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The Effect of Digital Leadership on the Enhancement of Organizational Creative Performance / A Survey Study in the Asia Cell Telecom Company in the Northern Region-Iraq

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Abstract

General Background: Organizations face increasing pressure to adapt leadership approaches in response to rapid digitalization and technological change. **Specific Background:** Digital leadership, encompassing digital vision, decision-making, execution, and guidance, has emerged as a strategic approach within the telecommunications sector to support organizational creative performance. **Knowledge Gap:** Despite growing scholarly attention, limited empirical evidence exists regarding how digital leadership simultaneously relates to exploratory and exploitative creative performance, particularly in developing economies and dynamic industries. **Aims:** This study examines the relationship between digital leadership and organizational creative performance in Asiacell Telecommunications Company in Northern Iraq. **Results:** Using a quantitative cross-sectional design with 88 valid responses analyzed through PLS-SEM, the findings reveal a strong and statistically significant positive relationship between digital leadership and organizational creative performance, with all dimensions contributing meaningfully. **Novelty:** The study provides empirical validation of digital leadership as a multidimensional construct that simultaneously supports both exploratory and exploitative creativity within a telecommunications context in a developing economy. **Implications:** The results highlight the importance for organizations to develop digital leadership capabilities to sustain creativity and maintain competitiveness in digitally transforming environments.

Highlights:
- Strong Statistical Relationship Identified Between Leadership Digitalization and Creative Outcomes
- All Leadership Dimensions Jointly Contribute to Dual Forms of Organizational Creativity
- Empirical Evidence Derived From Telecommunications Context in a Developing Economy

Keywords: Digital Leadership, Organizational Creative Performance, Telecommunications Sector, Exploratory Creativity, Exploitative Creativity.

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Introduction:

Business models in the context of digitalization are currently experiencing great achievement. This can be linked to the power of information and communication technology and to create the value of it. Considering the ever-accelerating changes, Business level external environment at the organizational and national level, it becomes essential to explore the leadership style for quick access and response to change To maintain competitive position, market share and position. Digital is attracting attention Leadership style, considering this leadership style; responding reliably to rapid development, it changes. Doing business is the foundation of digital leadership. Utilize digital data and communication technologies for management. Transformation into digital organization represents main key for globally competition [1][2]. Due to recently digital space threads beside the enormous advances of digital technologies, traditional procedures, processes and business models have been changed. Traditional leadership approaches and methods cannot meet the demands, benefits, and challenges of the digital age we live in. Therefore, it is vital to strive towards developing digital leaders in the hope of ensuring new ways of organizing, controlling, and communicating [3].

The simultaneous handling of various administrative and production issues, coupled with the massive influx of data and information through digital channels, is likely to create real challenges for business organizations. The current era has generated real motivations for leaders towards the necessity of possessing technical and digital capabilities and the ability to deal with them, and thus the possibility of adopting modern forms of organization and communication. In the digital age, in the context of major changes in the social and technological environment, modern business organizations are increasingly required to adopt the type of leadership that can thrive in a digital environment.

On the other hand, organizations existing in today's market and facing the complexity of their interactive environment are required to be innovative and capture new ideas, latest concepts, and ultimate performance. In fact, the ability to manage creativity helps create innovative processes, services, products, and procedures within the firm. This will open new ways to get further development of the organization. Creative industries require the development of organizational structures in addition to the creativity of the individuals working [4]. Sasmoko proposed that digital leadership has a positive correlation with innovation capability. Organizations strive to achieve their planned goals and outperform their competitors. This means that the organization has succeeded in reaching optimal performance. Organizational performance is determined by its ability to innovate and excel in producing products and providing services [5].

Theoretical Part:

First: Digital Leadership

Leadership refers to the ability to lead the organization to successfully achieve its different goals and launch a sustainability and long-term competitive advantage. To maintain this level, Business organizations should strive to adopt technological and digital approaches that will ensure faster production processes, reduce costs, and optimize resource utilization. The ability to apply and use ICT awareness all around the firm including management and gaudiness leader skills towards performance improvement refers to the notion of “digital leadership”. Digital leadership involves high innovation skills to help. It focuses on implementation of different leadership approaches that are suitable a longest with the digitalization era. These days, most organizational leaders increasingly rely on the use of social media to achieve and manage certain organizational activities, for example gaining and increasing market share. This kind of use is captivating a growing number of leaders. afterwards, organization leaders are increasingly using digital platforms [6]. Today’s leader should have digitals skill. These skills make leaders have exceptional attributes and performance that influence a leader’s behavior and decisions, thus having an impact on firm-level variables.

