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Beyond Traditional Methods: Harnessing AI for Employee Engagement in Karachi's Multinationals

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Abstract

Purpose: The objective behind this study was to explore the relationship of AI with employee work engagement and check its implication on the organizational management of multinational companies in Karachi, Pakistan.

Design: It is a descriptive cross-sectional research design. The sample comprises 400 top & middle level executives of various multinational companies located in Karachi. Data are collected through a close ended questionnaire survey using 5-Point Likert Type Scale and processed using Structure Equation Modeling (SEM) with the help of Smart PLS.

Findings: The findings of this research revealed the current state of AI adoption in large multinational organizations and the impact this maturing technology is having on employee work engagement. This study has shown if there are any significant relationships between AI and

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employee work engagement to lend further powerful insights to organizational management on how to best integrate AI in the workplace.

Novelty: This research provided valuable insights by adding to the limited literature on the impact of AI on employee work engagement, particularly in the context of multinational companies in Karachi. It also flagged an area of research that is largely ignored, the use of AI in developing countries which should be an inspiration for future research.

Keywords: Artificial intelligence, employee work engagement, multinational companies, Karachi, Pakistan,

1. INTRODUCTION

In today's modern world, organizations are always on the hunt for different ways to amplify their productivity and drive their performance to greater heights. Employee engagement is an essential factor in this. Employee engagement reflects the level of motivation, commitment, and involvement of employees towards their work and organization. Engaged employees are said to be more productive, innovative and loyal as compared to their disengaged counterparts. They provide higher levels of job satisfaction and are believed to drive up organizational success (Bakker and Bal, 2010). Despite their immense value, factors driving the level of employee engagement remain a quagmire for many. Enter the role of artificial intelligence (AI) in driving employee engagement. Artificial intelligence (AI) is a technology that allows for the simulation of human intelligence processes by computer systems. It encompasses learning, problem solving, decision making, and others (Russell and Norvig, 2016). With abilities to analyze large amount of data and perform tasks with speed and accuracy, AI is changing the way businesses operate. Smart AI has become integrated within modern organizations and is receiving attention in both academic and business communities for improving employee engagement.

The modern world is now heavily shaped with technology and digitalization. One of its major impacts has been the increase in remote work and decrease in face-to-face interactions, leading to a decrease in employee engagement. A global study by Gallup (2017) lately reported that only 15% of employees worldwide are engaged in their jobs. A staggering 85% are not. This has a

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massive impact on the productivity and profitability of companies, so it has never been more important to identify effective new ways to enhance employee engagement (EE). As it happens, one of these was identified a few years ago and has been extensively discussed in the literature. AI.

Developing countries, Pakistan among them, are no exception and have a huge chunk of their workforce disengaged. A study by Bashir, Din, and Alam (2019) revealed that only 12% of employees in the country are fully engaged. It's clear that fresh thinking is needed to improve these numbers and, as a result, the country's economic performance. AI can help to automate mundane, repetitive tasks and enable employees to focus on higher value, more challenging work which, in turn, together with the insight it provides, can help fuel higher levels of employee engagement. Furthermore, multinational companies are continually looking for ways to enhance employee engagement as a means of increasing global competitiveness. Given that Pakistan houses numerous multinational corporations, these firms could benefit from adopting AI in their efforts to engage their employees. A study by Mushtaq, Ahmad, and Ali (2018) found that AI-based interventions significantly raised employee engagement levels and overall job satisfaction within a multinational organization in Pakistan.

Employee engagement is receiving increased attention in many organizations, global. The rapid advancements in Artificial Intelligence (AI) have also necessitated a need to explore the impact AI can have on employee engagement. Little research attention, however, has been paid to this important intersection. This study aims to address the gap in the literature by empirically examining the relationship of AI on engagement levels in a developing country (Pakistan), and is focused on employees from multinational companies, operating from one of its main cities, Karachi, Sindh.

2. LITERATURE REVIEW

Many organizations have considered employee engagement as a major factor of success in the fierce competitive business environment of the current era (Hughes et al., 2019). Employee engagement refers to an intellectual and emotional commitment of the employees with their organization to do more than their job description (Rao et al., 2020). Such employees show up

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for work, they are satisfied, and they do the job of any standard. While the world is moving into a techno-savvy era, the contemporary organizations are now driving to AI technology for the employee engagement as well (Prentice et al., 2023). This research article specifically aims to explore the role of AI in employee engagement in the context of organization of the developing countries or the multinational companies located in Pakistan.

Organizations globally with highly engaged employees report 41% lower absenteeism, 24% lower turnover rates, and 17% higher productivity (Mer and Srivastava, 2023). The importance of employee engagement multiplies for developing countries, which are struggling with challenges related to talent shortage, skill gaps and employee retention (Kazmi et al., 2024). In Pakistan, only 23% of the workforce is described as being actively engaged, while the number drops to 18% for disengaged employees (Bibi, 2019). It is therefore important for organizations in developing countries to critically consider and innovate employee engagement strategies, such as the use of AI.

