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Artificial intelligence and its impact on HRM functions of Pakistani airlines: evidence from moderated mediation model

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Abstract
The purpose of this study is to see how Artificial Intelligence (AI) can impact Human Resource Management (HRM) functions within the context of Pakistani airlines, through mediating role that knowledge sharing plays and moderating role that service quality plays in process. By examining relationship between AI, HR functions, knowledge sharing, service quality, and innovation in airline industry, this study aims to fill gaps in existing literature by addressing gaps in existing literature. Social Cognitive Theory (SCT) consider for theoretical framework, and provides comprehensive perspective on how AI impacts HR functions and elucidates relationships among employee knowledge sharing and service quality. The airline industry heavily relies on knowledge sharing and ability to meet passenger preferences. AI plays significant role, especially in enhancing passenger service quality and HR functions. Study highlights significance of AI knowledge in airline industry, emphasizing the need for further research to understand its effects on relationship between AI and service quality. Study also examines moderating impact of service quality between AI & HR functions. The research, conducted in Pakistani airlines, contributes to deeper understanding of how AI can transform HR practices and offers insights for organizations considering adoption of AI technology in airline industry.

Keywords: Artificial Intelligence, Knowledge Sharing, HR Functions, Service Quali

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1. Introduction

Information technology and artificial intelligence has invented evidence and communication revolution, in management of aviation sector through new innovation and information service quality. Pérez-Campuzano et al. (2021) regarding artificial intelligence techniques as applying HR functions to maximize an enterprise values. Ogunsina & DeLaurentis, (2022) pointed out artificial intelligence is crucial to breakthrough or organizational development and sustainably. Artificial intelligence includes problem-solving, learning, reasoning, understanding natural language, perceiving and interpreting environment, and new complex situations to such HR issues. Thus, HR procedures and techniques mostly require interesting attention of management Holzinger et al. (2019), through artificial intelligence recent advancements. However, despite large applications of AI in HR enhancement in the airline industry, research in such sector is scant. Therefore, more research needed for scholars to explore such gaps.

This research addresses several gaps in current literature. Firstly, growing application of AI in almost

every field, scarcity of research in HR function (Singh & Shaurya, 2021) and also AI relationship between knowledge sharing, service quality and, innovative work performance. Secondly, researcher also aims to fill gap by investigating new relationship between AI and HR functions (Singh & Shaurya, 2021), such as in airline industry. Thirdly, this research also contributes to more understanding of how AI could impact and enhance HR functions in airline industry. Last, research will shed light on AI role in transforming HR practices and help organizations make informed decisions about adopting and implementing latest AI technology in airline industry.

Additionally, the researcher emphasize the critical and significant impact of knowledge management (Bashir & Farooq, 2019), in airline industry. Previous literature on airline has also emphasized importance of information and its significance in HR functions (Singh & Shaurya, 2021). Thus, knowledge sharing enhances employees' creativity and employee performance (Rejeb et al., 2022). However, the influence of AI in airline innovative performance on knowledge sharing has not been described (Bashir & Farooq, 2019). This study intends to deliver empirical evidence and inclusive discussion on how AI influences knowledge sharing and, innovative performance in airline. Also, knowledge sharing and innovation mediation role relationship between AI and HR functions.

To address identified issue, the study adopts social cognitive theory (SCT) as conceptual framework. SCT provides holistic perspective on artificial intelligence by which AI impact HR function and also provide in-depth understanding of AI associations between employee knowledge sharing and, service quality in Artificial intelligence contexts. By employing SCT, the researcher aim to provide theoretical foundation to explain relationship between HR functions and AI adaptation successfully.

