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Impact of Human Intelligence on Organizational Outcomes: The Moderating Role of Machine Intelligence

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Abstract

This study aims to assess the collective impact of human and machine intelligence on the organizational performance of banking sector employees. A quantitative, deductive research approach is applied to this research. Data is collected through non-probability, and convenience sampling techniques and the selected sample size was 351 for this PLS-SEM (structural equation modeling) was used for data analysis through SMART PLS. The research indicates that EI and CQ influence employee performance. However, the study highlights a minimal moderating effect of employee AI capability in their interactions with customers. In Pakistan, enhancing employee commitment to improving customer experience is essential. This can be achieved by connecting customer feedback to how employees provide services. This connection can substantially improve AI capabilities and overall service quality, particularly in terms of external service performance and organizational outcomes. The definition of emotional and cultural attributes varies from respondent to respondent. Time limitation was also another factor while conducting this research. The data is collected only by Karachi-based banking employees in this way the findings are limited to location. The study emphasizes the paramount of EI on organizational performance internal or external so, to gain competitiveness there is a need to strengthen the EI of employees by involving them in the communication and decision-making process of the organization.

Keywords: Emotional Intelligence, Cultural Intelligence, Artificial Intelligence, Organizational Outcomes.

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1. Introduction

A substantial body of literature has explored how cultural and emotional intelligence in employees and leaders can shape organizational outcomes (Lam et al., 2022). In the pursuit of business success, fostering employee emotional intelligence and cultural intelligence has become crucial for achieving organizational effectiveness within a competitive business landscape (Nosratabadi et al., 2020). Emotional intelligence plays a pivotal role in enhancing employee dedication and vigor at work, enabling them to adeptly manage behaviors, attitudes, and emotions associated with their roles, which can also spill over into other areas (Yang et al., 2021). Beyond emotional intelligence, organizations must prioritize cross-cultural and technological innovation to ensure their survival and competitiveness. Embracing these elements not only sustains employee innovation and performance but also maintains market relevance (Jie et al., 2020).

Hence, this study aims to analyze the combined impact of employee emotional and cultural intelligence, along with the influence of artificial intelligence, on various factors connected to organizational outcomes (Mahmood et al.,2023). These factors include employee performance, satisfaction, motivation, and commitment, as well as customer loyalty and satisfaction (Prentice et al., 2020). This research makes a significant contribution by departing from conventional self-reported methodologies. Instead, it delves into the intricate relationship between employee cultural and emotional intelligence and organizational performance. Furthermore, it seeks to determine how introducing artificial intelligence, specifically "Artificial Intelligence," can magnify or diminish this impact. Notably, while a considerable amount of research on human and machine intelligence is centered in Western countries (Lim & Kim, 2020), this study is distinct in its focus on Pakistani organizations with a predominantly non-western workforce. This unique context enriches the current literature. In summary, this study enriches our understanding of how employee emotional and cultural intelligence, combined with the integration of artificial intelligence, influences various organizational outcomes. It goes beyond conventional approaches and investigates how these intelligences impact organizational performance positively or negatively. This study's distinction lies in its focus on Pakistani organizations, providing insights into a non-western work environment.

Emotional intelligence (EI) has gained significant attention in the past two decades as a critical factor for both individual and organizational success. In the modern management landscape, EI stands out as a predictor of positive outcomes across various domains. It influences internal aspects such as employee job satisfaction, productivity, performance, co-worker relationships, creativity, and innovation, as well as external factors like customer satisfaction, loyalty, and efficient customer service (Yang et al., 2021). EI refers to the capacity of individuals to perceive, understand, and manage both their own emotions and those of others, shaping their professional thought patterns (Goleman, 2021). It encompasses dimensions like self-awareness, self-regulation, empathy, motivation, and social skills, all of which contribute to enhanced employee performance. While some scholars view EI as an acquirable skill or competency, others debate whether it's an inherent trait. For employees seeking higher job productivity and

performance, honing EI alongside technical skills is essential. EI is particularly advantageous in customer-centric roles within the service industry (Yao et al., 2019). From an organizational standpoint, employee EI is linked to outcomes like job performance, satisfaction, commitment, and customer contentment, ultimately affecting profitability and job competence (Darvishmotevali et al., 2018). Moreover, EI is believed to be trainable, offering employees tools to navigate social and workplace challenges (Shakeel & Baskar, 2020).

In an era of globalization and increasing interconnectivity, the service sector, with its multicultural dynamics, has emerged as a vital arena. Employees here interact with diverse customers, emphasizing the significance of cultural intelligence. Cultural diversity management is a challenge that modern organizations grapple with, and cultural intelligence plays a pivotal role. Initially conceived as a trait of cross-cultural managers, it has evolved into a multidisciplinary research domain. Its focus on employee behavior and attitudes impacting service quality is paramount. Managing variability becomes crucial given the role of service quality in a customer's experience. Emotional intelligence, cultural intelligence, and employee personality intertwine to influence service quality and performance (Alshaibani & Bakir, 2017). The integration of artificial intelligence (AI) into business operations aims to enhance efficiency and effectiveness, mirroring human-like intelligence (Khan et al.,2022). In a cross-cultural context, AI can reshape an organization's interactions with stakeholders, partners, and customers. However, while AI holds great potential, improper implementation can lead to cybersecurity risks and biased outcomes, potentially fostering a negative work environment. AI offers multifaceted advantages for organizations, improving various aspects from marketing to supply chain management (Wamba-Taguimdje et al., 2020). The proper utilization of AI technology can amplify a firm's business value, but this hinges on an organized approach.

In summary, EI has become a linchpin for individual and organizational triumph. The fusion of emotional and cultural intelligence, along with the influx of artificial intelligence, reshapes business landscapes, influencing processes, communication, and product design. While AI promises immense benefits, a cautious approach is required to prevent undesirable consequences. In today's complex work environment, organizations seek capable employees possessing both human and machine intelligence. Enhanced performance outcomes are linked to creative, motivated, and skilled individual’s adept in self-management, problem-solving, and customer-oriented creativity. However, the research question pertains to whether the combined influence of human and machine intelligence significantly enhances overall employee and organizational performance.