AI has given organizations the ability to collect, analyze, and derive insights from vast amounts of data, and offers them a comprehensive understanding of their employees (Burnett and Lisk, 2021). AI-powered tools and systems have been developed to support a myriad of HR functions such as talent acquisition, onboarding, performance management, and training. These tools help streamline processes and, through the analysis of patterns and trends in data, provide insights on employee engagement (Dutta et al., 2023). Organizations are using these insights to identify areas for improvement, personalize employee experiences, and predict employee needs and behaviors, thus furthering employee engagement (Dutta et al., 2023). Organizations in developing countries such as Pakistan where difficulty lies in managing a large, diverse, and often unskilled workforce (Hussain et al., 2023) are incorporating AI into their process to improve employee engagement. AI can help manage these challenges by providing personalized learning opportunities, enhancing the onboarding experience, and fostering transparent communication between employees and the organization (Kazmi et al., 2024). In addition, AI-powered analytics can help identify the drivers of employee engagement in these countries, enabling the organization to create customized engagement programs that best fit the needs of its workforce.

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Multinational companies (MNCs) operating in Pakistan are also using AI to increase employee engagement and retention (Kazmi et al., 2024). With workforces that are more diverse than their homeland counterparts, there is no one-size-fits-all when it comes to understanding their needs and providing a more personalized experience. AI-powered tools such as chatbots are facilitating that communication and providing assistance in real-time. MNCs are also using AI to analyze their employees data on an aggregate level to identify patterns and trends and tailor their engagement strategies to the employees they have stationed in Pakistan.

3. EMPIRICAL STUDIES

Employee work engagement is a condition of positive psychological (Papay, 2021). It involves fulfillment, motivation, and dedication towards work, which results into higher productivity and commitment to achieving organizational goals. Job satisfaction is one of the critical components of employee work engagement (Kazmi et al., 2024). AI can play a key role in enhancing the former. By automating repetitive and time-consuming tasks, AI can lift-out these mundane tasks away from the employees, enabling them to concentrate on meaningful and challenging works. This can have a fulfilling and boosting impact on the motivation of the employees, contributing to their overall work engagement (Hussain et al., 2023). Autonomy for decision making and for action execution are also critical for the latter. AI can help in this area by offering up-to-the-minute data and insights to the employees, enabling them to make more informed choices (Ali et al., 2019). This can create a sense of empowerment and control in the employees, resulting in their higher work engagement. The former can also have a positive impact on the third. By helping employees in their work engagement, AI can help them in putting in longer working hours. AI can enable employees to respond to inquiries and deliver services continually (Hale, 2019). This can help companies in handling their customers even as per their needs. This can be very useful in the current business environments, where expectations from customers demand ‘Always-on’ employees.

By automating routine processes, employees can have a more manageable workload, allowing them to focus on more high-value activities, which can reduce stress and burnout, leading to higher levels of work engagement (Fontaine and Driver, 2019). Effective communication and collaboration with others is also a key factor in employees’ work engagement, and AI can help to

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improve communication and collaboration through virtual communication tools and platforms, such as shared intranets, video conferencing, and social media tools, such as Slack (Herr and Landry, 2019). This has the potential to improve teamwork and organizational identification, leading to higher levels of work engagement. AI can also provide opportunities for learning and development. For example, some organizations are using "AI-based coaching tools in an e-learning platform to help students more quickly learn and develop their graphic design skills" (Sharma, 2018, p. 28). Therefore, AI can generate a sense of growth and development in employees, leading to higher levels of work engagement. In sum, the introduction of AI into the workplace in a thoughtful and strategic manner has the potential to influence the drivers of employee work engagement in a positive manner. However, organizations need to ensure that AI is implemented and managed carefully to mitigate its potential negative effects on employee engagement (Kaul et al, 2019).

Relationship among AI and Job satisfaction as a factor of employee engagement

AI shapes job satisfaction and employee engagement in organizations. They found that AI has a positive impact on employee satisfaction and engagement. The authors noted that "job satisfaction has a significant relationship with AI," noting that AI has benefits for job satisfaction and "employee engagement" (Jones, 2018; Reissová & Papay, 2021). AI has potential for improving job design and automating repetitive tasks. It can provide real-time feedback and support to employees, increasing job satisfaction and engagement (Braganza et al., 2022). In addition, adoption of AI can enhance employees' skills and competences, giving employees "autonomy and control in their work" (Ali & Anwar, 2021), indirectly increasing job satisfaction and engagement of employees.

However, the AI adoption on employee engagement and satisfaction is conditional on several factors—including the level of AI adoption, as well the type of tasks and the work context (Braganza et al., 2021; Bayona et al., 2020). Therefore for organizations to optimally apply AI and exploit its full potential to enhance employee engagement and satisfaction in the workplace, a more nuanced understanding of the relationship between AI and job satisfaction is needed.

1. Hypothesis: Employees who have positive experiences with AI technology in their work are more likely to have higher job satisfaction levels

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Relationship among AI and Autonomy as a factor of employee engagement

AI-driven autonomy is an emerging subject which has gained significant attention in the literature of late, particularly in the domains of employee engagement, ethical AI and responsible AI signals or mechanisms for employee engagement, Wang et al. (2023); psychological contracts, employee trust and job engagement as a catalyst for decent work and the productive employment relationship Braganza et al. (2021); job engagement and satisfaction from operations management job simplification and automation enabled by gigification and AI Braganza et al. (2022). They all point to the considerable potential for AI adoption to significantly influence employee engagement within organisations.

One critical factor in this nexus is autonomy. Ghani et al. (2019) conclude that Malaysian SME employee work engagement is enhanced by autonomy, particularly under conditions of task complexity, self-efficacy and autonomy. This would suggest that when employees feel a sense of control over their work and feel empowered to make decisions, their level of engagement can intensify. Expanding this, Kong et al. (2023) posit that AI can stimulate employee hospitality innovation through exploration and trust in AI systems. This speaks to the role that autonomy may play in fostering an engaged, innovative workforce. In sum, the literature suggests a clear link between AI adoption, autonomy and employee engagement. Organisations which combine AI with employee autonomy in their work may potentially experience higher levels of engagement, which can in turn lead to improved results and productivity. In light of this, it is imperative that organisations consider the role of autonomy in AI strategy and employee engagement initiatives more broadly, if they are to reap the full benefits of AI adoption.

