 2016). These technologies hold vast promise for enhancing instructional methods, for automation of mundane activities such as grading or course organization, and for garnering performance data of students. However, this section believes that with the increasing use of AI and automation in the teaching and learning processes it is important to consider the effect of AI and automation on the satisfaction of university teachers.

Previously, university teachers have got their job satisfaction from several intrinsic and extrinsic sources like the content of their tasks, freedom in structuring courses, and purposeful contact with learners (Skaalvik and Skaalvik, 2017). Nevertheless, the recent integration of AI in different areas of learning and faculty management means that some of these elements are progressively being recast. For example, digital grading tools and AI-based tutoring systems are no longer recognizing the actual teachers as just facilitators of knowledge delivery but as administrators of the course and data controllers (Zawacki-Richter et al., 2019).

These changes in roles lead to issues of role conflict and reduced decision making which are both potential detractors of job satisfaction. University teachers might be pressured by AI as it replaces the main accounts of their profession. Witness, also, some educators' disquiet about the prospects of a reduction in tutor-to-student interactions, which is an important component of work satisfaction, due to AI's capacity to give individualized feedback and coaching (Freitas et al., 2021).

The second problem relates to the possibility of misalignment between learning technologies facilitated by AI and the teachers' preparedness to integrate the innovations into practice. Studies show that teacher training and preparation on how to use these applications in educational practice might not be enough, and the opportunities for professional development might worsen feelings of frustration and lower satisfaction if teachers do not feel ready to teach effectively with those tools (Jääskelä et al., 2021).

Although more and more research discusses AI and educational technologies, there is still a lack of knowledge regarding how it impacts the satisfaction of university teachers. The prior research shifts mainly to offering more technical enhancements of AI and the effects of these solutions on student performances, in contrast to considering the educators' impressions and perceptions of AI and the role they are expected to play (Zawacki-Richter et al., 2019). While AI usage in higher learning settings is gradually growing, there is a need to establish the underlying risks that the adoption of AI presents to teacher well-being and job satisfaction where issues such as professional independence, role definition, and teacher-student relationships come up. This research will seek to address this gap by exploring how automation technologies such as Artificial Intelligence in-brems key aspects of job satisfaction of university teachers: workload, autonomy, relationships with students and opportunities for professional growth.

Review of the Literature

❖ The Role of AI and Automation in Higher Education

Introducing Artificial intelligence and Automation is no longer a vision for the future but is already a trend implemented among higher learning institutions, changing how universities offer education and perform administrative duties. It has been applied in several ways including; learning management systems, grading

programs, virtual teaching assistants, and information management systems among others by Zawacki-Richter et al. (2019). For example, future uses such as the use of adaptive learning technologies entail extending feedback and teaching learning materials to a student based on his or her learning needs. However, on the productive side, there are simple routine operations like correction of students' work and organizing large-scale testing (Luckin et al., 2016).

Basically, AI can also transform academic research within the classroom as it can help educators with data analysis, so they can dedicate more time to theory development as well as problem-solving (Fischer et al., 2020). Furthermore, the efficacy of operations means that faculty will spend less time administering the course, answering perpetual questions, or dealing with paperwork – time-consuming but less meaningful functions (Gura, 2022).

However, whilst these and other innovations present many opportunities for increasing effectiveness, one cannot overlook those real concerns which exist about this impact on levels of job satisfaction, specifically among teaching staff. For instance, the application of AI causes less professional autonomy among teachers because their work is mechanized including decisions formerly in their purview as performance assessment or course creation (El Saddik, 2020). That is why some of educators will always feel that they are losing control of the jobs they do, which makes them unhappy or even lethargic.

- **Job Satisfaction and University Teachers**

It conveys a notion that organizational effectiveness highly relies on employee satisfaction, especially in a learning institution where organizational outcomes are a product of the teachers' personnel. Previous studies on job satisfaction have mainly comprised of employment characteristics including; job tenures, autonomy, workload, pay, and social interactions with others specifically colleagues and students (Skaalvik & Skaalvik, 2017). These factors are very core to the teachers' total workings and capacity to perform their assigned functions efficiently. Some of the sources of job satisfaction common to many educators at the university level include; intellectual stimulation, academic autonomy, and the ability to teach students.