The airline industry relies on knowledge sharing and abilities to ensure passenger preference; however, a lack of operational difficulties and support in managing and controlling passenger related issues can have severe consequences (Li et al., 2022), therefore, artificial intelligence is main significance, especially during passenger service quality and HR functions. AI is more about to analyze passenger data and preferences to provide personalized travel recommendations. However, AI knowledge needs more to explore in personalized learning, intelligent tutoring systems etc. and employees also updated their knowledge and skills to overcome challenges. The literature on role of AI is scare (Liao et al., 2022), particularly in airline industry, such as in Pakistan. The Management, who accepted AI techniques during peak season, is found to maximize service quality and improve work performance (Holzinger et al., 2019). Hence, the importance of AI knowledge in airline industry, no study has examined its effects on relationship between AI and service quality. Yet, Yousaf et al. (2020) concludes that research study that AI has positive relation with service quality and a positive correlation with innovative work performance has empirically proved. Hence, with initial challenges of AI, the HR professional needs to map for role of AI in knowledge sharing, service quality, innovation, and thus, enhance HR functions.

Therefore, this study also examines moderating role of innovation in relationship between AI and HR functions. Moreover, AI research and development continue to progress, more and more areas will be explored, and the impact of AI on various aspects of society will continue to expand (Huang et al., 2022), especially in developing countries. Pakistani Airline (such as Pakistan International Airlines), one of Pakistani main airlines, realizes the need to use technology advances, including AI, to compete in the dynamic aviation business. Pakistani Airlines hopes to improve HRM procedures, employee experiences, and corporate objectives by incorporating AI.

In summary, the study fills gaps in AI literature by examining relationship between the AI, HR functions, knowledge sharing, service quality and innovation. It response to call of Huang et al. (2022) by describing AI and its noble contributions in HR functions contributions, also by analyzing SCT as theoretical framework, the study provide comprehensive discussion and describing the mention relationship and identified problem. In reference to above discussion, current study research has following research question.

RQ: Does AI technique affects HR functions in airline industry?

2. Theoretical framework and hypothesis development

Social cognitive theory (SCT)

According to Jabeen et al. (2022), SCT suggests that expected outcomes within social environment affect individual behavior, which utimately beneficial and productive (Huang et al., 2022). Applying SCT to this study, It can be said that cognitive and social factors toward consumer preference (Castillo et al., 2021). SCT suggests that businesss mareketing strategies appeal target consumer and ultimately increase sales. The SCT also articulates applying to consumer preferenc and consumer choice and cognitive factor of consumer that outcome expectations (Liao et al., 2022). When consumer feel valuable and have greater information and received more innovative service quality product that motivate to chioce product. This motivation stems

product belief and traggir consumer needs and desires, towards final product chioce. The SCT has been widely adopted by theoritical framework in business field (Irfan et al.,2020). Notably, most sholars discussed artificial intellengence (Castillo et al., 2021) and outcome HR functions (Xu et al., 2019) as cognitive forces that guiding consumer preference. Knowledge sharing pertains key externally and internally resources founds sustainable resources for competitive advantage. Liao et al. (2022) also underlined that company knowledge sharing plays an significant impact not only in overall HR functions effeciency, but also in service quality of an organization. Specific to this study, we also exposed to service quality and innovative performance, since airline services can satisfy customers' demands and their outcome expectation can only be develop certain abilities from AI and HR functions conscious aspect. Accordingly, current research incorporates airline consumer preference and related AI, HR functions, knowledge sharing, and service quality.

AI & HR functions

According to SCT theory, AI, stresses the essential component of HR functions, based on fact that AI has become a part of an essential task, such as recruitment, onboarding, and selection. Such a symbolic connection concerns whether AI can help personnel to provide efficient and accurate HR functionality. Thus, it is reasonable to infer that airline management will develop efficient HR functions to conquer more consumer, hence, AI techniques can serve as arena for customers to shape positive behavioral conduct. With AI, airlines can automate routine HR tasks such as recruitment and onboarding, freeing up HR professionals to focus on more strategic initiatives. AI can also analyze large amounts of employee data, identifying trends and patterns that may go unnoticed by human analysts. Specific to study, when AI establish strong interaction with airline working, they are more likely to shape HR functions enhancement (Huang et al., 2022), hence, airline AI cohensively integrates more consumer towards preferences. In light of these justigications, we propose that:

Hypothesis 1: AI positively influences on HR practices.