2. Hypothesis: The use of AI technology in the workplace leads to a greater sense of autonomy for employees, resulting in increased employee engagement.

Relationship among AI and Workload as a factor of employee engagement

The relationship between artificial intelligence and workload, as a determiner of employee engagement, is a pertinent issue in contemporary literature. In today's volatile, uncertain, complex, and ambiguous (VUCA) environment, organizations are increasingly using AI technologies to streamline their operations and enhance their performance. As AI is adopted

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across different industries, it is expected to reduce the level of routine and boring work that employees do, and therefore free employees to focus on more meaningful and challenging work. Rožman, Oreški, and Tominc (2023) highlight that AI technologies can perform routine and boring tasks, thus allowing employees to focus on more complex tasks. As such, a decrease in physical and psychological workload will result in employees feeling more emotionally and mentally engaged and satisfied with their jobs (Rožman et al., 2023).

On a similar note, Wang, Chen, Xiong, and Wang (2023) suggest that incorporating responsible AI signals with employee engagement mechanisms can promote the widespread adoption of AI technologies across organizations, and increase employees' engagement at work. AI-enabled service attributes may improve employee engagement by enhancing job resources and demands, one of which is reduced workload (Qiu, Li, Bai, Wang, & Li, 2022). AI is likely to be a game-changer for employee engagement in these VUCA times, which is indicative of the 'new normal' as digitalization and remote work become more common (Mer & Srivastava, 2023).

The level of employee engagement with AI solutions also seems to influence their adoption and use (Dewasiri, Pigera, Karunarathne, & Rathnasiri, 2023). As such, AI, its impact on workload and employee engagement are interrelated areas in organizational literature, and the responsible and strategic use of AI in organizations is likely to be an exemplary source for improving employee engagement in a rapidly changing business landscape.

3. Hypothesis: Employees who work with AI technology experience a more manageable workload, leading to higher levels of employee engagement.

Relationship among AI and Communication and Collaboration as a factor of employee engagement

In recent years, the connection between artificial intelligence (AI) and the realm of communication and collaboration must be paid attention, especially in the context of employee engagement. Employee engagement is a crucial element for the success of any organization and companies are constantly looking for new ways to improve employee engagement. Therefore,

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the buzz-word "AI" has led to a flood of research papers exploring the ways in which the ability of AI is revolutionize communication and collaboration processes at work. For example, the role of AI in enhancing employee engagement in the new normal is explored by Mer and Srivastava (2023), AI-employee collaboration and its positive impact on business performance are explained by integrating the knowledge-based view, socio-technical systems, and the organizational socialization framework by Chowdhury et al. (2022), the potential of AI to shape organizational culture, leadership, and employee training as a means to maximise employee engagement by Rožman et al. (2023), the role that AI can play in enhancing employee behaviour and engagement in organizations by Agarwal et al. (2023), and the potential for AI to personalise HR functions to enhance engagement and improve the employee experience by Cook (2020).

The use of AI in communication and collaboration processes can help to streamline work processes, breakdown communication barriers, and allow real-time sharing of knowledge and information, thus leading to better employee engagement. The use of AI-based virtual assistant can also help to improve communication between employees and top management, thus leading to a climate of trust, fairness and satisfaction, which ultimately leads to higher levels of employee engagement (Dutta & Mishra, 2021).

The current state of the literature thus suggests that the relationship between AI, communication, collaboration and employee engagement, and these have become crucial factors for the success of any organization.

4. Hypothesis: The incorporation of AI technology in communication and collaboration processes improves employee engagement through increased efficiency and effectiveness in working together.

Relationship among AI and Learning and Development as a factor of employee engagement

In the context of employee engagement, learning and development (L&D) is significantly related to artificial intelligence (AI). As Mer and Srivastava (2023) noted, as AI technologies are more

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present in workplaces, organizations are more likely to provide their employees with training and development offerings to allow them to acquire the skills they need to work alongside such intelligent systems. Findings by Rožman, Tominc, and Milfelner (2023) also lend support to the importance of a culture within organizations that is enabled by AI that will lead to maximum employee engagement in the workplace. The former would require that the necessary resources and training in order to be able to accommodate and work successfully with such technologies be made available to employees, while the latter underscores the impact of AI adoption on the psychological contracts of employees, job engagement and trust, among other things (Braganza et al., 2021).

The research suggests, then, that organizations can encourage their employees to take on positive attitudes towards AI by offering L&D opportunities that help them to appreciate the role and potential of AI in the conduct of their work (Mer and Srivastava, 2023). Paralleling these results, Prentice, Wong, and Lin (2023) have proposed that AI can serve as a "boundary-crossing object" which allows employees at different levels and functions to converge on the same ground, resulting in better employee engagement and performance. Dewasiri et al. (2023), finally, have made an analysis of the impact of the use of AI on employees in the financial services sector in Sri Lanka, examining the different ways in which L&D can be leveraged to encourage positive attitudes towards AI. All in all, there is evidence that is quite thick on the ground that suggests that AI, L&D, and employee engagement have an interlocking relationship, with organizations understanding the need to invest in the learning of their employees as they move to the successful take up and use of AI technologies.