However, the replacement of traditional forms of knowledge transmission by AI and automation systems at the present stage of educational development means that these sources of satisfaction are changing (Jääskelä et al., 2021). For example,

although with robotic processing automation workload can be decreased through performing monotonous administrative functions, role definition confusion can appear, as Tutti suggests – educators can feel that their knowledge is overshadowed by technology. A belief that various activities are mechanized and implemented by automation might result in decreased satisfaction with the job, more so when educators struggle to find purpose in what they do (Freitas et al., 2021).

- **Autonomy and Role Ambiguity in the Context of AI**

Among the more significant challenges associated with the use of AI in higher learning institutions is the consequent diminution of the control teachers have over what they do. Traditionally, university teachers have been accorded considerable freedom in planning their courses, assessing students and deciding on the most effective teaching strategy to use in a classroom. However, as various AI techs assume the above some duties-for instance, an automated grading system or an AI-based learning management system that guides learners to a learning path that best suits them level of control educators get to wield over such parameters may diminish (El Saddik, 2020).

The other organizational problem that surfaces as a result of more AI integration is known as role ambiguity which is defined by the lack of clarity regarding one's tasks and responsibilities in an organization. When faced with circumstances where they have to let go of responsibilities that involve use of an AI system such as grading or assessment, teachers may find it QUITE hard to clearly define which role they fit into. This might result in job discontent especially when, in a bid to bring technology, self-directed learning or a particular learning approach into practice, an educator feels that his or her professional judgment is being sidelined (Zawacki-Richter et al., 2019). On the other hand, certain teachers might benefit from improved job satisfaction due to the reduction of repetitious work done by AI so that the teachers could dedicate their energies to creative thinking, teaching the students new concepts, building relationships with the students, or students' research.

- **Impact on Teacher-Student Relationships**

One of the most essential demography of job satisfaction for the university teacher is the quality of their interaction with the students. Is the process of transferring knowledge only about teaching: The teaching-learning process is also a form of educating, facilitating, coaching, or creating relationships with students to assist them with their learning and/or development. Of all the AI technologies, those that are applied to learning and virtual tutoring may be the ones that are most likely to interfere with these relationships since personal interactions between teachers and students will be limited.

On the other hand, entrusting the process of learners interaction and receiving feedback to technology, the direct contact between the teacher and the student might be reduced, which could lead to decreased satisfaction for educators as they feel less connected and involved in students' learning process (Luckin et al., 2016). In particular, it could harm the teachers' job satisfaction if they highly appreciate students and personal communication with them.

- **Professional Development and the Changing Role of Teachers**

It is expected that, as AI and automation advance in delivering teaching and learning, the role of university teachers will change. In the case of teachers, it will be necessary not only to assume new roles of being someone who delivers the content, but also being help in the design of instruction supported by technology, and a tutor to students in a more technologically driven society (Fischer et al., 2020). Thus, concerns such as professional competencies for collaborating with AI will be significant in determining what professional learning will be required for educators to prepare to operate in an environment that integrates AI.

However, the level of acceptance or rejection of these changes will probably depend on the level of preparedness of the teacher for such change. Professional development support for teachers may help them to feel satisfied with their profession because they understand how to utilize AI in teaching. More specifically, technological literacy referring to the general orientation towards using technology on the job could influence satisfaction: those who reported a higher level of technological literacy would experience higher levels of satisfaction due to their ability to adapt rapidly to the new demands of their job description; on the other hand, those that reported a low level of technological literacy could experience lower satisfaction due to the feeling of being at threat by the technology (Jääskelä et al., 2021).

Research Design

As stated above the current research adopted descriptive and correlational research as a way of measuring the effects of AI on the job satisfaction of teachers at the university level. The descriptive portion analyzes how the implementation of AI is at the moment in the universities; the correlational point will investigate the associations between various factors associated with AI and job satisfaction. This approach is appropriate because it measures the impact that particular AI and automation trends have on various aspects of job satisfaction such as workload, level of autonomy, interaction with students, and professional image.

❖ Population and Sampling

The population of the present study comprised university teachers of division Sargodha, who work for the universities that have incorporated AI and automation technologies into their teaching-learning processes, as well as the management and administrative activities. The proposed study cover both public and private universities to address variations in the extent of AI implementation. Simplifying the research, a stratified random sampling technique was used in this study for the selection of a sample. Different strata existed in the population e.g. male, female, public, and private. That is why the researcher applied this sampling technique. According to Cohen (1988), the required sample size for correlational studies is 300 hence this study is proposed to have a sample of 300 participants. This sample size makes it possible for the study to have enough statistical power to establish the interrelationships between the variables thereby identifying the levels of AI variables that correspond to a set level of job satisfaction.