AI, knowledge-sharing and HR functions

Artificial intelligence (AI) is an act in which employees easily share ideas and other information in workplace (Huang et al., 2022). The literature highlights that AI enhances organizational knowledge sharing initiatives and contributes to individual and organizational HR functions performance (Tam et al., 2022). AI predicts organizational knowledge sharing and functions efficiency (Alnamrouti et aal., 2022). However, it is highlighted in artificial intelligence literature that knowledge sharing needs support of AI, which as result change organization working procedures and increase technology productivity (Huang et al., 2022). The effect of AI in organizations makes process of knowledge sharing more efficient. Tam et al. (2022) elaborates that when organization share knowledge through efficient channel, AI allows airline consumers to prefer consequently, and support company policies and procedures. In review by Based on Ghimire & Suvedi (2020), artificial intelligence was found to significantly affect knowledge sharing in a positive way. Using artificial intelligence can enhance HR function by promoting culture conducive to knowledge sharing, establishing shared vision and providing shared goal, and improving relationship between HR and AI based on knowledge sharing.

Several empirical studies have also demonstrated that there is a relationship between knowledge sharing and human resources functions. Thus, Singh et al. (2021) find that those organizations that promote knowledge sharing processes are more likely to have better HR practices than those that do not. In study by Koech and colleagues (2022), which examined elements of knowledge sharing that had an impact on HR policies and found that sharing knowledge was motivating individuals to share knowledge and transform basic HR functions into better ones, it concluded that knowledge sharing was motivating individuals to share.

As stated by Huang et al. (2022), that new knowledge-sharing policies, the behaviors' of sharing and creating new knowledge will occur naturally. However, many researchers believe that HRM can improve knowledge-sharing processes and create environment conducive to knowledge-sharing. Hence, we propose that:

Hypothesis 2a: AI positively impact knowledge sharing.

Hypothesis2b: knowledge sharing significantly influences HR functions.

The mediation role of knowledge sharing

AI describes as 'company's ability to employ and master AI-specific resources' (Yousaf et al., 2020). According to research, cultivating AI capabilities can boost organization's organisational innovation. However, he did not specify the particular influence channel connecting the two. We are conducting in this study an investigation into the effect that information sharing has on relationship between artificial intelligence competencies and organizational innovation as a result of the facts outlined above. In conjunction with AI skills, organizations can invest in flexible data storage, data processing systems that can process data

quickly and run complex algorithms, and tools for knowledge exchange (Ghimire & Suvedi, 2020). Moreover, higher AI capabilities are reflected in an organization's culture of effective teamwork, consistent collective goals, and shared resources. This can contribute towards more active knowledge-sharing environment. Since factors that influence members to hide or reveal their knowledge depend on individual's intentions, as well as their organizational climate regarding knowledge explorers (Yousaf et al., 2020), important to understand that factors such as influence knowledge-hiding and sharing. Furthermore, community can enhance citizen engagement in artificial intelligence technology learning by employing appropriate knowledge-sharing methods to enhance citizen engagement in artificial intelligence technology teaching as well (Singh et al., 2021). Research indicates that the dissemination of knowledge and access to necessary technical tools can help students in Pakistan improve their creativity (Ghimire & Suvedi, 2020). Hence, proposed that:

Hpothesis 3: knowledge sharing mediates relationship among AI and HR functions.