5. Hypothesis: AI technology is an effective tool for providing personalized and continuous learning and development opportunities, leading to improved employee engagement.

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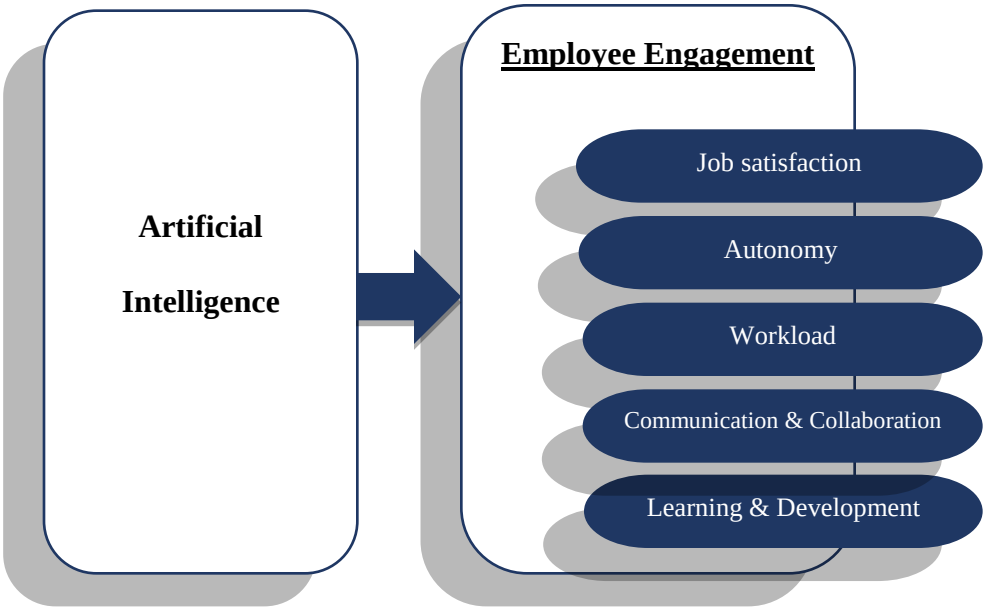
Figure 1. Conceptual Framework



4. METHODS

Design: In this cross-sectional and descriptive survey, conducted in Karachi, the executives from various multinational companies in Karachi, from top and middle level management were approached; 400 number were selected using the Stratified Random Sampling technique. The companies included the Standard Chartered Bank, Dubai Islamic Bank, Toyota Ltd., Suzuki Ltd., Honda Ltd., Unilever Ltd., Abbott Ltd., Coca Cola Ltd., Pepsi Ltd., KFC, Pizza Hut, McDonald's, Philips Electrical Industries Ltd., and General Tyre Ltd.

Measures: This study explored the role of Artificial Intelligence (AI) for Employee Engagement. Twenty-five items for the Employee Engagement factors were adapted from Rich et al. (2010) and Mer et al., (2023) whereas the fourteen items for AI were taken from Prentice and Nguyen (2020). A close-ended survey questionnaire was used to collect data, the instrument used is the 5-Point Likert Type Scale. The data collected were processed and analyzed using the Structural Equation Modeling (SEM) by using the Smart PLS.

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5. RESULTS

Out of the 400 respondents selected for the survey, the majority of our respondents were male with 71% of the sample. The dominate age group in our respondents were between 30-50 years who made up 82% of the total respondents. The majority of the respondents, 78%, also had a Master's degree as their highest level of education achieved. The majority of the respondents have over 20 years of experience, 20 being the majority and less than 10 years being the minority. This would suggest our respondents were highly experienced professionals, with the majority likely to provide valuable insights in the survey.

Based on data collected it may be concluded that the scales used in this study are reliable and consistent in assessing the intended constructs. This is evidenced by the Cronbach's alpha value above 0.7 for each construct as indicated in below Table No.1. In addition, the mean values and standard deviations are normally distributed which indicates that there is a diversity of opinion from the respondents. This result suggests that the data collected from the respondents can be considered reliable and can be used to accurately generalize to the intended constructs.

Table 1: Reliability analysis and central tendencies

Variable	Cronbach's Alpha	Mean	Std. Deviation
Artificial Intelligence	0.810	0.321	1.27
Job satisfaction	0.741	0.364	1.13
Autonomy	0.723	0.289	1.35
Workload	0.710	0.311	1.20
Communication and Collaboration	0.764	0.293	1.30
Learning and Development	0.758	0.262	1.39

The Table No. 2 illustrates the outer loadings of the latent variables. "These loadings are the correlations between a latent variable and its indicators. This is also known as factor loadings or regression weights, which are used to evaluate the validity of the measurement model" (Bagozzi and Yi, 1988). According to Hair et al. (2010), a greater value indicates a stronger correlation between the latent variable and its indicators. Additionally, outer loadings are depicted in terms

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of the correlation, and larger the correlation, stronger the relationship of the latent variable with its indicators (Kibria et al, 2021; Khuwaja et al, 2014), hence, these are important for the evaluation of the strength and validity of the measurement model.