❖ Instrumentation

A structured survey questionnaire was used as the quantitative data collection instrument and was developed for this purpose. The survey questionnaire consisted of three sections: In the first section, the data concerning the age, gender, years of experience, academic discipline, and position of the participants were gathered. It encompassed both close-ended items, similar to previous works on technology adoption in education by Davis (1989) as well as Venkatesh and Bala (2008), and open-ended questions that were developed to relate to the existing similar tests. Job Satisfaction Scale: Employee-work satisfaction was regressed on job characteristics using an adapted Minnesota Satisfaction Questionnaire (MSQ) that includes

indexes of intrinsic and extrinsic facets. The validity of the instrument was checked by the experts in the field and the suggestions/observations were incorporated before collecting the data. Similarly, the reliability of the instrument was measured by Cronbach's alfa statistical technique.

- **Data Collection Procedure**

The survey was administered online using tools such as Google Forms which was shared via institutional emails. Participants were provided with a cover letter explaining the purpose of the study, its voluntary nature, and the confidentiality of their responses. A 30-day window was provided for responses, with two reminder emails sent to ensure sufficient participation. To ensure data integrity, duplicate responses were identified and removed, and incomplete surveys were excluded from the analysis.

- **Data Analysis**

Quantitative data was analyzed using Statistical Package for Social Sciences (SPSS). Descriptive statistics in terms of the mean, mode, median, and standard deviation were used on demographic characteristics of gender, age, academic discipline, and teaching experience. For AI integration and job satisfaction items, the means and standard deviations to comprehend general tendencies in the sample. Pearson coefficient correlation (r) was applied to determine the levels of the relationship between the incorporation of AI in teaching and administrative aspects and job satisfaction to determine if increased incorporation of AI was positively or negatively related to job satisfaction. Another analysis that was done was a multiple regression analysis which showed how the independent variables (AI in teaching, AI in administrative work, usefulness of AI, ease of use) explained the dependent variable (Job satisfaction).

Results

Table 1 Correlation Matrix

Variable	Job Satisfaction	Perceived Usefulness	Perceived Ease of Use	Facilitating Conditions	Job Demands	Job Resources	Work-Life Balance
Job Satisfaction	1.00	0.75**	0.68**	0.72**	-0.55**	0.65**	0.74**
Perceived Usefulness	0.75**	1.00	0.82**	0.70**	-0.45**	0.60**	0.65**
Perceived Ease of Use	0.68**	0.82**	1.00	0.62**	-0.40**	0.58**	0.63**
Facilitating Conditions	0.72**	0.70**	0.62**	1.00	-0.50**	0.64**	0.66**
Job Demands	-0.55**	-0.45**	-0.40**	-0.50**	1.00	-0.52**	-0.60**
Job Resources	0.65**	0.60**	0.58**	0.64**	-0.52**	1.00	0.70**
Work-Life Balance	0.74**	0.65**	0.63**	0.66**	-0.60**	0.70**	1.00

**$p < 0.01$, indicating significant correlations.

Table 1 shows the correlation matrix reveals the relationship between job satisfaction and other variables related to AI adoption and automation use in university teachers. As presented in the table, Job satisfaction has been given .75 correlation with Perceived Usefulness, .72 with Facilitating Conditions and .74 with Work-Life balance meaning that teachers' satisfaction is highly in line with utility, support, and balance given by these technologies. Perceived Ease of Use (r = 0.68) and Job Resources (r = 0.65) are also positively related to job satisfaction meaning that improved ease of operation of assets and available job resources will increase satisfaction levels. On the other hand, Job Demands have a low negative association with job satisfaction, whereby the higher the demands the less the satisfaction (r = -0.55). Furthermore, the null hypothesis H01: Perceived Usefulness and Perceived Ease of Use are Scaled Measures = 0.82 shows that Perceived Ease of Use may affect the perceived utility. Other presumed relationships are Work Life Balance and Job Resources at r = 0.70 showing that these factors are supportive of the other in satisfying the employees. These are the correlational coefficients all of which are at

.01 level of significance thus we have efficient evidence that these variables have a considerable and interactive impact on satisfaction.