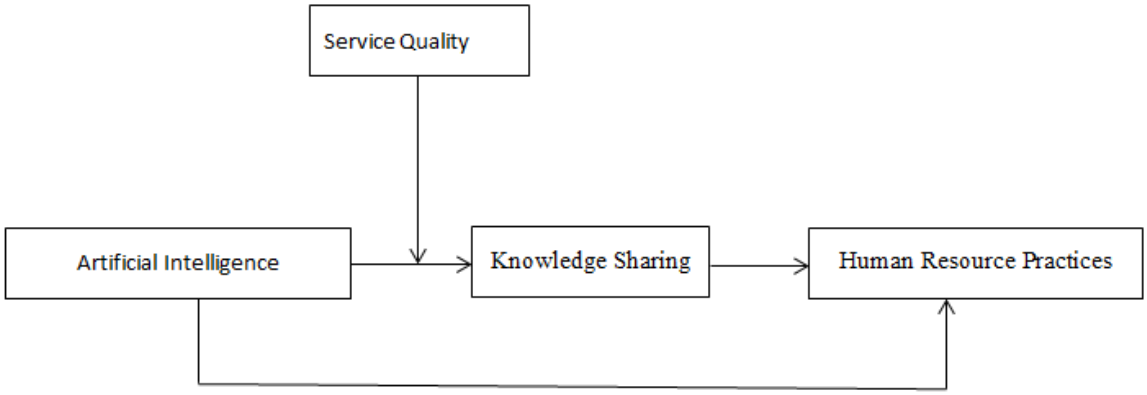
Service quality moderating impact

Studies have shown that AI can positively influence HR processes, as well as the quality and efficiency of firm services; the quality of service around relationships will also influence how motivated AI and, HR are (Yousaf et al., 2020). In AI, cross-departmental coordination is crucial for organization collaboration, between individuals and more service quality enable organizations to invest more in AI techniques. Waqas et al. (2022) indicates that AI interaction positivilty correlated with the tactics of knowledge shared and the sence of more enhnaced HR practices.

Moreover, according to (Latif & Rana, 2020) service quality is positively related to the amount of knowledge that people share, and artificial intelligence may have a significant effect on members' ability to enhance recruitment policies in order to meet organizational needs. A recent study showed that service quality has an impact on the work pressure of employees as well as improving the quality of their work. In accordance with SOE theory, the lack of service quality within the organization will affect the relationships between organizational AI and recruitment and organizational hiring policies (Yousaf et al., 2020). In this regard, the strong relationship between service quality atmospheres has contributed to HR policies (Ghimire & Suvedi, 2020) and the establishment of AI-related organizations, resulting in effective establishment of service quality patterns within these organizations. Further studies have shown that employees working in AI-related cultures are likely to have a positive perception of service quality (Huang et al., 2022) and therefore lead to a more effective HR policies and practices. Hence, we proposed that:

Hpothesis 4: Service quality moderates the relationship between AI and HR functions.

Figure 1: To summarize, we recommend our theoretical model



3. Research Methodology

From 350 questionnaires distributed at Islamabad, Peshawar, Lahore, Karachi airport, we were able to compile a representative sample of 296 replies. This study is deductive and quantitative in nature. More, survey questionnaire utilize to assess impact of AI on Pakistani Airlines' HRM operations has certain limitations. The survey relied on a Likert scale. Questionnaires found are an effective research instrument for gauging target audience members' feelings, answers, and overall behavior (Johnson & Christenson, 2004). For research random sampling procedure utilized.

Measurement Scale

This study selected mature measurement scale projects and adjusted research scenarios accordingly to ensure reliability and validity. Researchers have identified six questions regarding artificial intelligence capability (Mikalef and Gupta, 2021), and four questions concerning knowledge sharing (Sudibjo et al., 2021). HR practices (Hansen et al., 1999) include 12 question items, while service quality includes five (Mikalef and Gupta, 2021). According to the authors, all items in paper were scored on 5-point Likert scale, ranging from 1-5.