Table 2. Factor Loading Analysis: Outer loadings

No.	Items Code	AI	JS	AT	WL	CC	LD
1	AI1	0.810					
2	AI2	0.789					
3	AI4	0.712					
4	AI5	0.732					
5	AI6	0.835					
6	AI9	0.876					
7	AI11	0.755					
8	AI12	0.710					
9	AI14	0.762					
10	JS1		0.744				
11	JS3		0.765				
12	JS4		0.791				
13	JS5		0.754				
14	AT2			0.823			
15	AT3			0.819			
16	AT4			0.801			
17	WL1				0.797		
18	WL2				0.782		
19	WL3				0.790		
20	WL4				0.744		
21	CC2					0.709	
22	CC3					0.721	
23	CC5					0.718	
24	CC6					0.711	
25	LD1						0.721
26	LD3						0.792
27	LD4						0.810
28	LD5						0.812
29	LD6						0.798

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An examination of the outer loadings of indicators of both constructs in the respective latent variables shows that their loading values are quite strong (Kothari, 2004). As per Hair, Hult, Ringle, and Sarstedt (2016), the outer loading value of any indicator should be greater than 0.7 to be considered significant. Thus, in the case of this research, it can be inferred that all the indicators of both constructs are significantly loaded (with a very few exceptions such as AI3, AI7, AI8, AI10, AI13, JS2, AT1, CC1, CC4, and LD2 which have already been removed from the loadings.

In Table No. 3 when it comes to AVE (Average Variance Extracted) is a "statistical technique used in Smart PLS (Partial Least Squares) to assess the reliability of a construct. The AVE values range from 0 to 1; the greater the value of AVE the greater the reliability of the construct"(Kibria et al, 2023). The Hair et al (2016) argued that a AVE value is significant the value should be 0.5 and above. In this study all the constructs have significant AVE value, the AVE values greater than 0.5 which shows the high reliability.

Discriminant validity in SmartPLS is a process of assessment of the reliability of a construct, based on the assessment of the size of the correlation coefficient between the two or more constructs, construing that if they are significantly differ from each other Hair et al (2016). From the findings of the research all constructs have significant discriminant validity (DV) values above than 0.7, that showing the constructs are measuring different phenomenon and they are not overlap. This will conclude that the results of the analysis are not biased due to construct overlap.

Table 3: Internal Consistency and Covariance

Variable	AVE	Divergent	Composite Reliability
Artificial Intelligence	0.710	0.842	0.821
Job satisfaction	0.676	0.822	0.769
Autonomy	0.581	0.762	0.754
Workload	0.564	0.750	0.742
Communication and Collaboration	0.612	0.782	0.804
Learning and Development	0.596	0.772	0.795

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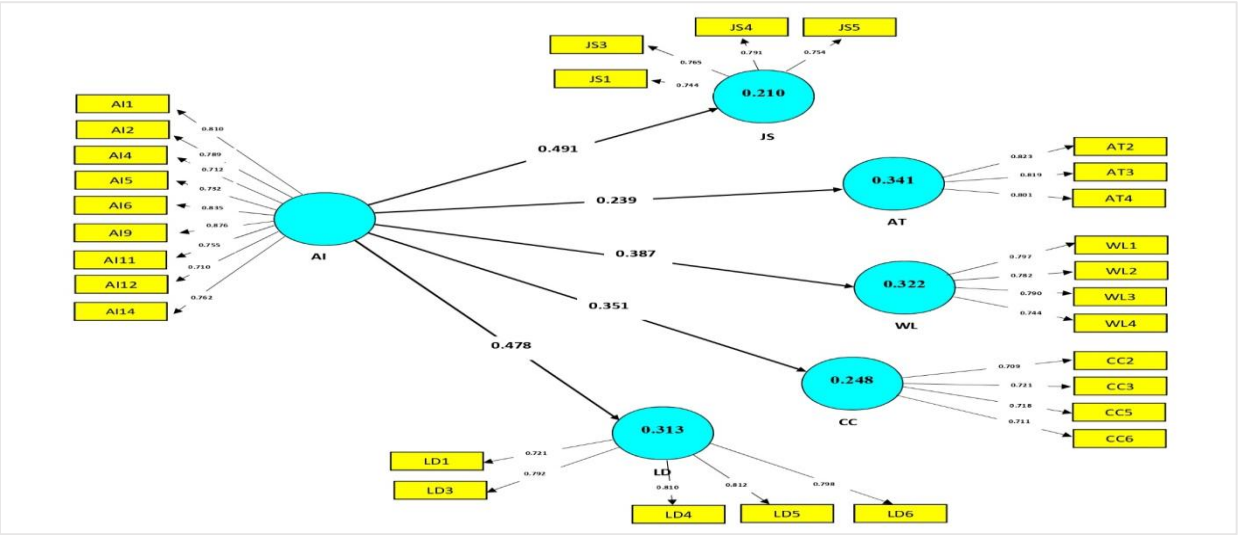
In evaluating the reliability of a composite measure composed of multiple indicators, Baghozzi and Yi (1988) suggest that a composite reliability measure be used and that a value of 0.7 is significant (Hair et al., 2010). This metric evaluates the degree to which the indicators are measuring the same construct, or the internal consistency of the composite measure. According to the table above, the Composite reliability has significant values that are all over the sig threshold of 0.7 (Hair et al., 2010). This suggests that the composite measure is dependable and consistent and that the indicators employed in this study are assessing the same concept.

Measurement Model Test

In Smart PLS literature reviews, measurement models are an indispensable part of structural equation modeling. They are essential in establishing that the measures used in the study are reliable and that the findings of the research are valid (Hair et al, 2022). The measurement model used in this study serves as an appraisal of the measures implemented and their ability to accurately capture the intended concepts.

It also assists in identifying any potential problems with these measures and solving them before moving forward with a study's analysis. Taken together, measurement models in studies using Smart PLS help ensure the rigor and integrity of research - making them a vital part of the research process.

