



Digital Leadership and Organizational Commitment in the Era of Artificial Intelligence: Evidence from Private Sector Firms

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Abstract

This paper focuses on investigating how digital leadership is correlated with artificial intelligence (AI) adoption and organizational commitment in the companies of the Pakistani private sector. The research design used was a quantitative cross-sectional study and primary data (150 employees in Punjab) were gathered by use of structured questionnaire. Descriptive statistics, correlation analysis, and multiple regression were employed to provide the analysis of the data. The results indicate that digital leadership and AI adoption have significant and positive relationships with organizational commitment. The results of correlation are strong associations between the variables where digital leadership reported significant association with AI adoption ($r = 0.62, p < 0.01$) and organizational commitment ($r = 0.58, p < 0.01$). Further regression analysis shows that digital leadership ($b = 0.45, p = < 0.001$) and AI adoption ($b = 0.35, p = < 0.001$) have significant predictive power on organizational commitment, and account for 52% of its variance ($R^2 = 0.52$). The research finds that digital leadership is a prevailing factor to encourage employee commitment, whereas AI adoption leads to increased efficiency at the workplace and positive attitudes towards employees. The research offers practical implications of the managers in the developing economies, the need to deploy leadership and technology to improve organizational performance.

Keywords: Leadership, Intelligence, Commitment and Private Sector.

Introduction

Over the past several years, the fast development of the artificial intelligence (AI) and online technologies has dramatically reorganized the structure of organizations, leadership style, and behaviors of employees in different parts of the world. Organisations are turning to AI-led systems more to improve



efficiency, decision-making and competitiveness. Under this changing digital environment, leadership has evolved not based on the conventional management practices but rather more technologically inclined practices as it is known today-digital leadership. Digital leadership also focuses on how leaders can use digital tools to create innovation and shepherd organizations through the technological transformation. Artificial intelligence has also been installed into organizational operations especially in developing economies like Pakistan, as the firms of the private sector are struggling to stay competitive in the age of Industry 4.0. There is empirical evidence that AI implementation enhances the performance of organizations, innovation, and employee skills, particularly with a robust leadership team and organizational preparedness (Jamil et al., 2025). Nevertheless, the effective implementation of AI technologies does not only rely on technical infrastructure, but efficient leadership is needed, which will be able to coordinate technological activities with organizational objectives and employee expectations. Digital leadership is very important in allowing the adoption of AI because it helps create an environment that is conducive to innovation, trust, and flexibility among the employees. Recent research carried out in Pakistani setting underscores that digital leadership can be regarded as one of the enablers of transforming technological capabilities into the better organizational performance. In example, a study on Pakistani companies shows that AI and application of digital leadership positively improve the performance and innovation ability of the organization (Mahmood et al., 2024). On the same note, the IT industry in Pakistan shows that digital leadership plays a crucial role in aiding the adoption of AI because it promotes an innovative environment and interest in staff (Khan et al., 2025). In conjunction with technological transformation, organizational commitment is also important factor that affect the performance of employees, their retention and general success of an organization. Organizational commitment denotes the psychological attachment of organizational employees towards their organization and their readiness to contribute to the organization. When applied to the framework of digital transformation, leadership practices and the technological adoption can play an important role in shaping the attitudes and commitment levels of employees. Effective AI-based and digital leadership would help to increase trust levels, empowerment, and engagement among employees to build the organizational commitment (Qaiser et al., 2025). Although the literature on digital transformation and AI has been on the rise, not much research has explored the interconnection between digital leadership, adoption of AI, and organizational commitment, especially in Pakistan in the private sector. Majority of the literature works dwell on either technological performance and innovation or individual leadership, which creates a knowledge gap on how these two constructs interrelate to affect employee attitude. So, the proposed study will address this gap by examining the interdependence of digital leadership, AI adoption, and the commitment of organizations with the participation of the private sector firms in Pakistan. Particularly, the research aims to test the impacts of digital leadership on the adoption of AI and the role of both on the increase in the organizational commitment. In such a way, the current study will add to the existing body of knowledge by offering empirical findings within the context of a developing country and practical implications to managers who have to make their way through the trials of digital transformation.



Methodology Research Design

In this study, the research design followed was quantitative cross-sectional study to investigate the relationship between digital leadership and organizational commitment in the age of artificial intelligence. The cross-sectional method permitted gathering information about employees at a single time to compare the effects of digital leadership practices on the diligence of employees to their companies.

Study Area and Sampling

The sample encompassed the employees of the privates in Punjab, Pakistan. As the study was a voluntary exercise and information gathered over the internet, the respondents were reached via the internet and professional networks. The use of non-probability convenience sampling method was based on accessibility of the respondents and voluntariness of the survey. One hundred and fifty respondents of various organizations in the private sector in Punjab were involved in the research. The sample was deemed to be sufficient in terms of statistical analysis including correlation and regression to study the relationship of the study variables.