Common Method Variance:

Using same respondents for both independent and dependent variables may have introduced common method bias. Both methodologically and statistically, this bias was controlled for. We first protected respondents' anonymity and counterbalanced the items' order. As a second step, we used Harman's single-factor test (Podsakoff, MacKenzie, Lee and Podsakoff, 2003). In particular, we conducted an exploratory factor analysis and examined unrotated factor solution to determine number of factors needed to explain variance. Results showed no general factor (the loading for first principle component was only 0.28), indicating a lack of systematic variance across measures.

Descriptive Analysis

Table 2 presents the participants' profile, indicating that the majority of respondents (67.91%) were male, while a smaller proportion (32.09%) was female. Approximately 33.45% of respondents fell within 25-30 years age, while 44.93% of participants was aged between 31-36 years. The remaining 21.62% of the participants were aged over 37 years. The most significant demographic subset, including 65.54% individuals (such as flyer) or 34.46% non-flyer of the total respondents consisted of individuals from Pakistan airline sector. A majority of the participants (49.32%) possessed a intermediate degree, whereas a smaller proportion (21.96%) had pursued graduate education.

Table 1: Descriptive Statistics (n 296).

Attributes	Category	Frequency	Percent
Gender	**Male**	**201**	**67.91**
	Female	**95**	**32.09**
Age	**25-30**	**99**	**33.45**
	31-36	**133**	**44.93**
	Above 37	**64**	**21.62**
Nationality	**Flyer**	**194**	**65.54**
	Non-Flyer	**102**	**34.46**
Education level	**Graduate & above**	**65**	**21.96**
	Inter	**146**	**49.32**
	Matric & lower	**85**	**28.72**

Data analysis results:

Cronbach's values and composite reliability values were used to assess construct dependability. All of Cronbach's values varied from .86 to.89, and composite reliability values ranged from .83 to.86, as shown in Table3. They were all more than 0.70, showing construct was dependable (Fornell and Larcker, 1981). Convergent and discriminant validity were used to assess construct validity. Average variance extracted (AVE) values and item loadings were used to test convergent validity. The AVE values were larger ideal value of 0.50 (Fornell and Larcker, 1981), and loadings of all items were greater ideal value of 0.70 (Hair et al., 1998), indicating construct had good convergent validity (Table2). AVE square roots were all bigger than construct correlations, showing construct had good discriminant validity.

Table 2: Model Fit

	Cmin/Df	TLI	CFI	RMSEA
Artificial Intelligence (AI)	1.48	.96	.97	.04
HR practices (HR)	3.26	.97	.98	.07
Knowledge sharing (KS)	2.75	.99	.99	.06
Service Quality (SQ)	2.64	.97	.98	06
Model fit indexes	2.54	.92	.91	.05

Note: chi-square/ degrees of freedom (Cmin/Df); comparative fit Index (CFI); = root mean square error of Approximation (RMSEA), Tucker–Lewis Index (TLI)

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Table 3: CR, AVE & Factor loading

	Items	FL	α	CR	AVE
Artificial intelligence (AI)	AI1-AI6	0.74	.87	0.88	0.83
HR practices (HR)	HR1-HR4	0.84	.88	0.90	0.84
Knowledge sharing (KS)	KS1-KS8	.92	.86	.93	0.86
Service Quality (SQ)	SQ1-SQ9	0.84	.89	0.90	0.84

Hypothesis Testing:

Hypothesized impacts were assessed using (SEM) procedure. Table-4 also presents hypothesized influences parameter estimates. However, the structural model fit appropriateness was assessed, and good fit indices discovered. (CMIN/Df=2.54, CFI=.91, RMSEA=.05), which satisfied recommended thresholds criteria (). Hence, standardized coefficients of AI on HR were (β=.51, significant), thus H1 was supported. H2 were also found (β=.31, significant). In particular, coefficient of CL on CS was 0.57 (β=.56, significant), H3 was thus supported. Hypothesis-4 standardized coefficients of CL and CS were also found (β=.57, significant).