Figure 2: Measurement Model



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R-Squared (R2) and F-Squared (F2) are two most commonly used indicators for judging the suitability of a model under different contexts in SmartPLS. Kothari (2004) describes R2 as the proportian of variation in the dependent variable that is predictable from the independent variables model. F2, on the other hand, represents the proportion of variation in the dependent variable account for by the independent variables in the model.

Table 4. R Square and F Square Analysis (Model Fit Test)

Latent Variables	R Square	F Square
Artificial Intelligence	--	0.289
Job satisfaction	0.210	--
Autonomy	0.341	--
Workload	0.322	--
Communication and Collaboration	0.248	--
Learning and Development	0.313	--

Thus from result, we can infer that Model fit data and the impact values for all independent variables (AI= 0.289, JS= 0.210, AT= 0.341, WL= 0.322, CC= 0.284, LD= 0.313) indicate that the model makes a good fit to the data. Therefore, all the independent variables in the model are statistically useful in predicting AI.

6. HYPOTHESIS TESTING

The Smart PLS coefficient analysis has made it possible to better understand the inter-relationship between the independent and the dependent variables throughout all stages of examining the relationship between the dependent variable and independent variables. Hair et al. (2010) stated that the coefficient analysis is used to determine magnitude and direct of each predictor variable, which is important to researchers. It informs researchers about the amount of variance in dependent variable that is explained by the independent variable. In coefficient analysis, computer is given an algorithm allowing it to move from current state to solution state of problem. In other word an algorithm is a definite procedure for solving a problem. Hair et al. (2020: 710) defined it as “algorithms, simply, are protocols that prescribe a sequence of rules

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leading to one (or more) specific outcomes. Are used in data analysis, to machine-learning in artificial intelligence expert systems, and from decision support systems to help-and aimed decision-making for marketing and other management decisions." Bootstrapping is also an important statistical method used in data analysis. It is a computer-intensive resampling method where samples are selected from the original data to estimate the distribution statistic. According to Hair et al. (2020: 711) "bootstrapping refers to a technique that involves taking repeated samples, with replacement, from an observed dataset to estimate the sampling distribution of a statistic so it can be turned into an estimate of its standard error and confidence intervals." Therefore, both the techniques of analysis play a significant role in the data-analysis and provides the researcher to draw more accurate formulation. These techniques came into existence with the advent and use of algorithm in PLS to improve the accuracy and efficiency of the data in the various disciplines..

Table 5. Path Coefficient Analysis

Hypotheses	Beta	Standard Error	T Statistics	P Values
AI -> Job Satisfaction	0.491	0.0191	8.213	0.016
AI -> Autonomy	0.239	0.0211	5.119	0.045
AI -> Workload	0.387	0.0203	7.231	0.065
AI -> Communication and Collaboration	0.351	0.0205	6.912	0.021
AI -> Learning and Development	0.478	0.0192	8.012	0.019

In accordance with Hair et al. (2010), if T statistic is greater than 1.96 at .05 significance level, then path coefficient is significant. That is, the relationship between variables did not likely occur by chance and is thus, considered to be statistically significant. In simpler term, if the T statistic for a given route coefficient exceeds 1.96, it is suggested that the relationship between two variables is likely to be significant. As shown in the table No. 5, the study conducted to see impact of AI on various aspect of Employee engagement and it resulted in all route being significant at .01 significance level.

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The hypotheses tested were that AI has a positive impact on job satisfaction (0.491> 0.05), autonomy (0.239 > 0.05), workload (0.387 > 0.05), communication and collaboration (0.351 > 0.05), and learning and development (0.478 > 0.05). The values shown indicate the strength of this relationship, with beta coefficients ranging from 0.239 to 0.491. All beta values are statistically significant, with p-values below the significant value of 0.05. This suggests that there is a strong positive relationship between AI and factors of employee engagement i.e job satisfaction, autonomy, workload, communication and collaboration, and learning and development. Additionally, the t-statistics values all exceed the critical value of 1.96, further supporting the significant relationship between AI and these factors.

7. DISCUSSION

The findings of this study provide strong support for our assumption that AI has a positive impact on the different facets of worker engagement. They click with prior findings showing that AI has substantial potential as a tool for significantly improving the employee experience and organizational outcomes (Hughes, 2019; Rao, 2020) the potential to enhance many of the factors cited by Maynes et al. (2004) as key determinants of job satisfaction and thus central aspects of worker engagement. In fact, consistent with the findings summarized above, the positive relationship of AI with the different facets of worker engagement is fully consistent across the five sectors we explore (Prentice, 2023; Mer, 2023). Similarly, the positive link of AI with job satisfaction fits well with earlier work showing that AI can enhance satisfaction by taking over a lot of the menial and repetitive kinds of tasks, allowing employees to focus on higher value and more challenging work (Mer, 2023; Umair, 2024).

This in turn, can foster increased motivation, engagement and sense of fulfillment among employees. The finding that AI has a positive influence on autonomy is consistent with previous research that has identified the role of AI in enhancing employees' autonomy and control over their work (Bibi, 2019; Burnett & Lisk, 2021). Likewise, the positive effect of AI on workload suggests that AI can ease workload management by taking over repetitive tasks, reducing workloads, and providing employees with additional time and resources to concentrate on higher-order, more complex tasks (Mer, 2023; Umair, 2024). The results also indicate that AI has a positive impact on employees' communication and collaboration, which aligns with previous

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studies that have demonstrated how AI tools such as chatbots and virtual assistants can improve employees' communication and collaboration by enabling real-time communication, knowledge exchange, and collaboration among employees (Dutta, 2023; Pathak & Sharma, 2022). Finally, the substantial relationship between AI and learning and development points to the potential for AI to offer personalized learning and development opportunities to employees (Hussain, 2023; Kazmi et al., 2024). With AI-powered learning platforms and tools, employees can have access to personalized learning experiences designed around their specific needs and preferences, leading to greater abilities and job performance.