1.1 Research Questions

This study aims to comprehensively review the current literature concerning human intelligence, particularly emotional intelligence (EI) and cultural intelligence (CQ), and their influence on both internal and external organizational service performance. It has been observed in the context of the banking sector existing in Pakistan that the use of AI is not aligned with human intelligence capabilities. Either it is designed according to a foreign and alien work environment, or it lacks the contribution of local banking experts thus making it a less adaptive and practical tool

for the bankers and the real operational platform (Umamaheswari & Valarmathi, 2023). Additionally, the study seeks to explore the moderating role of artificial intelligence (AI) in enhancing this relationship. The distinctive aspect of this research lies in its examination of AI as a moderator. Below are a few study inquiries that were elaborated upon in the exhaustive analysis of the pertinent literature.

- How can the emotional intelligence of an employee impact organizational internal service performance?
- How can the emotional intelligence of an employee impact organizational external service performance?
- How can the cultural intelligence of an employee impact organizational internal service performance?
- How can the cultural intelligence of an employee impact organizational external service performance?
- How artificial intelligence can impact emotional intelligence?
- How Cultural intelligence can impact emotional intelligence?
- How artificial intelligence can impact organizational internal service performance?
- How artificial intelligence can impact organizational external service performance?

1.2 Significance of the Study

The present study has three main concerns. Firstly, examine the impact of emotional intelligence on employee performance and satisfaction. Secondly, it explores the effect of cultural diversity or cultural intelligence on customer service quality. Finally, it tests the interaction of CI, and EI with the moderating effects of AI on organizational creativity and performance. The present study is one of few studies in the field of the service industry which tends to investigate the organizational internal and external service creative performance by linking human and machine intelligence altogether and by recognizing the service industry's dynamic environment. The hospitality sector is one of the most diverse sectors of the business world with highly diverse customers and workforce along with cross-cultural interactions between them (Nazarian et al., 2017).

2.Theoretical Background and Hypothesis Development

2.1. Conception of Intelligence

To comprehend human and machine intelligence, it's essential to delve into the concept of "intelligence" itself. This exploration seeks to capture the essence of intelligence, be it human or machine based. Over the years, the question of "what is intelligence?" has sparked debates. Sternberg (2021) has defined intelligence as a measurable cognitive ability, often quantified as the IQ or intelligence quotient. It's worth noting that intelligence is a socially constructed category, that shapes individuals' positions and identities (Kim, 2023). It empowers individuals to adapt to their environment, effectively tackle challenges, and find solutions.

2.1.1 Emotional Intelligence

Understanding Emotional Intelligence necessitates exploring emotions and intelligence themselves. The concept of intelligence traces back to Aristotle, and Thorndike (1920) (Huang et al.,2021) categorized intelligence into three dimensions:

I. Social Intelligence: Relating to human adaptation in social contexts.
II. Mechanical Intelligence: Involving tools and objective behavior-related skills.
III. Abstract Intelligence: Tied to principles and concepts for problem-solving.

Emotional Intelligence (EI), at the intersection of cognition and emotion, exhibits diverse definitions (Kukah et al., 2023). Despite variations, EI entails the cognitive ability to comprehend others and one's own emotions, shaping thoughts and actions (Mayer, Salovery, & Caruso, 2000). Boadi et al. (2019) noted that these branches equip individuals with cognitive and social discernment, enabling effective emotional use. He highlighted EI's multidirectional impact on employee actions, work outcomes, and customer co-creation (Coronado & Benítez, 2023).

2.2 Emotional Intelligence and Organizational Outcome

Bozionelos & Bozionelos (2018) emphasized that strong interpersonal relationships result from the trait perspective of Emotional Intelligence (EI), which amalgamates personality traits, social-emotional skills, and cognitive abilities. Meta-analysis indicated that "Trait EI" is more robust in measurement and definition than "Ability EI" and holds paramount significance in organizational outcomes (Deshpande & Srivastava, 2023). EI is established as an essential context for behaviors tied to employment, influencing career satisfaction, health, unusual work-related behavior, and organizational citizenship behavior. These behaviors impact job results such as service performance, job productivity, innovation, and income (Yang et al., 2021). Huang et al., (2021) characterized EI as a diverse collection of personal skills and tendencies, enhancing both organizational and individual performance.

High EI correlates with improved social relationships, career success, and life satisfaction, thereby impacting business profitability and employee job efficiency (Yao et al., 2019), especially in service-oriented organizations with customer interactions.EI predicts both individual work-related performance and career success within organizations (Prentice et al., 2020). Individuals with elevated EI experience professional success, healthier lives, stronger personal relationships, and effective leadership (Schutte et al., 2007; Gupta & Bajaj, 2017). Consequently, a significant relationship exists between EI and employee job performance (Shi et al., 2014).

2.3 Cultural Intelligence

"Cultural Intelligence" (CQ) signifies an individual's ability to comprehend, navigate, and interact within various cultural settings (Earley & Mosakowski, 2004). Earley's work in 2006 categorized CQ into cognitive, meta-cognitive, behavioral, and motivational dimensions, with meta-cognitive focusing on consciously grasping and learning the norms and knowledge of different cultures during interactions (Thomas et al., 2015). Organizations can enhance employee CQ through strategies such as training, coaching, experiential learning, and personal development plans (The Society of Human Resource Management). Experience and reflection, for instance, can help newcomers

adapt to unfamiliar cultures and interact effectively with culturally diverse colleagues (Min et al.,2023). Research highlights that employees with well-developed CQ offer significant benefits to both individuals and organizations, with CQ level influencing professional and personal performance (Robledo-Ardila et al., 2016). Regrettably, the potential of cultural diversity as a competitive advantage is often overlooked, despite its connection to improved financial performance through strategic asset utilization (Nosratabadi et al., 2020). CQ intersects with emotional and social intelligence, representing a multidimensional aspect of multiple intelligences. Literature underscores that motivational and cognitive CQ significantly impact employee contextual and task performance. Additionally, in cross-cultural contexts, CQ serves as a predictor of employee work performance (Husin et al., 2019; Alexandra,2023).