Table 4: Path coefficient

	Path	R.W	t	p	Consequences
H1	AI → HR	.51	22.88	***	Supported
H2a	AI → KS	.31	14.67	***	Supported
H2b	KS→ HR	.57	14.78	***	Supported

Notes: AI-Artificial intelligence, HR- HR practices, KS- Knowledge sharing SQ-Service Quality Significant at *po0.05; **p o 0.001

Table 5: Indirect Path Coefficient

Indirect Relationship	Direct	Indirect	Mediation observed
AI-KS-HR	0.31**	0.34**	Partial Mediation
AI-SQ-HR	0.34**	0.36**	Moderating exist

In non-parametric resampling tests, bootstrap techniques are used to identify the indirect role of KS & SQ (Preacher & Hayes, 2008) among AI and HR. According to Table 5, total, direct, indirect, and impacts of KS, SQ on the relationship between AI and HR evaluated. Partial mediation and moderating effects exist in relationship between AI and HR function.

4. Discussion

The study of the airline sector in Pakistan exhibited distinctive patterns of artificial intelligence in organizations, which influence HR practices. Recent studies have repeatedly emphasized the need for empirical studies, which help strength the relations among artificial intelligence and HR functions (Huang et al., 2022). These mechanisms are of crucial importance for casual effects of artificial intelligence on different HR outcome (Alnamrouti et al., 2022). Besides others research, we has extending scholarly contributions, regarding HR outcome through better AI practices. However, this paper examined strategic significance of AI in the context of airline consumers. Hence, this model of artificial intellengence that generate synergistic effects that better HR functions in the contect of basic airline activates. Our result extends the findings of several recent studies, such as, (Castillo et al., 2021). Additionally, knowledge sharing factors mediating impact that guide HR functions, through AI practices. However, it should be noted that particular characteristics of the airline settings are reflected in this study Again, only recent studies on airline consumers have focused their attention on AI practices, and HR functions (Latif & Rana, 2020), and knowledge sharing as mediating constructs. In our study, we found that Pakistan's airline generally denominated relatively higher level AI practices consequences via HR performance, compared to knowledge sharing, and relatively higher level AI impact-on HR practices. More, our study also have given significant importance to service quality as moderating constructs between AI practices and HR functions. In our study, we found that Pakistan's airline generally denominated relatively higher level AI practices consequences via HR performance, compared to service quality, and relatively higher level AI impact-on HR practices. Therefore, the findings have several theoretical contributions and limitations.

Theoretical implications:

The current study has several important contributions. First, theoretically analyze role of knowledge sharing in indirect relationships among AI and HR practices, to address demand for study on concern subject

(Singh et al., 2021). The current study also demonstrates a direct connection involving AI and HR functions that supports sustainable mediation pathway. Secondly, earlier research often concentrated over how processes were configured in western context (Huang et al., 2022). This empirical analysis of the Pakistan airline sector, however, makes a valuable contribution by improving the generalizability and validity of artificial intelligence research. Thirdly, earlier studies often focused on AI practices in western setting (Latif & Rana, 2020), however, it is important to assess what AI shapes better HR practices. Hence, AI practices more relevant in directing individuals towards HR practices. Finally, our study confirms the multidimensionality of AI and the comparative outcome of AI in manipulating HR functions (Yousaf et al., 2020), service quality and knowledge sharing. These findings also call others constructs indirect links (such as, motivation, innovation etc) on artificial intelligence practices, in clarifying HR functions better practices.

Practical implications:

In practical terms, better synergy of artificial intelligence is essential to organization HR functions performance. As artificial intelligence practices are fairly implemented (Pérez-Campuzano et al., 2021), better and efficient HR-related practices implemented. Our findings support the value of AI practices for HR, knowledge sharing and service quality in airline industry. Furthermore, organization equips with enough resources encourage AI and apply better HR functions and other activities. Obviously, artificial intelligence practices may ease path way for knowledge sharing and service quality in airline sector. In short, Artificial intelligence (AI) based systems have the capability to automate the process of performance evaluations and offer employees with ongoing feedback.

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