Data Collection Instrument

The data was collected through the structured questionnaire that was administered online as primary data. The questionnaire was created in connection with the existing literature connected with the topics of digital leadership, the adoption of artificial intelligence, and organizational commitment. It was divided into a number of sections such as the demographic features of respondents, digital practices of leadership at the level of organizations, the use of AI in the workplace, and the level of organizational commitment among the employees. The scale of responses was decided based on a five-point scale of Likert where 1 strongly disagree to 5 strongly agree.

Validity and Reliability

The validity of the questionnaire was checked by the experts on management and organizational studies who helped in content validity. A pilot test was also done to enhance transparency and consistency of the instrument. Cronbachs Alpha was used to determine the reliability of the constructs with values of 0.70 being taken as acceptable.

Data Analysis

The data collected was analyzed by the statistical software like SPSS. Frequency, percentage, mean, and standard deviation were the descriptive statistics that were applied to describe the characteristics of respondents. A correlation analysis was employed to study the association between digital leadership and organizational commitment whereas multiple regression analysis was employed in the study to establish the effect of digital leadership and the adoption of artificial intelligence on the organizational commitment of employees.



$$r_{xy} = \frac{\sum_{i=1}^n (x_i - \bar{x})(y_i - \bar{y})}{\sqrt{\left\{ \sum_{i=1}^n (x_i - \bar{x})^2 \sum_{i=1}^n (y_i - \bar{y})^2 \right\}}}$$

r_{xy} = correlation coefficient between variables X and Y

X_i, Y_i = individual scores

\bar{X}, \bar{Y} = mean scores of X and Y

Multiple Regression Analysis

Multiple regression was conducted to assess the effect of digital leadership and AI adoption on organizational commitment:

$$OC_i = \beta_0 + \beta_1 DL_i + \beta_2 AI_i + \epsilon_i$$

Where:

OC_i = Organizational Commitment of respondent iii

DL_i = Digital Leadership score of respondent iii

AI_i = AI Adoption score of respondent iii

β_0 = Intercept

β_1, β_2 = Regression coefficients

ϵ_i = Error term

Model Fit and Significance

R² measures the proportion of variance in OC explained by DL and AI.

Significance was tested at $p < 0.05$.

Standardized Beta coefficients (β) were used to compare the relative impact of independent variables on OC.

Ethical Considerations

Participation in the survey was completely voluntary, and respondents were assured that their responses would remain confidential and anonymous. The data collected were used only for academic and research purposes.

Table 1: Descriptive Statistics of Study

Variable	Mean	SD	Min	Max
Digital Leadership (DL)	3.82	0.57	2.0	5.0
AI Adoption (AI)	3.65	0.61	2.0	5.0
Organizational Commitment (OC)	4.01	0.52	2.5	5.0
Age (years)	34.5	7.8	22	55
Work Experience (years)	9.6	5.1	1	25

Table 1 provides the descriptive statistics of the main variables of the research, which are Digital Leadership (DL), AI Adoption (AI), Organizational Commitment (OC), and demographic characteristics, age, and work experience. The scores reveal that there is a relatively high score in Digital Leadership (Mean = 3.82, SD = 0.57), which implies that the respondents tend to consider their leaders to be digitally competent and useful in terms of technology-related initiatives. This observation goes in line with Avolio et al. (2014), who pointed out the fact that digital leadership improves the adaptability and innovation in



organizations in the contemporary working environments. Likewise, AI Adoption (Mean = 3.65, SD = 0.61) is an indicator of moderate to high usage of artificial intelligence in the organizational contexts. The standard deviation is quite low and it means that there is consistency in responses. This agrees with the findings of Davenport and Ronanki (2018) that companies are adopting AI in their business more to enhance efficiency and the quality of decision-making in their organizations. Organizational commitment (Mean = 4.01, SD = 0.52) is the most important variable with the highest value of its mean, which means that the employees are attached and loyal to their organizations. This is in line with the study of Meyer and Allen (1991) who discovered that greater levels of commitment are linked to desirable work results like high productivity and lower levels of turnover. In terms of demographic factors, the mean age of the respondents (Mean = 34.5 years, SD = 7.8) indicates that the working population is quite mature, whereas the mean working experience (Mean = 9.6 years, SD = 5.1) states that the majority of the participants have a great amount of work experience. The significance of these characteristics is that the results of previous research (e.g., Ng and Feldman, 2010) indicated that age and experience have a significant impact on technology uptake and organizational attitudes. All in all, the descriptive statistics depict that the sample is properly balanced, and the variability of variables is moderate. The average scores of DL, AI, and OC are rather high which means that the organization has a positive organizational climate with technological preparedness and high employee commitment.