2.3.1 Cultural Intelligence and Organizational Outcome

The literature demonstrated CQ has a significant impact on employee job performance (Davies et al, 2023; Jyoti et al., 2015) conducted a study that examined 342 banks in India and suggested that CQ has a significant relation with cross-cultural adaptability and performance. Likewise, a study was conducted in South Korea where the data was collected from 383 migrant workers in China and their supervisors and found that innovative behavior is positively impacted by CQ (Fan et al., 2020). All four dimensions: cognitive, meta-cognitive, behavioral, and motivational of CQ defined by Earley and Ang (2003), and Ang &Van Dyne (2015) have a significant impact on an employee's internal and external service performance. In the contemporary era, CQ is considered a valuable, intangible, strategic, and inimitable resource that ensures competitive advantage As stated by (Plum, 2009, February) cultural intelligence provides the essential information and insights required to endorse social skills that further allow an organization to recognize cultural diversity which further grants capacity of human mentality to realize innovative information also the effective management of CQ facilitates organizations to administer the aspects of intra and inter-organizational dealings with stakeholders and society at large(Morin & Talbot, 2023).

Previous literature unveiled that positive job-related attitudes and feelings of employees could cultivate employee job-related performance thus, employees require cultural ability that can assist in increasing constructive job-related feelings as well as lowering pessimistic job-related feelings in intercultural organizational settings. Worldwide, the exponential growth of the service industry shifted the paradigms of organizations; employees and customers all have adopted the trend of multiculturalism (Ljubica & Dulcic, 2012). Therefore, the need for cross-cultural management is being increased in the service industry. Thus, the frontline service provider's employee role is also becoming very important while interacting with customers on national or international fronts. Darvishmotevali et al. (2018) suggested that if there is appropriate management of cultural diversity in an organization, it can ensure excellent performance outcomes like innovation and creativity (Davies et al.,2023).

2.4 Artificial Intelligence as moderator & role of HRM

Artificial Intelligence (AI) involves creating computer-based solutions to mimic human tasks (Basu et al., 2023). Its prominence has grown due to the availability of vast

data. Kaplan & and Haenlein (2019) define AI as systems interpreting external data to learn and achieve specific tasks through adaptation. AI, akin to machine intelligence, employs humanoid machines for enhanced operational efficiency. In today's competitive landscape, AI is a vital driver of organizational innovation, thriving across global service sectors (Shafiya et al., 2023). AI emerges when complex databases circulate within organizational systems. By utilizing algorithms and machine efficiency, AI addresses human concerns. This assists businesses in providing outstanding customer experiences, using deep-learning algorithms to identify customer preferences without human interaction (Lu, 2019). Incorporating service robots improves customer relations (Webster & Ivanov, 2020). Lu et al.'s (2019) meta-analysis suggests that businesses will increasingly adopt AI for cost-saving mechanisms and enhance workplace efficiency, thereby contributing to economic growth (Kaushal et al.,2023). Prentice et al. (2020) reveal AI's penetration into service sectors like banking, airlines, tourism, and hospitality, enhancing business performance and customer experience. Integrating AI and human resource management enhances organizational efficiency, leading to benefits like streamlined recruitment, improved managerial decisions, enhanced workplace learning, employee retention, and engagement (Minbaeva, 2021).

2.4.1 AI Capability and Organizational Outcome

To sustain organizational initiatives, AI-specific technology is necessary, requiring corresponding resources to establish unique and difficult-to-replicate AI capabilities AI capability, per Mikalef & Gupta, pertains to a firm's capacity to manage, organize, and direct AI-specific resources, categorized into tangible, human, and intangible resources as per Grant's framework. Numerous literatures emphasize the role of technology, particularly AI, in fostering business creativity, which in turn enhances firm performance (Perifanis & Kitsios, 2023). In the service industry, the synergy of AI and service robots can impact employee performance and service organizations across various levels (Mikalef & Gupta, 2021). AI's augmentation spans various industries, promising significant financial gains, especially in service sectors like recruitment, banking, tourism, healthcare, and hospitality. In the modern era, organizations increasingly rely on AI to enhance decision-making and understanding of complex systems (Galanos, 2019; Kunduru 2023). The current study aims to assess the interplay of emotional intelligence, cultural intelligence (human intelligence), and the moderating influence of artificial intelligence (machine intelligence) on organizational outcomes. Specifically, it scrutinizes how cultural and emotional intelligence impact service outcomes, considering varying AI levels. This analysis deepens the understanding of employee roles in the service industry concerning AI.

2.5 Research Hypothesis

H1: EI is significantly related to internal service performance.

H2: EI is significantly related to external service performance.

H3: CI is significantly related to internal service performance.

H4: CI is significantly related to external service performance.

H5: AI capability and quality have a significant moderating effect on the relationship between EI and internal service performance.

H6: AI capability and quality have a significant moderating effect on the relationship between EI and external service performance.

H7: AI capability and quality have a significant moderating effect on the relationship between CI and internal service performance.

H8: AI capability and quality have a significant moderating effect on the relationship between CI and external service performance.

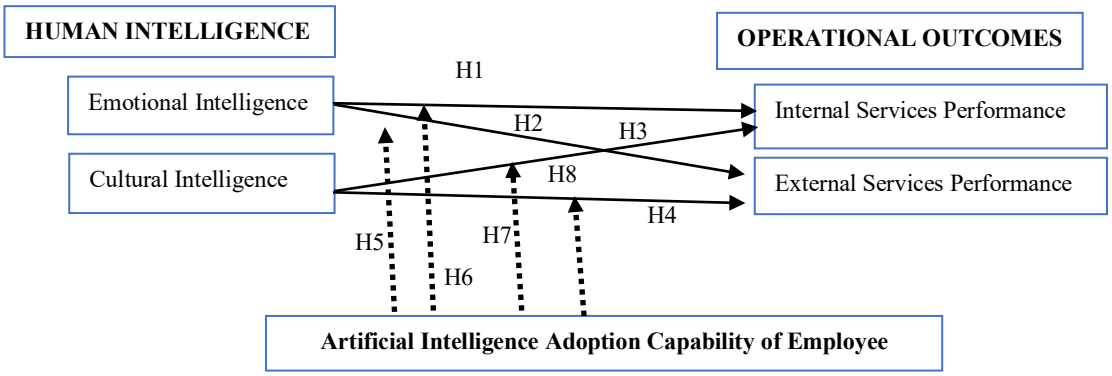

Figure 01: Conceptual Framework

3. Methodology

The study adopts a quantitative approach, employing a deductive method to investigate the relationship between human intelligence as an independent variable and artificial intelligence as a mediator affecting organizational performance. The primary aim of this article is to propose a methodology for examining these dynamics. The growing utilization of AI in banks and their business operations has expanded opportunities for the banking sector to deliver efficient and prompt services at any time and from anywhere. The researcher follows the positivism philosophy in conducting this study, a methodology also employed by other researchers in similar studies (Khan et al., 2022). The research focuses on employees in the banking sector in Pakistan, encompassing 25 public and private, conventional, and Islamic banks.

