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RESEARCH PAPER

Role of Artificial Intelligence on Leadership Decision Making: A Perspective of Business Sector Organization

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ABSTRACT

Comparing the different digital technologies from a business perspective, artificial intelligence is the fastest-growing technology. Globally, all business organizations rapidly use various artificial intelligence applications for decision-making. This study explores how artificial intelligence will affect the leadership decision-making process in the business sector of Pakistan. A quantitative approach was used to analyze the problem in question. The data was gathered from different business leaders across Pakistan. The data was analyzed via SmartPLS. The results show that transformational leaders are the highest users of artificial intelligence in their decision-making, while transactional leaders are lower users, and servant leaders are the lowest users in their decision-making. It is recommended that business organizations across Pakistan utilize more and more artificial intelligence applications in their business processes because it also significantly impacts the organization's growth.

| **Keywords:** | Artificial Intelligence, Business Sector, Servant Leadership, Transactional Leadership, Transformational Leadership |

Introduction

In today's world, an organization without information technology is considered incomplete (Schepman & Rodway, 2020). Among the different technologies based on digital phenomena, artificial intelligence is one among them (Sharma et al., 2019). Artificial intelligence is one of the fastest-growing industries in today's world. Artificial intelligence is used globally across all industries (Cortellazzo et al., 2019). The word artificial intelligence combines two words: artificial and intelligence. Artificial means anything non-natural and human made (Loureiro et al., 2021). Intelligence is the level of analyzing and judging things based on past experiences. In artificial intelligence devices, there are several related prerecorded data, among which they relate the data, analyze it, and give a perception of reality (Ramachandran et al., 2022). Artificial intelligence, or AI, is the simulation of human intelligence in devices designed to reason and acquire knowledge similarly to people (Vaio et al., 2020). The creation of algorithms, software, and hardware that allow computers and other machines to carry out activities that ordinarily require human intelligence falls under the broad umbrella of computer science (Eriksson et al., 2020). These tasks include problem-solving, reasoning, learning, comprehending natural language, spotting patterns, and making decisions (Enholm et al., 2022).

AI is divided into two main categories: weak or narrow AI and general or strong AI (Ahmad et al., 2021). Weak and narrow AI is designed to perform a specific and narrow range of tasks, while general and strong AI is used for a wide range of general tasks and is not limited to specific tasks (Peng et al., 2023). The narrow and weak AI includes minimal functions; they don't hold any intelligence reasoning like human beings. Siri and Alexa are the most common examples of narrow and weak AI (Bolander, 2019). Strong and general AI

includes a high level of intelligence like humans, and they perform different tasks like human beings (Korteling et al., 2021). Examples of AI technologies and approaches are machine learning, neural networks, natural language processing, computer vision, robots, and more (Fjelland, 2020). A form of AI known as "machine learning" uses data to train algorithms to spot patterns and make predictions or judgments without being explicitly programmed. Machine learning is particularly effective at tasks like speech and picture recognition because it models complicated patterns using neural networks (Hassani et al., 2020).

AI applications have a wide range of applications across all industries globally, including entertainment, healthcare, business organization, research, etc. (Wang et al., 2023). This technology is continuously evolving due to the contribution of the different research who are focusing keenly on this technology and trying to make it more capable to support it more and more for the human being (Awan & Shahid, 2011). Regarding business organizations, AI has a major role in their development. In today's world, no organization can develop without adopting digital technology, and AI is the leading digital technology (Alam et al., 2023). Even AI is used in decision-making at different organizational levels (Cheng et al., 2023). Especially in the business sector, the organization uses it a lot for decision-making, like leadership decisions, etc. However, all types of leadership positions in the organization use this technology for their decision-making (Ni et al., 2023). This study examines the impact of artificial intelligence on the decision-making process of the different leadership styles in Pakistan's business sector organizations. Although there are several leadership styles named transactional, transformational, servant, democratic, autocratic, etc., this study has focused its limitations on transformational, transactional, and servant leadership.

Literature Review

Leadership plays a vital role in the development of any organization. Leadership is defined as leading a group of people (Ryan, 2020). The state and position of being a leader. A leader is a person who leads or commands a group or organization. Several leadership styles are named transactional, transformational, servant, democratic, autocratic, leadership, etc. (Spector & Ma, 2019). This study has focused its limitations on transformational, transactional, and servant leadership. However, all types of leadership use digital technology for their decision-making (Jiang et al., 2022). Especially in today's world, many people with leadership positions in the business sector organization are more diverted towards artificial intelligence-related tools for their decision-making (Gabriel, 2020).