Table 2: Demographic Attributes of the Respondents

Demographic	Category	f	%
Gender	Male	90	60.0
	Female	60	40.0
Age	≤30	40	26.7
	31–40	70	46.7
	>40	40	26.6
Education	Secondary	70	46.7
	Bachelor	50	33.3
	Master or above	30	20.0
Work Experience	≤5 years	30	20.0
	6–10 years	50	33.3
	>10 years	70	46.7

Table 2 shows the demographic of the respondents, gender, age, education level, and work experience of respondents of the study and is an important context in understanding the study findings. The gender distribution is that the respondents are male (60 percent) with 90 representing the male respondents, and female respondents (40 percent) numbering 60. It means that the sample is relatively balanced but males are a bit dominant. This kind of gender representation is typical in the organization and technical sectors whereby, the number of male players usually surpasses the number of female players especially in developing and transitional economies. Eagly (1987) proposes that gender differences may affect the leadership perception and behavior at workplace and it is therefore important to consider gender composition in the study of organizations. In age, most of the respondents are aged 31-40 years (46.7%), [?]30 years (26.7%), and above 40 years (26.6%). This implies that, majority of the participants are mid career individuals, which is usually related to



increased productivity, flexibility, and receptive to innovation. According to a study conducted by Ng and Feldman (2010), the employees of this age group are more likely to show the balance between the experience and the desire to use new technologies, including artificial intelligence. With regard to education 46.7 percent of the respondents have secondary degree, 33.3 percent have bachelors degree and 20 percent have master degree or higher. This distribution indicates a workforce that is highly diverse in terms of education with quite a large share possessing relatively low formal education. The education level is important in the acceptance of technology and involvement of the organization. As pointed out by Becker (1993), increased education level increases the skills, knowledge and ability of the individuals to embrace innovations and this is more so applicable in research related to digital leadership and adoption of AI. Regarding the work experience, the highest number of respondents (46.7% is above 10 years of experience) is followed by 6-10 years (33.3%), and [?]5 years (20%). This denotes that the sample consists of a good number of professionals who are experienced. The experience is a key issue that affects organizational commitment and performance because employees with experience will be more attached to the organization and have more knowledge about the dynamics in the work place. Meyer and Allen (1991) pointed out that tenure and experience are also important in increasing the rate of organizational commitment. The demographic profile, in general, indicates that the study sample includes mostly the middle-career, experienced people, having diverse levels of education. The diversity increases the reliability and generalizability of the study results, especially in the study of the correlation between digital leadership, AI adoption, and organizational commitment.

Table 3: Correlation Analysis among Digital Leadership, AI Adoption, and Organizational Commitment

Variable	DL	AI	OC
DL	1	-	-
AI	0.62**	1	-
OC	0.58**	0.54**	1

Table 3 describes the correlation, indicating the connection between Digital Leadership (DL), AI Adoption (AI), and Organizational commitment (OC). The findings present that all variables are positively and significantly related ($p < 0.01$) which implies that there is a significant relationship between the constructs. Digital Leadership and AI Adoption ($r = 0.62$, $p < 0.01$) correlate with one another, the stronger correlating positive association suggests that the more developed the digital leadership is, the more developed the use of artificial intelligence in organizations. This observation constitutes the argument by Westerman et al. (2014) who stressed that digitally savvy leadership is highly relevant towards technological change and innovations. Employees with digital vision and abilities are more likely to support the implementation of the new advanced technologies, including AI, by establishing a supportive organizational atmosphere. On the same note, Digital Leadership and Organizational Commitment ($r = 0.58$, $p < 0.01$) have a moderately strong positive relationship. This would mean that employees will tend to be more committed in case leaders portray digital competence and transformational behaviors. This would be in line with the results of the Bass (1985) study that identified that effective leadership, and especially transformational leadership, increase the employee motive, trust,



and emotional attachment to the company. Moreover, Organizational Commitment has a positive relationship with AI Adoption ($r = 0.54, p < 0.01$), which means that companies that have successfully adopted AI technologies are more likely to have employees who are more committed. This can be attributed to increased efficiency in work, better decision making and increased job satisfaction that comes as a result of technological support. Davenport and Ronanki (2018) state that AI can improve the performance of an organization and the experience of its employees in the event of effective implementation, which will help build a greater organizational commitment.