The sample, comprising 351 participants, is drawn from all these banks using convenient sampling techniques for their simplicity and effectiveness in data collection. The design for convenience sampling is used when the population's frame is not available or is very large, so we used nonprobability convenience sampling. The questionnaire for "Emotional Intelligence" consisting of 12 items is adopted from Boadi et al., 2020, for "Artificial Intelligence" 15 items questionnaire is adopted from Prentice et al., 2020 and the "Organizational Outcome" questionnaire consisting of 8 items was adopted from Prentice et al., 2020. Five-point Likert scale is utilized for item assessment. To analyze the survey results, the study employs the Partial Least Squares method and Structural Equation Modelling techniques through SmartPLS. The data undergoes scrutiny on two levels: reliability and validity measures. Additionally, the Bootstrap method is employed to assess the significance of both direct and indirect path hypotheses.

4. Results

4.1 Respondent Profile

Our population (Refer to Table 1) consisted of two major age brackets. Almost 47 percent belonged to the age bracket of 20 to 30 and 31 percent belonged to 31 to 40. The rest population was of the remaining age group. Gender 59 % were male respondents. The educational level of 48 % of the respondents was graduate. 28 % belonged to the middle management level and 37 % belonged to the lower middle level.

Table 1: Respondent Profile

Description	Value	Frequency	Percentage
Age	20 to 30	162	46.4
	31 to 40	108	30.8
	41 to 50	62	17.9
	51 above	19	4.9
Gender	Female	144	41
	Male	207	59
Education	Intermediate or A Levels	54	15.4
	Undergraduate	66	19.0
	Graduate	167	47.6
	Others	64	18.5
Position	Top Management	60	17.0
	Middle Management	98	28.0
	Officer Level	130	37.0
	Other	63	18.0

4.2 Analysis: Data and Results

The measurement model's results (refer to Table 2) offer statistical values that assess the significance of the study's model. These results need to meet standard criteria to validate the model and its indicators. A minimum variance (Cronbach's Alpha) of 0.7 confirms indicator reliability (Fuchs, 2011). Additionally, acceptable outer loading values above 0.5 confirm AVE values and indicator reliability. AVE values should not exceed 0.5 to ensure convergent reliability. Indicator reliability can also be gauged through the rho_A coefficient (> 0.7) and Composite Reliability (> 0.6) (Dijkstra & Henseler, 2015).

In our model, Cronbach's Alpha values exceed 0.7, affirming indicator reliability for further analysis. The item loading values in our measurement model also exceed 0.5, indicating AVE values (> 0.5) and indicator reliability (Hair Jr. et al., 2021). Statistical values for the rho_A coefficient is also > 0.7, confirming indicator reliability. Similarly, our composite reliability value is > 0.6. All measures provided in Table 2 verify the reliability of model constructs.

4.2.1 Measurement Model

Table 2: Measurement Model

Constructs	Items	Outer Loadings	Cronbach's Alpha	rho_A	Composite Reliability	AVE
Emotional Intelligence (EI)	OEA3	0.708	0.808	0.809	0.862	0.51
	ROEA1	0.674				
	SEA3	0.718				
	UOEA1	0.736				
	UOEA2	0.719				
	UOEA3	0.728				
Cultural Intelligence (CQ)	BCQ1	0.77	0.743	0.743	0.838	0.565
	BCQ2	0.713				
	MCCQ1	0.743				
	MCQ1	0.757				
	OUESP1	0.787				
	OUESP2	0.729				
	OUESP3	0.758				
	OUESP4	0.731				
Artificial Intelligence (AI)	AIR2	0.7	0.846	0.847	0.883	0.52
	AIT2	0.756				
	AIT3	0.693				
	AIcom2	0.688				
	AIin1	0.715				
	AIin2	0.764				
	AIin3	0.727				
Organizational Outcome: Internal Service Performance	OUISP1	0.78	0.759	0.76	0.847	0.58
	OUISP2	0.763				
	OUISP3	0.731				
	OUISP4	0.772				

4.2.2 Discriminant validity – Fornell-Larcker Criterion.

Table 3: Discriminant Validity - Fornell-Larcker Criterion

	AI	CQ	EI	ESP	ISP
AI	0.721				
CQ	0.646	0.846			
EI	0.677	0.714	0.714		
ESP	0.778	0.698	0.65	0.852	
ISP	0.613	0.718	0.691	0.757	0.762

In reflective models, discriminant validity assumes that the correlation of latent constructs should exceed the Average Variance Extracted (AVE). Refer to Table 3 for illustrating the Discriminant Validity values. The aim is to establish a meaningful

relationship between constructs and their respective indicators (Hair Jr. et al., 2021). The HTMT measure assesses discriminant validity, with a standard range of values less than 0.90, confirming distinctiveness between insightful constructs.

4.2.3 Discriminant Validity - Hetrotrait-Montrait Ratio (HTMT)

It is less than 0.90. Thus, our model reflects a significant correlation between the construct and its indicators (Refer to Table 4).

Table 4: Discriminant Validity – Hetrotrait-Montrait Ratio (HTMT)

	AI	CQ	EI	ESP	ISP
AI					
CQ	0.523				
EI	0.818	0.825			
ESP	0.655	0.845	0.836		
ISP	0.768	0.76	0.879	0.8	

4.3 Path coefficient

This indicates the direct influence of one variable (cause) on another variable (effect).