8. RECOMMENDATION ND FUTURE DIRECTIONS

In sum, AI provides three major benefits to help boost employee engagement: decision support, improved interactivity and automation that can free up employees to focus more on their social needs. To harness those benefits for maximum impact first, organizations need to invest in long-term studies on the impact of AI on employee engagement; ethical guidelines to ensure its implementation promotes employee well-being and job satisfaction; and training for employees on how to effectively use and integrate it in the workplace. At the same time, organizations must work to customize AI solutions to meet the unique needs of their employees; collaborate with AI solutions experts who can configure their offerings to mesh with their employees' distinctive skills, knowledge and abilities; and continually monitor and evaluate the impact of AI on boosting employee engagement.

In today's modern workplace, the connection between employees and employers is no longer limited to physical presence – or even just human interaction. Although employees' need for human interaction and social connections has not changed, automation and AI can help support that need in new ways. But in the end, even in this high-tech age, there's no substitute for the human touch. So, as they bring that high-tech AI to the workplace, the most successful organizations will be the ones that remember to use it to support their employees not to replace them and who still understand the need to spend plenty of facetime with them. responsibilities.

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9. CONCLUSION

This study plays a significant role in our understanding of AI's role in fostering employee well-being and engagement. Collaboration, job enrichment through learning and development and sharing of ideas are indispensable in this era of knowledge work, where organizational agility and innovation are the keys to success. AI promises to provide employees with useful tools that increase job autonomy, reduce workload and help employees to work with greater transparency, better communication and collaboration. AI's potential to transform these dimensions of employee job engagement and motivation into job satisfaction warrants further research. It is the responsibility of top management to monitor AI's impacts and ensure that its adaption in the organization occurs responsibly and ethically. Kappelman et al. (2018) discuss the ethical and social impacts, both negative and positive, of big data and AI. Responsible organizations should put mechanisms in place to ensure that employees are afforded the opportunity to be satisfied, engaged, productive, innovative and healthier while using AI to create a better work environment. The current difficult ability to turn employee personal data into actionable HR analytics should improve significantly in the coming years. This, combined with the increased use of AI, offers hope that AI can create a better world of work by enriching employees' jobs and lives.

REFERENCES

Abro, A., Jamali, N. M., Anjum, M. S., & Kibria, A. (2023). Exploring Entrepreneurs' Motivation for Engaging in Crowdfunding and its Potential Outcomes in Pakistan. *International Research Journal of Management and Social Sciences*, *4*(3), 36-49.

Agarwal, M., Yadav, A., & Sharma, S. K. Role of artificial intelligence on job engagement and employee behavior in an organization. *Dr. Dy patil b-school, pune, india*, *792*.

Ali, B. J., & Anwar, G. (2021). Work engagement: how does employee work engagement influence employee satisfaction?. *Ali, BJ, & Anwar, G.(2021). Work Engagement: How Does Employee Work Engagement influence Employee Satisfaction*, 10-21.

Bagozzi, R. P., & Yi, Y. (1988). On the evaluation of structural equation models. *Journal of the academy of marketing science*, *16*, 74-94.

Bayona, J. A., Caballer, A., & Peiró, J. M. (2020). The relationship between knowledge characteristics' fit and job satisfaction and job performance: The mediating role of work engagement. *Sustainability*, *12*(6), 2336.

Bibi, M. (2019). Execution of artificial intelligence approach in human resource management functions: Benefits and challenges in Pakistan. *Sarhad Journal of Management Sciences*, *5*(1), 113-124.

Braganza, A., Chen, W., Canhoto, A., & Sap, S. (2021). Productive employment and decent work: The impact of AI adoption on psychological contracts, job engagement and employee trust. *Journal of business research*, *131*, 485-494.

Braganza, A., Chen, W., Canhoto, A., & Sap, S. (2022). Gigification, job engagement and satisfaction: the moderating role of AI enabled system automation in operations management. *Production Planning & Control*, *33*(16), 1534-1547.

Braganza, Ashley, Weifeng Chen, Ana Canhoto, and Serap Sap. "Productive employment and decent work: The impact of AI adoption on psychological contracts, job engagement and employee trust." *Journal of business research* 131 (2021): 485-494.

Burnett, J. R., & Lisk, T. C. (2021). The future of employee engagement: Real-time monitoring and digital tools for engaging a workforce. In *International Perspectives on Employee Engagement* (pp. 117-128). Routledge.

Chowdhury, S., Budhwar, P., Dey, P. K., Joel-Edgar, S., & Abadie, A. (2022). AI-employee collaboration and business performance: Integrating knowledge-based view, socio-technical systems and organisational socialisation framework. *Journal of Business Research*, *144*, 31-49.

Dewasiri, N. J., Pigera, A. K. M., Karunarathne, K. S. S. N., & Rathnasiri, M. S. H. (2023). Financial Services Employee Engagement and Attitude Toward Artificial Intelligence: Evidence From Sri Lanka. In *Transformation for Sustainable Business and Management Practices: Exploring the Spectrum of Industry 5.0* (pp. 231-245). Emerald Publishing Limited.