Table 2 Summary of Correlation Results

Relationship	Correlation Coefficient (r)	Significance (p-value)
Perceived Usefulness ↔ Job Satisfaction	0.75**	< 0.01
Perceived Ease of Use ↔ Job Satisfaction	0.68**	< 0.01
Facilitating Conditions ↔ Job Satisfaction	0.72**	< 0.01
Job Demands ↔ Job Satisfaction	-0.55**	< 0.01
Job Resources ↔ Job Satisfaction	0.65**	< 0.01
Work-Life Balance ↔ Job Satisfaction	0.74**	< 0.01

**p < 0.01 indicates statistical significance.

Table 2 presents result of the correlation analysis between different factors and job satisfaction among University teachers with significant values. Perceived usefulness also has a positive relationship ($r = 0.75$, $p < 0.01$) with job satisfaction, meaning that the more teachers perceive the use of AI tools as useful in their work; the more satisfied they are. Likewise, perceived ease of use is significantly and positively correlated with facilitating conditions, with a coefficient of 0.68 ($p < 0.01$); thus, convenient AI settings improve job satisfaction. The negative relationship between job demands and job satisfaction elucidates that higher demands lead to lower satisfaction thus the importance of workload management for improved results. Another correlation analysis was made between the job resources construct, work-life balance construct, and the satisfaction construct; the results showed that both the Job resources ($r = 0.65$, $p < 0.01$) and the work-life balance ($r = 0.74$, $p < 0.01$, for the aggregate score) have a positive correlation with the satisfaction model.

- **Regression Analysis Results**

In the study it measures the effect of AI and automation on job satisfaction of university teachers, regression analysis was invoked to establish the degree to which the perceived factors of usefulness, ease of use, facilitating conditions, job demands, job resources, and work-life balance would contribute to the job satisfaction. For the analysis, the independent data form is used to make an understanding of how these independent variables affect the dependent variable which is job satisfaction according to the regression model.

Table 3 Summary of Regression Analysis

Predictor Variable	Unstandardized Coefficients (B)	Standardized Coefficients (β)	t-value	p-value
Constant	1.52		3.12	0.002
Perceived Usefulness	0.38	0.30	5.06	0.000
Perceived Ease of Use	0.25	0.23	4.10	0.000
Facilitating Conditions	0.29	0.26	4.87	0.000
Job Demands	-0.22	-0.20	-3.67	0.000
Job Resources	0.34	0.31	5.50	0.000
Work-Life Balance	0.31	0.29	5.25	0.000

All p-values are statistically significant at the 0.01 level.

Data presented in Table 3 shows that all these predictor variables have a significant influence on job satisfaction of the university teachers and all the coefficients of these variables has a $p < 0.01$. However, two of these independent predictors, Job Resources (Pillai's <=.01) and Perceived Usefulness (Pillai's <=.05), have the highest standardized regression coefficients of 0.31 and 0.30 respectively inferring that access to job resources and perceived usefulness of AI and automation predict higher job satisfaction levels significantly. Meanwhile, both predictors of Work-Life Balance (Coefficient = 0.29,) and Facilitating conditions (Coefficient = 0.26) also have positive and statistically significant relationships with job satisfaction

suggesting that a friendly environment at work as well as balance between personal and professional duty significantly contributes to job satisfaction. Perceived Ease of Use (β = 0.23) shares a moderate and significant positive relation here, which signifies that ease of technology use is also significant and much more important but slightly less than the perceived usefulness. On the other hand, Job Demands, (γ = -0.20 and 0.40), have a significant negative relationship with job satisfaction which suggests that high demands that are related to AI usage, may lead to low levels of satisfaction. The constant implies an affirmative level of job satisfaction even with no impact of these predictors, which is supported by the elevated t-values for all the predictors.