Table 5: Path Analysis (EI as IV)

Path	Original Sample (O)	T Statistics	P Values
AI -> ESP	0.42	6.47	0.00
AI -> ISP	0.42	7.12	0.00
CQ -> AI	0.54	13.04	0.00
CQ -> ESP	0.22	3.31	0.00
CQ -> ISP	0.17	3.06	0.00
EI -> AI	0.35	8.50	0.00
EI -> ESP	0.19	3.55	0.00
EI -> ISP	0.26	5.37	0.00
EI*AI*ESP->ESP	-0.04	1.84	*0.07*
EI*AI*ISP -> ISP	-0.06	3.08	0.00

Table 6: Path Analysis (CQ as IV)

Path	Original Sample (O)	T Statistics	P Values
AI -> ESP	0.43	6.51	0.00
AI -> ISP	0.42	7.37	0.00
CQ -> AI	0.54	12.73	0.00
CQ -> ESP	0.21	3.57	0.00
CQ -> ISP	0.17	3.00	0.00
CQ*AI*ESP -> ESP	-0.03	1.41	0.16
CQ*AI*ISP -> ISP	-0.05	2.72	0.01
EI -> AI	0.35	7.71	0.00
EI -> ESP	0.20	3.46	0.00
EI -> ISP	0.27	5.56	0.00

A P value is deemed favorable if it's below 0.05, and a standard t-statistic value above 1.96 is considered significant and indicative of a good fit for the model. Therefore,

a t value is significant when its absolute value equals or exceeds 1.96. For a comprehensive understanding, refer to Tables 5 and 6, illustrating the PLS estimation model results. These results include path coefficients, their significance assessed through a two-tailed test, and align with the hypotheses of the model.

4.4 Hypothesis Testing

For the model goodness of fit, hypotheses were tested to determine the significance of construct relation (Refer to Table 8 and figure 2 & 3). H1 evaluates whether AI has a considerable impact on ESP. The statistics revealed that AI has a considerable impact on ESP (EI as IV: β= 0.424, t = 6.474, p < .001) (CQ as IV: β= 0.426, t = 6.513, p < .001). Thus, H1 is supported. H2 evaluates whether AI has a considerable impact on ISPs. The statistics revealed that AI has a considerable impact on ISP (β= 0.419, t = 7.117, p < .001) (CQ as IV: β= 0.420, t = 7.372, p < .001). Thus, H2 is supported. H3 evaluates whether CQ has a considerable impact on AI. The statistics revealed that CQ has a considerable impact on AI (β= 0.535, t = 13.043, p < .001) (CQ as IV: β= 0.535, t = 12.731, p < .001). Thus, H3 is supported. H4 evaluates whether CQ has a considerable impact on ESP. The statistics revealed that CQ has a considerable impact on ESP (β= 0.222, t = 3.777, p = 0.001) (CQ as IV: β= 0.212, t = 3.568, p < .001). Thus, H4 is supported. H5 evaluates whether CQ has a considerable impact on ISP. The statistics revealed that CQ has a considerable impact on ISP (β= 0.218, t = 3.306, p= 0 .002) (CQ as IV: β= 0.165, t = 2.996, p = 0.003). Thus, H5 is supported. H6 evaluates whether EI has a considerable impact on AI. The statistics revealed that EI has a considerable impact on AI (β= 0.354, t = 8.503, p < .001) (CQ as IV: β= 0.354, t = 7.710, p < .001). Thus, H6 is supported. H7 evaluates whether EI has a considerable impact on ESP. The statistics revealed that CQ has a considerable impact on AI (β= 0.190, t = 3.547, p < .001) (CQ as IV: β= 0.200, t = 3.461, p < .001). Thus, H7 is supported. H8 evaluates whether EI has a considerable impact on ISP. The statistics revealed that EI has a considerable impact on ISP (β= 0.261, t = 5.370, p < .001) (CQ as IV: β= 0.274, t = 5.561, p < .001). Thus, H3 is supported.

4.5 Moderation Analysis

To determine the moderating effect of EI*AI*ESP -> ESP moderation analysis was done in this study. The statistics divulge a significant moderating role of AI when EI and CQ act as independent variables for ISP. Similarly, the result of AI was insignificant when EI and CQ acted as independent variables for ESP. (See Tables 7 and 9)

Table 7: Moderation Analysis

Path Coefficients	Original Sample (O)	T Statistics	P Values
EI*AI*ESP -> ESP	-0.037	1.839	0.066
EI*AI*ISP -> ISP	-0.055	3.077	0.002
CQ*AI*ESP-> ESP	-0.029	1.413	0.158
CQ*AI*ISP -> ISP	-0.047	2.718	0.007

H1 evaluates whether EI*AI*ESP has a considerable moderating impact on ESP. The statistics revealed that EI*AI*ESP has an insignificant impact on ESP (β= -0.037, t = 1.839, p = 0.066). Thus, H1 is not supported. H2 evaluates whether EI*AI*ISP has a considerable moderating impact on ISP. The statistics revealed that EI*AI*ISP has an

insignificant moderating impact on ISP (β= -0.055, t = 3.077, p = 0.002). This hypothesis is not supported due to the reason that in the local environment of developing countries like Pakistan, the capacities of people are not aligned with the AI capacities, so together they may not sync in the manner to provide the organizational outcome Thus H2 is supported.H1 evaluates whether CQ*AI*ESP has a considerable moderating impact on ESP. The statistics revealed that CQ*AI*ESP has an insignificant moderating impact on ESP (β= -0.029, t = 1.413, p = 0.158). Thus, H1 is not supported.H2 evaluates whether CQ*AI*ISP has a considerable moderating impact on ISP. The statistics revealed that CQ*AI*ISP has a significant impact on ISP (β= -0.047, t = 2.718, p = 0.007). Thus, H2 is supported.