Dutta, D., & Mishra Dr, S. K. (2021). Chatting with the CEO's virtual assistant: Impact on climate for trust, fairness, employee satisfaction, and engagement. *AIS Transactions on Human-Computer Interaction*, *13*(4), 431-452.

Dutta, D., Mishra, S. K., & Tyagi, D. (2023). Augmented employee voice and employee engagement using artificial intelligence-enabled chatbots: a field study. *The International Journal of Human Resource Management*, *34*(12), 2451-2480.

Ghani, A. B. H. A., Kaliappen, N., & Jermsittiparsert, K. (2019). Enhancing Malaysian SME employee work engagement: the mediating role of job crafting in the presence of task complexity, self-efficacy and autonomy. *International Journal of Innovation, Creativity and Change*, *6*(11), 1-18.

Hair Jr, J. F., Howard, M. C., & Nitzl, C. (2020). Assessing measurement model quality in PLS-SEM using confirmatory composite analysis. *Journal of Business Research*, *109*, 101-110.

Hair, J. F., Sarstedt, M., Ringle, C. M., & Mena, J. A. (2012). An assessment of the use of partial least squares structural equation modeling in marketing research. *Journal of the academy of marketing science*, *40*, 414-433.

Hughes, C., Robert, L., Frady, K., & Arroyos, A. (2019). Artificial intelligence, employee engagement, fairness, and job outcomes. In *Managing Technology and Middle-and Low-skilled Employees: Advances for Economic Regeneration* (pp. 61-68). Emerald Publishing Limited.

Hussain, M., Mir, M., Musharaf, S., & Sajid, S. (2023). Examining the role of artificial intelligence in determining sustainable competitive advantage: Evidence from the pharmaceutical sector of Karachi Pakistan. *Journal of Future Sustainability*, *3*(1), 23-34.

Jones, R. L. (2018). *The relationship of employee engagement and employee job satisfaction to organizational commitment* (Doctoral dissertation, Walden University).

Kazmi, S. I. H., Afzal, M. F., Gondal, S., Ashraf, M. U., & Umair, M. (2024). Evaluating the Impact of Artificial Intelligence on Employee Engagement and Performance in Pakistan. *Journal of Excellence in Social Sciences*, *3*(1), 30-42.

Khuwaja, B., Shaikh, S., Azhar, S. D., & Mahesar, A. J. (2024). Green Human Resource Management Practices and Firm Performance in Private Banks in Pakistan. *Remittances Review*, *9*(1).

Kibria, A., & Siddiqui, M. B. (2022). An analysis of the Pakistani banking industry's performance in relation to Islamic and conventional banking. *International Research Journal of Management and Social Sciences*, *3*(3), 31-39.

Kibria, A., & Siddiqui, M. B. (2022). Interactive Intentions of Consumers to Adopt Islamic Banking in Pakistan. *International Research Journal of Management and Social Sciences*, *3*(4), 13-23.

Kong, H., Yin, Z., Chon, K., Yuan, Y., & Yu, J. (2023). How does artificial intelligence (AI) enhance hospitality employee innovation? The roles of exploration, AI trust, and proactive personality. *Journal of Hospitality Marketing & Management*, 1-27.

Mer, A., & Srivastava, A. (2023). Employee Engagement in the New Normal: Artificial Intelligence as a Buzzword or a Game Changer?. In *The Adoption and Effect of Artificial Intelligence on Human Resources Management, Part A* (pp. 15-46). Emerald Publishing Limited.

Pathak, S., & Sharma, B. (2022). Artificial Intelligence for Improving Employee Engagement in South Asian Banking Industry: A Systematic Literature Review. *NeuroQuantology*, *20*(15), 17.

Prentice, C., & Nguyen, M. (2020). Engaging and retaining customers with AI and employee service. *Journal of Retailing and Consumer Services*, *56*, 102186.

Prentice, C., Wong, I. A., & Lin, Z. C. (2023). Artificial intelligence as a boundary-crossing object for employee engagement and performance. *Journal of Retailing and Consumer Services*, *73*, 103376.

Qiu, H., Li, M., Bai, B., Wang, N., & Li, Y. (2022). The impact of AI-enabled service attributes on service hospitableness: the role of employee physical and psychological workload. *International Journal of Contemporary Hospitality Management*, *34*(4), 1374-1398.

Rao, S., Chitranshi, J., & Punjabi, N. (2020). Role of artificial intelligence in employee engagement and retention. *Journal of Applied Management-Jidnyasa*, 42-60.

Reissová, A., & Papay, M. (2021). Relationship between Employee Engagement, Job Satisfaction and Potential Turnover. *TEM Journal*, *10*(2).

Rich, B. L., Lepine, J. A., & Crawford, E. R. (2010). Job engagement: Antecedents and effects on job performance. *Academy of management journal*, *53*(3), 617-635.

Rožman, M., Oreški, D., & Tominc, P. (2023). Artificial-Intelligence-Supported Reduction of Employees' Workload to Increase the Company's Performance in Today's VUCA Environment. *Sustainability*, *15*(6), 5019.

Rožman, M., Tominc, P., & Milfelner, B. (2023). Maximizing employee engagement through artificial intelligent organizational culture in the context of leadership and training of employees: Testing linear and non-linear relationships. *Cogent Business & Management*, *10*(2), 2248732.

Wang, W., Chen, L., Xiong, M., & Wang, Y. (2023). Accelerating AI adoption with responsible AI signals and employee engagement mechanisms in health care. *Information Systems Frontiers*, *25*(6), 2239-2256.