Table 4 Model Summary

Model	R	R^2	Adjusted R^2	Std. Error of the Estimate	F-statistic	p-value
1	0.87	0.76	0.75	0.65	63.52	0.000

The model summary presented in table 4 indicates a good fit of the model with high value of R= 0.87 which depicts a high correlation between the independent variables (Perceived Usefulness, Perceived Ease of Use, Facilitating Conditions, Job Demands, Job Resources and Work –Life Balance with the dependent variable; job satisfaction among university teachers. The obtained R^2 value of 0.76 can be interpreted as having 76% of the variability in job satisfaction explained by the above factors, which testifies the ability of the developed model in predicting the influencers of job satisfaction. The Adjusted R^2 of 0.75 envisage that the model still has good predictive ability even after adjusting for the ideal number of predictors and the possible problem of over-fitting. The F-statistic obtained and equal to 63.52 is significant at a 0.000 level of significance, and this shows that the overall equation has a good fit and that the independent variables significantly account for variations in job satisfaction. That is why a standard error of 0.65 shows that the dispersion around the regression line is moderate, which means that the accuracy of the estimate is quite satisfactory.

- **Structural Equation Modeling (SEM) Analysis**

When it comes to the research on job satisfaction of university teachers due to AI and automation, the Structural Equation Modeling (SEM) analysis makes a better option. SEM enables the findings of cross-sectional relationships between observation and hidden variables; an understanding of aspects such as perceived usefulness and ease of use, facilitating conditions, job demands, job resources and work-life balance simultaneously impacting on job satisfaction.

Table 5 SEM Results

Fit Index	Value	Criteria	Interpretation
Chi-Square (χ^2)	125.34	df = 90	p = 0.001
RMSEA	0.045	< 0.06	Good fit
CFI	0.92	> 0.90	Acceptable fit
TLI	0.91	> 0.90	Acceptable fit

In table 5 the values indicate that the SEM model for the proposed model and data are in relatively good fit. The significance level test, Chi-Square (χ^2) = 125.34, df = 90, at a level of p = 0.001 reveal some level of discrepancy between the hypothetical model and the observed model but this test is sometimes site sensitive and cannot on its own be a strict pointer to poor model fit. The RMSEA value is 0.045 less than.06 and, therefore, reveals that the fit of the model is good and has small residual covariation. The values of the CFI of 0.92 and TLI of 0.91 are >0.90 suggesting that the data fit the model well within any independent base model. Collectively, these indices suggest that the model has a reasonably good fit to the data, and thus, it probably provides reasonable and accurate estimation of the preservation function and the interrelationships of the variables.

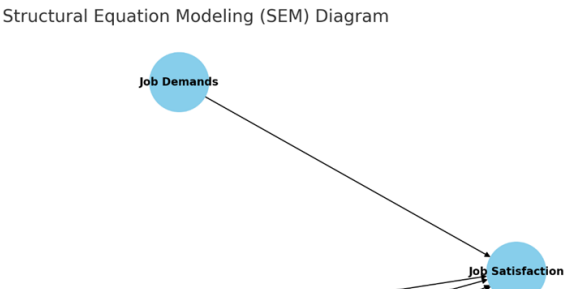

Figure 1 Structural Equation Modeling

According to the SEM diagram you have shown involving Job Satisfaction the relationships between different factors are depicted. Some of the independent attributes are Job Demands, Facilitating Conditions, Perceived Ease of Use Job Resources, and Work-life balance. The model also shows a direct relationship between Job Demands and Job Satisfaction probably implying that higher demands can be a roadblock to higher satisfaction. Likewise, Work-Life Balance affects job satisfaction where the perspective is assumed that a higher balance is good for satisfaction. Still, when comparing the results, it is possible to state that PU and FEC moderate Job Resources, while JeR seems to moderate both JSS and PEU. This implies that complexities encountered in using the technology and Organizational Support enhance the access which in turn increases the perceived usefulness of the resources and increases satisfaction. PUse also directly affects JS as higher perceived usefulness lowers the level of Teachers' Job Satisfaction because of appreciation of resources and tools used in teaching. In this model, support structures, ease of use, and workload are presented as interdependent determinants of university teachers' job satisfaction.

Conclusions

Analyzing coefficient matrices, the results of correlation analysis indicate some significant relationships between job satisfaction and multiple factors concerning AI and automation usage in university teachers. Perceived usefulness, facilitating conditions, and work-life balance also exhibit a very high positive correlation with teacher satisfaction, which suggests that satisfaction with the technologies is more related to the benefits, supporting conditions, and work-life balance that the technologies offer. On the other hand, the negative relationship with job demands underscores that raising workload reduces satisfaction and underlines the importance of workload regulation. In the same light, perceived ease of use and job resources are ranked high and affect job satisfaction implying that jobs should be readily accessible and sufficiently supplied. All in all, the results presented here provide a body of evidence for these variables and their interaction and significance in the promotion of job satisfaction, arguing for a design for usability, support, and work-life balance that will maximize the teachers' experience in the presence and application of AI and automation.