Table 8: Summary of Hypotheses Testing

Hypothesis	Result
H1: AI -> ESP (when EI and CQ act as IV)	Significant
H2: AI -> ISP (when EI and CQ act as IV)	Significant
H3: CQ -> AI (when EI and CQ act as IV)	Significant
H4: CQ -> ESP (when EI and CQ act as IV)	Significant
H5: CQ -> ISP (when EI and CQ act as IV)	Significant
H6: EI -> AI (when EI and CQ act as IV)	Significant
H7: EI -> ESP (when EI and CQ act as IV)	Significant
H8: EI -> ISP (when EI and CQ act as IV)	Significant

Table 9: Summary of Moderating Hypotheses Testing

Hypothesis	Result
H1: EI*AI*ESP -> ESP (when EI and CQ act as IV)	In-significant
H2: EI*AI*ISP -> ISP (when EI and CQ act as IV)	Significant
H3: CQ*AI*ESP -> ESP (when EI and CQ act as IV)	In-significant
H4: CQ*AI*ISP -> ISP (when EI and CQ act as IV)	Significant

5. Discussion and Recommendations

The study highlights the significant impact of EI on both internal and external organizational performance. To enhance competitiveness, organizations should involve employees in decision-making processes to strengthen their EI. Similar recommendations have been given by (Boadi et al., 2020). Organizations can improve existing EI skills through diverse training programs, including workshops on project management, leadership, and social work activities. "EI Matter workshops" can be organized to boost individual self-awareness, self-management, and interpersonal skills, aiding in handling work-related challenges. Cross-cultural training should be implemented to foster understanding and respect for diverse cultures, promoting cultural inclusiveness. Talent acquisition diversity must be increased to ensure cultural inclusivity within the

organization. Cultural intelligence can be developed through international assignments and collaborations with universities for specialized training programs. Technological awareness should be nurtured by involving employees in AI-based assignments with rewards. This recommendation stands parallel with the recommendation of (Prentice et al., 2020). Educational workshops should emphasize the importance of soft skills alongside technical skills, crucial for survival in the rapidly evolving technological landscape. In Pakistan's context, nurturing emotional connections between employees and customer experiences is crucial. Linking customer feedback with service delivery can enhance employee engagement. By implementing these strategies, organizations can empower their employees with the skills and awareness needed to thrive in a competitive and diverse business environment, as advised by Prentice et al., (2020) through his study.

6. Conclusion, Future Research, and Limitations

This study investigates the combined impact of human intelligence, specifically Emotional Intelligence (EI) and Cultural Intelligence (CQ), along with Artificial Intelligence (AI), on both internal (e.g., teamwork, communication) and external (e.g., customer service, value creation) organizational outcomes. The goal was to offer valuable insights for practitioners and future researchers. The research comprehensively analyzed how EI, CQ, and AI influence employee behavior, AI capabilities, quality, and subsequently, organizational performance. The findings underscore that human intelligence has a stronger effect on internal service performance, especially in people-focused sectors like banking. AI acts as a moderator, strengthening the connection between human intelligence and internal service performance. Notably, while EI and CQ impact employee performance, the influence of employee AI capability on external customer interactions is limited, potentially due to a lack of emotional connection between employees and customers in such scenarios.

During this study, the researcher diligently ensured its robustness. Nonetheless, data collection from employees presented challenges. Acknowledging these limitations is essential. The subjectivity of emotional attributes posed a challenge, as respondents' definitions influenced their responses to structured questions, possibly limiting objectivity. Diverse cultural values among employees within various banks were recognized. Time constraints were a factor that affected the research process. Data collection was confined to banking employees in Karachi, potentially limiting the generalizability of findings. Cultural disparities between service providers and customers introduced personal biases related to individual values. The current technological landscape in the country posed constraints on AI implementation, underscoring the technological limitations of a developing nation. Addressing these limitations, it's worth noting that as a developing nation, certain technological constraints and challenges hinder the adoption of AI and other quality measures.

Future research can address the limitations of this study through various approaches. To enhance comprehensiveness, customer feedback on banking services could be collected, providing a holistic perspective. Assessing employee EI from a customer standpoint could further enrich the analysis. To enhance generalizability, future studies could explore cross-cultural and longitudinal dimensions. Furthermore, the study's constructs could be refined to validate findings across different sectors and

countries. Researchers might consider constructing a model with EI and CQ as independent variables, organizational outcomes as dependent variables, and AI (both customer service and employee software) as moderating factors. This modification could establish a significant relationship between EI, CQ, AI, and external service performance. In conclusion, future researchers are encouraged to consider these facets to strengthen the rigor and depth of their findings. This approach would contribute to advancing the knowledge in this area.

Ethical Consideration

The authors declare that this submission follows the policies of AJSS as outlined in the guide for authors and in the ethical statement.

Informed Consent

Respondents were interviewed based on informed consent.

Declaration of Interest Statement

The authors affirm that there are no apparent competing financial interests or personal relationships that could have influenced the work presented in this paper.

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7. References

Alexandra, V. (2023). Optimizing cultural intelligence development by considering different types of change. *The International Journal of Human Resource Management*, *34*(12), 2404-2428.

Alshaibani, E., & Bakir, A. (2017). A reading in cross-cultural service encounter: Exploring the relationship between cultural intelligence, employee performance, and service quality. *Tourism and Hospitality Research*, *17*(3), 249-263.

Alzoubi, H. M., & Aziz, R. (2021). Does emotional intelligence contribute to the quality of strategic decisions? The mediating role of open innovation. *Journal of Open Innovation: Technology, Market, and Complexity*, 7(2), 130.

Ang, S., & Van Dyne, L. (2015). *Handbook of cultural intelligence: Theory, measurement, and applications*. Routledge.

Basu, S., Majumdar, B., Mukherjee, K., Munjal, S., & Palaksha, C. (2023). Artificial intelligence–HRM interactions and outcomes: A systematic review and causal configurational explanation. *Human Resource Management Review*, *33*(1), 100893.

Boadi, E. A., He, Z., Boadi, E. K., Antwi, S., & Say, J. (2020). Customer value co-creation and employee silence: Emotional intelligence as an explanatory mechanism. *International Journal of Hospitality Management*, 91, 102646.

Bozionelos, G., & Bozionelos, N. (2018). Trait emotional intelligence and social capital: The emotionally unintelligent may occasionally be better off. *Personality and Individual Differences*, *134*, 348-351.