Table 4: The impact of Digital Leadership and AI Adoption on Organizational Commitment

Dependent Variable: Organizational Commitment (OC)

Independent Variables: Digital Leadership (DL), AI Adoption (AI)

Predictor	B	SE B	Beta	t	Sig.
(Constant)	1.22	0.34	—	3.59	0.000
Digital Leadership (DL)	0.42	0.08	0.45	5.25	0.000
AI Adoption (AI)	0.31	0.07	0.35	4.43	0.000

Model Fit: $R^2 = 0.52, F = 79.2, p < 0.001$

The outcomes of the multiple regression analysis that studies the effect of Digital Leadership (DL) and AI Adoption (AI) on Organizational Commitment (OC) are represented in Table 4. This model has a statistically significant value ($F = 79.2, p < 0.001$) which explains 52 percent of the variance in organizational commitment ($R^2 = 0.52$) which is a very strong explanatory power. This implies that, DL and AI are significant predictors of commitment among employees in organizations. The results indicate that Organization Commitment is impacted positively by Digital Leadership ($b = 0.45, p < 0.001$). This shows that one unit of the growth in the digital leadership can increase the organizational commitment significantly other factors remain constant. This finding is in line with Bass (1985) who held that a good leadership boosts motivation and commitment of employees to the organization. In addition, Avolio et al. (2014) accentuated that when leaders properly utilize digital means and bring innovation into the establishment, they develop the positive atmosphere that enhances commitment and engagement among employees. On the same note, AI Adoption also exhibits a remarkably high positive relationship with Organizational Commitment ($b = 0.35, p < 0.001$). This implies that companies that adopt artificial intelligence in their business processes can make employees more committed, which may be through increased efficiency, workload, and improved decision-making. This result concurs with Davenport and Ronanki (2018), who observed that successful implementation of AI improves the conditions of the organization and the experience of its employees, resulting in a greater number of positive attitudes in the workplace. Digital Leadership ($b = 0.45$) is also relatively more influential on the Organizational Commitment than AI Adoption ($b = 0.35$), which suggests that leadership had a more central role in influencing the attitudes of employees. This justifies the theoretical view of Meyer and Allen (1991) who noted that managerial practices and leadership behavior are the key factors that make a person committed toward the organization.



Conclusion

The present research explored the effects of digital leadership and adoption of AI on organizational commitment in the Pakistani privatized sector. The results are a solid empirical data that digital leadership and AI adoption have a substantial impact on the commitment of employees to their companies. The findings show that the impact of digital leadership on the level of organizational commitment is the most significant, which is why leaders capable of successfully managing the digital transformation and creating an innovative-driven culture should not be overlooked. The results can be correlated to the theoretical views provided by Bass (1985) and Meyer and Allen (1991) who highlighted the importance of leadership in the formation of the attitude and organizational identifications of workers. As well, the adoption of AI was also observed to have a major positive effect on organizational commitment, indicating that technological integration contributes to the increased efficiency, satisfaction and engagement of employees. This confirms the case of Davenport and Ronanki (2018) who emphasized the revolutionary potential of AI in enhancing company performance and employee experience. The paper concludes that companies that want to enhance the commitment of their staff should consider building digital leadership skills and at the same time encourage the successful use of AI tools. A blend of technology and leadership will lead to the positive organizational climate that will boost performance and employee welfare.

Recommendations

Digital leadership should be one of the priorities of organizations, and training programs provided should improve the skills of leaders in the field of integrating technologies, managing innovations, and making decisions based on data. A leader with good digital leadership skills is required to guide the employees through the digital transformation hurdles. The companies are encouraged to embrace the implementation of artificial intelligence in the workplace through investing in relevant technologies and offering the relevant infrastructure and technical support. This will make implementation easier, operational efficiency and overall better performance of the organization. The ability to train and build capacity of employees should also be highlighted through hosting frequent workshops and skill development exercises with regard to AI tools and digital systems. These initiatives are likely to enhance confidence among employees, minimize technological change resistance, as well as enhance their performance. Organizations are supposed to have a positive and creative culture that promotes cooperation, confidence and embrace change. Positive organizational workplace contributes to greater ease of adaptation to digital transformation among the employees and amplifies organizational commitment of the employees. The management must also introduce effective strategies of employee engagement in form of recognition and reward schemes, participative decision-making and direct communication. The practices are capable of boosting employee motivation, satisfaction, as well as long-term commitment. On the policy level, government and other authorities that may be concerned should facilitate the digital transformation within the private sector through the provision of incentives, training opportunities, and financing initiatives. This support could be helpful in speeding up the process of AI adoption and digital leadership creation in organizations. Lastly, future studies ought to use bigger and more



heterogeneous samples in various industries and geographies and implement longitudinal research designs to learn more about the long-term impacts of digital leadership and the adoption of AI on organizational commitment and other related variables.



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