Artificial intelligence (AI) in leadership today is prevalent across various sectors and industries (Ahmad et al., 2021). Here are some significant ways that AI can influence and improve leadership.

- Making judgments based on data: AI can swiftly process and evaluate vast volumes of data, assisting decision-makers in making wise choices. It offers useful patterns and insights that enable decision-makers to make data-driven decisions more likely to produce favorable results (Khan et al., 2022).

- Analytics that predict future trends, consumer behavior, and market dynamics can be created using AI. Leaders can use these insights to make proactive choices and create plans for potential opportunities and changes (Ibrahim et al., 2014).

- Automating repetitive and regular processes can free up leaders and their teams to concentrate on higher-value work. Increased efficiency and production may result from this (Liu et al., 2022).

- Personalization: Leaders may offer tailored experiences to stakeholders, employees, and customers thanks to AI. Individual preferences can be considered when designing messages, services, and goods to increase consumer engagement and satisfaction (N. Khan et al., 2012).

- Talent management: AI can help managers hire, plan their workforce, and train their staff. Top applicants may be found, employee performance can be evaluated, and individualized training and career development programs can be suggested (Irshad et al., 2023).

- AI can be used to identify and reduce risks, whether they are connected to market volatility, compliance, or cybersecurity. To safeguard their firms, leaders may make smarter decisions (Sayed et al., 2020).

- Customer Service and Engagement: By giving prompt and correct answers to questions, chatbots and virtual assistants powered by AI can increase customer service and engagement and improve the overall customer experience (Ahmad et al., 2023).

Hypotheses

H_1: Artificial intelligence has a significant impact on transformational leadership decision-making.

H_2: Artificial intelligence has a significant impact on transactional leadership decision-making.

H_3: Artificial intelligence has a significant impact on servant leadership decision-making.
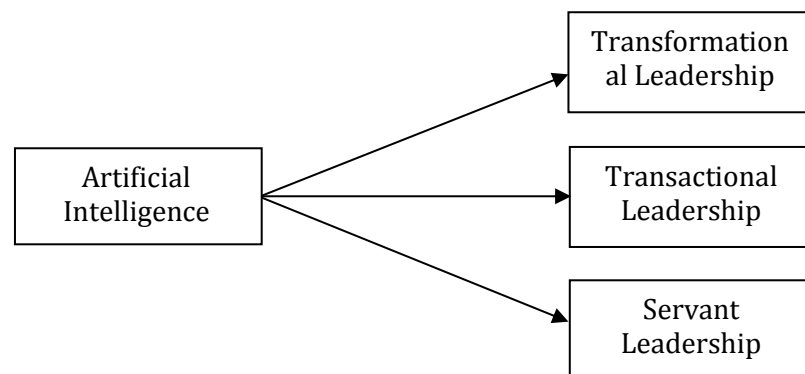
Conceptual Framework

Figure 1: Conceptual Model

Material and Methods

The philosophical roots of this study are with the positivism paradigm. This paradigm is based on an absolute scientific mechanism where the researcher believes in a single, quantifiable reality. The technique used for addressing the problem in question was the deduction approach, where we used general premises and reached a specific conclusion. This study is also based on some general theories of the social sciences about the adoption and usage of digital technology and how the leadership position in business organizations across Pakistan is using these theories. Primary data was gathered from the 415 leadership

positions among the business sector organizations across Pakistan. The collected data was analyzed via partial least square via SmartPLS software. All the measures used for the study were adopted from the prior studies and were gauged by the Likert scale.

Results and Discussion

This section of the paper includes a summary of the findings based on the primary data collected by the researcher.

Demographic Analysis

Table 1
Demographic Details

Gender	Frequency	Percentage
Male	243	59%
Female	172	41%
Total	415	100%
Age Group	**Frequency**	**Percentage**
21 to 35 Years	212	51%
36 to 50 Years	198	48%
51 and Above Years	5	1%
Total	415	100%
Industry Experience	**Frequency**	**Percentage**
Less than 5 Years	187	45%
5 to 10 Years	216	52%
More than 10 Years	12	3%
Total	415	100%

The table of the demography shows the demographic details of the respondents. The first section of the table shows the respondents' gender-based distribution, which shows that 41% of them are females and 59% are males. The second section of the table shows the age-wise distribution of the respondents. This section shows that 51% of the respondents belong to the age group of 21 to 35 years, 48% belong to the age group of 36 to 50 years, and 1% belong to the Age group of 51 and above years. The third section indicates the industry-wise experience of the respondents. This shows that among the 415 respondents, 45 % have experience of less than five years, 52% have experience of 5 to 10 years, and 3% have experience of more than ten years.