Brougham, D., & Haar, J. (2018). Smart technology, artificial intelligence, robotics, and algorithms (STARA): Employees' perceptions of our future workplace. *Journal of Management & Organization,* 24(2), 239–257.

Clayton, M. F., Iacob, E., Reblin, M., & Ellington, L. (2019). Hospice nurse identification of comfortable and difficult discussion topics: Associations among self-perceived communication effectiveness, nursing stress, life events, and burnout. *Patient Education and Counseling*, 102(10), 1793–1801.

Coronado-Maldonado, I., & Benítez-Márquez, M. D. (2023). Emotional intelligence, leadership, and work teams: A hybrid literature review. *Heliyon*.

Cui, Y. (2021). The role of emotional intelligence in workplace transparency and open communication. *Aggression and Violent Behavior*, 101602.

Davies, S., Froese, F. J., Chng, D. H. M., & Portniagin, F. (2023). Improving subsidiary performance via inpatriate assignments: the role of host country national subsidiary CEOs' social ties and motivational cultural intelligence. *Journal of World Business*, *58*(5), 101460.

Darvishmotevali, M., Altinay, L., & De Vita, G. (2018). Emotional intelligence and creative performance: Looking through the lens of environmental uncertainty and cultural intelligence. *International Journal of Hospitality Management,* 73, 44–54.

Demetriou, A., Kazi, S., Makris, N., & Spanoudis, G. (2020). Cognitive ability, cognitive self-awareness, and school performance: From childhood to adolescence. *Intelligence*, 79, 101432.

Deshpande, P., & Srivastava, A. P. (2023). A study to explore the linkage between green training and sustainable organizational performance through emotional intelligence and green work-life balance. *European Journal of Training and Development*, *47*(5/6), 615-634.

Dijkstra, T. K., & Henseler, J. (2015). Consistent partial least squares path modeling. *MIS Quarterly*, *39*(2), 297-316.

Earley, P. C., & Mosakowski, E. (2004). Cultural intelligence. *Harvard Business Review*, *82*(10), 139-146.

Fan, P., Song, Y., Nepal, S., & Lee, H. (2020). Can Cultural Intelligence Affect Employee's Innovative Behavior? Evidence From Chinese Migrant Workers in South Korea. *Frontiers in Psychology*, 11, 559246.

Fuchs, L. (2011). Partially Ordered Algebraic Systems. *Courier Corporation.*

Galanos, V. (2019). Exploring expanding expertise: Artificial intelligence as an existential threat and the role of prestigious commentators, 2014–2018. *Technology Analysis & Strategic Management,* 31(4), 421–432.

Goleman, D. (2021). Leadership: The power of emotional intelligence. *More Than Sound LLC.*

Gupta, R., & Bajaj, B. (2017). The Relationship between Leader's Emotional Intelligence and Employee Creativity: A Conceptual Framework of Mechanism. *Procedia Computer Science,* 122, 471–477.

Hair Jr., J. F., Hult, G. T. M., Ringle, C. M., Sarstedt, M., Danks, N. P., & Ray, S. (2021). *Partial Least Squares Structural Equation Modeling (PLS-SEM) Using R: A Workbook*. Springer Nature.

Huang, H., Wang, X., Sengan, S., & Chandu, T. (2021). Emotional intelligence for board capital on technological innovation performance of high-tech enterprises. *Aggression and Violent Behavior*, 101633.

Husin, H., Ahmad, F., & Islam, R. (2019). The effects of cultural intelligence on task performance and contextual performance: an empirical study on public sector employees in Malaysia. *Humanities & Social Sciences Reviews*, 7.

Jie, H., Martínez, O. S., & Crespo, R. G. (2020). The influence of employee emotional intelligence on enterprise innovation performance using an adaptive mathematical modeling of emotions. *Aggression and Violent Behavior,* 101538.

Jyoti, D. J., Kour, S., & Bhau, S. (2015). Assessing the Impact of Cultural Intelligence on Job Performance: Role of Cross-Cultural Adaptability. *Journal of IMS Group*.12(1), 12.

Kaplan, A., & Haenlein, M. (2019). Siri, Siri, in my hand: Who's the fairest in the land? On the interpretations, illustrations, and implications of artificial intelligence. *Business Horizons*, 62(1), 15–25.

Kaushal, N., Kaurav, R. P. S., Sivathanu, B., & Kaushik, N. (2023). Artificial intelligence and HRM: identifying future research Agenda using systematic literature review and bibliometric analysis. *Management Review Quarterly*, *73*(2), 455-493.

Khan, S. K., Sohail, A., & Ali, R. (2022). Analyzing Commercial Banks Performance through E-HRM Functions: Evidence from Pakistan. *Academic Journal of Social Sciences (AJSS)*, *6*(4), 001-014.

Kim, M. H. (2023). A bioecological perspective on mindset. *Contemporary Educational Psychology*, *73*, 102173.

Kukah, A. S. K., Owusu-Manu, D. G., & Edwards, D. (2023). Critical review of emotional intelligence research studies in the construction industry. *Journal of engineering, design, and technology*, *21*(6), 1925-1947.

Kunduru, A. R. (2023). Artificial intelligence usage in cloud application performance improvement. *Central Asian Journal of Mathematical Theory and Computer Sciences*, *4*(8), 42-47.

Lam, R., Cheung, C., & Lugosi, P. (2022). The impacts of cultural intelligence and emotional labor on the job satisfaction of luxury hotel employees. *International Journal of Hospitality Management*, 100, 103084.

Larivière, B., Bowen, D., Andreassen, T. W., Kunz, W., Sirianni, N. J., Voss, C., Wünderlich, N. V., & De Keyser, A. (2017). "Service Encounter 2.0": An investigation into the roles of technology, employees, and customers. *Journal of Business Research*, 79, 238–246.

Liboni, L. B., Cezarino, L. O., Jabbour, C. J. C., Oliveira, B. G., & Stefanelli, N. O. (2019). Smart industry and the pathways to HRM 4.0: Implications for SCM. *Supply Chain Management: An International Journal*, 24(1), 124–146.

Lim, S. H., & Kim, D. J. (2020). Does the Emotional Intelligence of Online Shoppers Affect Their Shopping Behavior? From a Cognitive-Affective-Conative Framework Perspective. *International Journal of Human–Computer Interaction*, 36(14), 1304–1313.