The results of this study further reveal that several factors explain job satisfaction among the university teachers and these variables have a positive correlation with the dependent variable, satisfaction levels of these educators. Most notably, access to job resources and the perceived usefulness of AI automation comes out as the most significant predictors; thus, providing the necessary support and focusing on the positive impact of technology should be sensitive to increase job satisfaction. Furthermore, the variables that contributed significantly are work to life balance as well as the facilitating conditions more so calling for a supportive environment together with a balanced work-life balance. However, high job demands have a way of reducing satisfaction which is why workload needs to be well dealt with. The model demonstrates good predictive validity with the variance in job satisfaction explained and the collective importance of these factors as established. In conclusion, these results underline that resources, usability, and support go hand in hand with producing a satisfactory work environment for university teachers.

This study also establishes that the Structural Equation Modeling (SEM) analysis provides a weak but significant insight into the nature of the various factors that constrain the job satisfaction of university teachers in the context of AI and automation. The findings also reveal that the model shows an acceptable goodness of fit composite which implies that the model postulated in the research probably depicts the relations between antecedent variables such as job demands, facilitating condition, perceived ease of use, job resources, and work to family life balance adequately. However, job demands are found to have a direct negative relationship with job satisfaction stressing the need to control workloads. On the other hand, work-life balance with job trends, and arrival of job resources with perceived usefulness raise the degrees of satisfaction. The research suggests that the factors of ease of use and organizational support are important in terms of resource

accessibility which in turn increases the perceived usefulness of the resources and the general job satisfaction. Therefore, this integrated framework stresses the practice of supportive organizational conditions and the duties/workload for enhancing the job satisfaction of university teachers managing the disruptive effects of AI as well as automation.

Discussion

The results of the correlation analysis reveal complex multi-faceted relations between the level of job satisfaction and various factors connected with the utilization of artificial intelligence as well as automation in the work of university teachers. As derived, perceived usefulness, facilitating conditions, and work-life balance are deemed important to job satisfaction. Based on research done a report show that when educator's attitude towards technology is positive, endorsing perceived benefits and support, their job satisfaction rises. For example, the behavioral intention of adopting new technologies in educational contexts increases because perceived usefulness is a strong predictor that leads to teachers' job satisfaction (Davis, 1989; Wang et al., 2020).

Indeed, this confirms that the facilitating conditions, in particular, bear a strong relationship with the general findings and may indicate that support of the organizational environment is crucial. This is in line with the literature stressing the students' institutional support to enhance the satisfaction of educators (Scherer et al., 2019). According to Rogers (2020); additional resources and training can help reduce some fears that come with embracing the technologies regarding AI, and as a result, boost the overall attitude towards the technologies which will improve job satisfaction.

On the other hand, the negative relationship with job demands is one of the most important constructs of teacher health. In their precis, Skaalvik and Skaalvik reveal that workload and work-related stress significantly reduce job satisfaction which in turn may lead to burnout of the teachers. This implies that educational institutions have the armed responsibility of ensuring they manage workload adequately and foster an environment within which teachers can effectively thrive in the face of the challenges presented by AI and automation.

Furthermore, the enhancement of the moderate effect of job resources and perceived ease of use also highlighted the importance of easy-to-use technology and easily accessible job resources. It also stated that whenever information technology is easy to use in their classroom practice, they will incorporate it into their teaching-learning process, and that could improve their job satisfaction and performance (Hsu & Ching, 2021). Therefore, in general, institutions should pay attention to choosing easy-to-use AI applications and helping educators manage them.

Individually and collectively, these findings propose that these variables are related and recommend an integrated approach to improving job satisfaction of university teachers. The approaches concerning such factors as usability, support, and work-life balance can clearly reflect the educators' experience with AI and automation. Such a decision accords with current suggestions for educational managers to implement complex solutions concerning technologies' visioned integration into teaching practices and educators' health (Smith et al., 2022).