Table 2
Construct Reliability

Constructs	Cronbach Alpha	Composite Reliability
Transformational Leadership	0.712	0.823
Transactional Leadership	0.752	0.899
Servant Leadership	0.761	0.791
Artificial Intelligence	0.791	0.812

Table 2 of the construct reliability shows the reliability of the construct of the model. When researchers use an approach based on variance, there are two common measures for reliability: Cronbach alpha and composite reliability. The threshold value for both measures is 0.7 or above. The table of the construct reliability shows that all the Cronbach alpha and composite reliability values are greater than the threshold value, indicating that all the construct of the model are reliable for further analysis.

Table 3
Items Reliability

Constructs	Items	Outer loadings
Transformational Leadership	TFL1	0.723
	TFL2	0.711
	TFL3	0.815
	TFL4	0.722
	TFL5	0.792
Transactional Leadership	TSL1	0.699
	TSL2	0.871
	TSL3	0.771
	TSL4	0.741
Servant Leadership	SRL1	0.714
	SRL2	0.776
	SRL3	0.734
	SRL4	0.719
Artificial Intelligence	AI1	0.766
	AI2	0.743
	AI3	0.738
	AI4	0.892
	AI5	0.881

Table 3 of the item's reliability shows the reliability statistics of the individual items of each model construct. The measure used for the item's reliability is the outer loading values. The threshold value for the item's reliability is 0.7 and above. The table of the item's reliability shows that all the items have an outer loading value greater than the threshold value, indicating that these items fully represent their respective constructs.

Table 4
Convergent Validity

Constructs	AVE
Transformational Leadership	0.512
Transactional Leadership	0.552
Servant Leadership	0.561
Artificial Intelligence	0.591

Table 4 of the convergent validity explains the convergent validity of the individual construct of the model. The measure used for the convergent validity is Average variance extracted (AVE). The threshold value for the AVE is 0.5 or above. The table of convergent validity explains that all the model constructs have a convergent validity value greater than the threshold value, indicating that all the model constructs are convergently valid.

Table 5
Discriminant Validity

Constructs	HTMT
Transformational Leadership	0.743
Transactional Leadership	0.645
Servant Leadership	0.452
Artificial Intelligence	0.665

Table 5 of the discriminant validity explains how the construct of the model explains the originality of that construct to whom they are adopted. There are different measures used for discriminant validity. According to the researcher, the most common measure used for discriminant validity is the HTMT values. The threshold value for the HTMT value is 0.85 or less. The table of the discriminant validity shows that all the constructs have HTMT values smaller than the threshold value, indicating that all the model constructs are discriminately valid.

Table 6
Hypothesis Testing and Regression Analysis

Hypothesis	Beta	T Value	P Value	Results
H1: AI >> TRFL LEAD	0.312	12.534	0.000	Supported
H2: AI >> TRSL LEAD	0.211	17.332	0.000	Supported
H3: AI >> SERV LEAD	0.162	9.711	0.000	Supported

Table 6 of the hypothesis testing, and the regression analysis shows three hypotheses claimed by the study. There are two common measures for testing a hypothesis based on the regression analysis: t and p value. The threshold value for the p value is 0.05 or less, and the threshold value for the t value is 1.96 or above. The table of the hypothesis testing shows that all three hypotheses have a p-value smaller than 0.05 and a value greater than 1.96, which indicates that all of them are significant and supported by the findings of this study. The beta value for each relationship shows the strength of that relationship.

Table 7
R-Square

Constructs	R-Square
Transformational Leadership	0.312
Transactional Leadership	0.211
Servant Leadership	0.162

R-Square is the measure to estimate the coefficient of determination of a model. The coefficient of determination is the estimate that tells us how much variation in the dependent variable is due to the independent variables. The table of R square shows that transformational leadership has the highest R-square value at 31.2%, while servant leadership has the smallest with a percentage of 16.2%.

Conclusion

This study examines the impact of artificial intelligence on leadership business decision-making. This study further explores how artificial intelligence will participate in the decision-making process of leadership positions in different organizations. This study's main focus was Pakistan's business industry and how different types of leaders use artificial intelligence tools for decision-making. This study has found that there are three main types of leadership in a business context that use Artificial intelligence services for decision making: transformational. The result of this study shows that transformational leadership is the highest users of artificial intelligence with the highest effect rate while servant leadership is the lowest with lowest effect rate while transactional is the moderate users. Furthermore, this study also claims that whatever they have, their role in the three types of leadership is significant in the context of the Pakistani Business sector.

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