Ljubica, J., & Dulcic, Z. (2012). The role of cultural intelligence (Cq) In the strategy formulation process–application to the hotel industry. *Annals and Proceedings of DAM International*, *23*(1), 115-120.

Lu, Y. (2019). Artificial intelligence: A survey on evolution, models, applications, and future trends. Journal of Management Analytics, 6(1), 1–29.

Mahmood, B., Ramzan, M., & Zafar, J. (2023). Examining The Mediating Role of Workplace Incivility Between Emotional Intelligence and Organizational Commitment. *Academic Journal of Social Sciences (AJSS)*, *7*(1), 049-063.

Mayer, J. D., Salovey, P., & Caruso, D. (2000). Models of emotional intelligence. *Handbook of intelligence*, *2*, 396-420.

Mikalef, P., & Gupta, M. (2021). Artificial intelligence capability: Conceptualization, measurement calibration, and empirical study on its impact on organizational creativity and firm performance. *Information & Management*, *58*(3), 103434.

Minbaeva, D. (2021). Disrupted HR? *Human Resource Management Review*, *31*(4), 100820.

Min, H., Kim, H. J., & Agrusa, J. (2023). Serving diverse customers: The impact of cultural intelligence on employee burnout, engagement, and job satisfaction. *Journal of Hospitality & Tourism Research*, *47*(3), 503-527.

Morin, G., & Talbot, D. (2023). Cultural intelligence of expatriate workers: a systematic review. *Management Review Quarterly*, *73*(1), 413-454.

Nazarian, A., Atkinson, P., & Foroudi, P. (2017). Influence of national culture and balanced organizational culture on the hotel industry's performance. *International Journal of Hospitality Management*, *63*, 22-32.

Nosratabadi, S., Bahrami, P., Palouzian, K., & Mosavi, A. (2020). Leader cultural intelligence and organizational performance. *Cogent Business & Management*, 7(1), 1809310.

Perifanis, N. A., & Kitsios, F. (2023). Investigating the influence of artificial intelligence on business value in the digital era of strategy: A literature review. *Information*, *14*(2), 85.

Plum, E. (2009, February). Cultural intelligence: The art of leading cultural complexity. In *Proceedings of the 2009 International Workshop on Intercultural Collaboration* (pp. 293-296).

Prentice, C., Dominique Lopes, S., & Wang, X. (2020). Emotional intelligence or artificial intelligence– an employee perspective. *Journal of Hospitality Marketing & Management*, 29(4), 377–403.

Robledo-Ardila, C., Aguilar-Barrientos, S., & Román-Calderón, J. P. (2016). Education-Related Factors in Cultural Intelligence Development: A Colombian Study. *Journal of Teaching in International Business*, 27(1), 41–58.

Schutte, N. S., Malouff, J. M., Thorsteinsson, E. B., Bhullar, N., & Rooke, S. E. (2007). A meta-analytic investigation of the relationship between emotional intelligence and health. *Personality and Individual Differences*, 42(6), 921–933.

Shafiya, S., Amin, S., & Ali, M. H. (2023). Examining E-Satisfaction as Mediator between Banking Mobile Application Quality Factors and Consumers E-Loyalty. *Academic Journal of Social Sciences (AJSS)*, *7*(1), 001-016.

Shakeel, P. M., & Baskar, S. (2020). Automatic human emotion classification in web document using fuzzy inference system (FIS): human emotion classification. *International Journal of Technology and Human Interaction (IJTHI)*, *16*(1), 94-104.

Shi, Y., Prentice, C., & He, W. (2014). Linking service quality, customer satisfaction, and loyalty in casinos, does membership matter? International Journal of Hospitality Management, 40, 81–91.

Sternberg, R. J. (2021). Intelligence and cognitive style. In Aptitude, learning, and instruction (pp. 77-98). Routledge.

Thomas, D. C., Liao, Y., Aycan, Z., Cerdin, J.-L., Pekerti, A. A., Ravlin, E. C., Stahl, G. K., Lazarova, M. B., Fock, H., Arli, D., Moeller, M., Okimoto, T. G., & van de Vijver, F. (2015). Cultural intelligence: A theory-based, short-form measure. *Journal of International Business Studies*, 46(9), 1099–1118.

Torrance, H. (1981). The origins and development of mental testing in England and the United States. British Journal of Sociology of Education, 2(1), 45–59.

Umamaheswari, S., & Valarmathi, A. (2023). Role of Artificial Intelligence in The Banking Sector. Journal of Survey in Fisheries Sciences, *10*(4S), 2841-2849.

Velten, L., & Lashley, C. (2018). The meaning of cultural diversity among staff as it pertains to employee motivation. Research in Hospitality Management, 7(2), 105–113.

Wamba-Taguimdje, S. L., Fosso Wamba, S., Kala Kamdjoug, J. R., & Tchatchouang Wanko, C. E. (2020). Influence of artificial intelligence (AI) on firm performance: the business value of AI-based transformation projects. *Business Process Management Journal*, *26*(7), 1893-1924.

Webster, C., & Ivanov, S. (2020). Robotics, Artificial Intelligence, and the Evolving Nature of Work. In B. George & J. Paul (Eds.), *Digital Transformation in Business and Society: Theory and Cases* (pp. 127–143). Springer International Publishing.

Wirtz, J., Patterson, P. G., Kunz, W. H., Gruber, T., Lu, V. N., Paluch, S., & Martins, A. (2018). Brave new world: Service robots in the frontline. *Journal of Service Management,* 29(5), 907–931.

Yachin, J. M. (2018). The 'customer journey': Learning from customers in tourism experience encounters. *Tourism Management Perspectives*, 28, 201–210.

Yang, R., Díaz, V. G., & Hsu, C.-H. (2021). Use of emotional intelligence to promote innovation among employees in the work environment through qualitative and quantitative analysis. *Aggression and Violent Behavior*, 101589.

Yao, S., Wang, X., Yu, H., & Guchait, P. (2019). Effectiveness of error management training in the hospitality industry: Impact on perceived fairness and service recovery performance. *International Journal of Hospitality Management*, 79, 78–88