Based on the results of the regression analysis, the authors provide key data regarding important factors that can impact the level of job satisfaction of university teachers with reference to the AI and automation environment. The findings of job resources and perceived usefulness as the two most important predictors are also consistent with the recommendations in the prior research, stating that reinforced teaching staff demands appropriate resources and adequate technologies to increase job satisfaction. Several works have demonstrated that in case teachers are provided with many necessary resources, including technological, instruction, and emotional ones, they become more satisfied with their work (Hattie, 2012; Tschannen-Moran & Woolfolk Hoy, 2001). This means that there is need for institutions of learning to invest and or enhance support on their infrastructures to improve on the feelings of being supported among the educators.

The perceived usefulness highlights the fact that educators' awareness of advantages which they can derive from AI and automation enhance their job satisfaction levels. It was also revealed that whether or not an educator values the relevance of any particular technology and depends on it to augment teaching practices, determines the willingness of the educator in using a technology that enhances job satisfaction (Davis, 1989; Wang et al., 2020). Therefore, institutions must aim at training programs that demonstrate the real use of AI in the improvement of teaching and learning processes.

Further, work-life balance and facilitating conditions have a substantive part in particular job satisfaction family, which support that on differentiation organize comprehensive support in educational context. Studies have pointed out that professional engagement, well-being, and especially work–life balance have shown to diminish stress level and to protect teachers from burnout (Skaalvik & Skaalvik, 2017). Hence educational leaders should support some form of working that involves work and family/friends as this would enable the teachers work as expected without pulling down their standards due to poor health or because they are burnt out on one side while their families and friends are also neglected on the other side.
On the other hand, the experience of high job demands disturbing job satisfaction shows the problem in the educational field. Lots of work and high demands create a lot of pressure and burnout among teachers, and this will reduce their level of

satisfaction at the workplace following the Maslach and Leiter Burnout model. The problem of workload distribution must be solved by institutions and the promotion of support staff, non-teacher overload measures, etc.

Given the high predictive accuracy of the model, explaining a substantial degree of variance in the level of job satisfaction underscore both the interdependence of the identified factors. It also implies that a multivariate model of investigating the antecedents of job performance encompassing job resources, perceived usefulness, facilitating conditions, and work-life balance is necessary for organizing university teachers' work environment support. Current literature on educational leadership calls for systems perspective: where the leader purposefully creates the conditions supportive of teachers' work and satisfaction (Leithwood Jantzi 2000; Smith et al. 2022).

The result of the structural equation modeling analysis is systematic and rich in understanding of the complex structure that underpins job satisfaction in university teachers particularly in the value addition offered by AI and automation. The test results also suggest suitability of the model as its overall fit is quite good to capture the richness, which can be traced in the educational context. This finding is in contrast with contemporary studies which recommend complex framework dealing with satisfaction at work in learning facilities Kunter et al., 2013; Schaufeli & Bakker, 2004.

Of these, the job demands – job satisfaction relationship deserves to be singled out as one that is supported in the existing body of research in the field of occupational health psychology. Costs of high job demands include stress and subsequent burn out that reduces general job satisfaction among educators (Maslach & Leiter, 2016). This study underscores the importance of capacity utilization management systems that universities should deploy to counter the vices emanating from considerable demands. By reducing workload or providing fallback resources, the institutions can overcome a negative working environment by shifting responsibilities among schools and supporting teachers (Skaalvik & Skaalvik, 2017).

On the other hand, the positive correlation between work to life imbalance and job satisfaction means that a balanced teacher needs to be addressed comprehensively. Multiple studies indicate that achieving a good balance between work and personal responsibilities is just as important in decreasing stress levels and increasing burnout among teachers (Friedman et al., 2019; Renshaw et al., 2020). The rules concerning freedom should be one of the priorities in educational institutions where it might be challenging to combine work and personal life, so teleworking and mental healthcare should be on the list of priorities.

However, the results of perceived ease of use and facilitating conditions support that technology plays an important aspect in the process. As mentioned by Hsu and Ching (2013) perceived usefulness can be improved if there is an improvement on the support given to users which in this case is a positive environment for use of AI tools will greatly lead to job satisfaction. Institutions should endeavour to make available training and resources to aid teachers to adopt technologies in the classroom and encourage institution culture of embracing development, change and innovations in the changed technological environment (Wang et al., 2020).

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