The researcher agrees with the studies, in identifying the variables of the digital leadership process, represented by vision, decision-making, implementation, and digital guidance, to create an integrated and interconnected environment for leading the digital environment. The successful integration of these dimensions will lead to significant improvements and successes in organizational and financial performance. The dimensions of digital leadership can be explained as follows:

1. Digital Vision (DV)

The concept of digital insight illustrates the intellectual and philosophical capabilities of a leader and their ability to anticipate and interpret the digital future and technological developments, enabling them to identify indicators, trends, and digital changes that affect the work environment and the organization in general, in addition to convincing the team of the importance of digital transformation. Digital leaders possess attributes that enable them to envision and develop optimal strategies to leverage digital transformation in pursuit of the organization’s strategic goals, while simultaneously promoting organizational renewal, modernization, and innovation by guiding the organization towards a suitable path.

2. Digital Decision-Making (DDM)

The core concept of digital decision-making lies in making decisions based on real data outputs generated through digital technologies. Decisions based on digitally sourced data are grounded in precise evidence and are less reliant on intuition and speculation. This enables organizations to respond quickly to changes in the external environment and technological advancements. Digital decisions can be supported by decision support systems and data analysis outputs. Undoubtedly, digital decisions significantly impact operational effectiveness and efficiency, risk reduction, and strategic adjustments

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1. Digital Execution (DE)

The term "digital implementation" refers to the managerial ability to translate the digital strategic direction and its associated plans into practical, implementable realities. This can be achieved by utilizing appropriate digital technologies and requirements to ensure the smooth and efficient continuation of digital projects. A key requirement for digital implementation is the availability of digital work teams empowered by senior management. This will have a significant impact on the organization's internal environment and contribute effectively to strategic digital success.

2. Digital Guidance (DG)

One of the most important responsibilities of a digital leader is to stimulate positive motivation among employees and deepen their intellectual engagement with the digital world, guiding them towards a digital environment across all aspects of their work. This requires enhancing managers' digital skills through workshops, dialogue, and training courses, as well as promoting best practices in digital behavior within work teams and fostering digital innovation, with the aim of achieving more constructive digital interaction through digital platforms.

Second : Organizational creative performance

Organizational performance is one of the most important foundations of modern public administration, and it is associated with the need for innovation in the provision of new services and products. It has received great attention from all parties involved in organizational work. This also relates to the need to introduce innovations pertaining to the provision of new services and products [7].

Performance level of any organization is often linked to its capability to innovate in making new products or providing new services. Creativity is one of the most important pillars that organizations rely on to accelerate the achievement of optimal organizational performance, and it reflects the organization's primary goal. Creative performance is a crucial pillar of organizational flexibility, which hinges on an organization's ability to achieve an effective balance between exploration the capacity to generate innovative and novel ideas and exploitation the capacity to improve the current situation. Enhancing the performance levels of any organization depends heavily on its ability to achieve an optimal balance between exploration and exploitation [8]. Undoubtedly, organizational creativity has become one of the most important pillars and directions for business partners and senior management and thus can be considered an invaluable asset in the modern business world. Creativity reflects the process of delivering exceptional and unprecedented efforts or work, leading to the achievement of the highest levels of outstanding performance [9]. Creative organizational performance is one of the most important basic assets in enhancing competitive advantage, and many researchers have identified indicators of creative performance as exploitative creative performance and exploratory creative performance, as explained below:

1. Exploratory Creative Performance

This refers to the capability of employees and teams to come up with ideas and approaches that are unconventional, unique, and radical, and which usually involve a high level of uncertainty and risk. Exploratory creative performance opens up new areas of knowledge and scientific research and offers novel alternatives that could change the current rules of work. This type of performance is often used in dynamic environments that require continuous innovation [10].

2. Exploitative Creative Performance

This refers to the ability and capacity of individuals and work teams to improve and sustain current approved ideas and develop them gradually, focusing on the benefits achieved and practical feasibility, as well as the quality of implementation outputs. This performance model focuses on investing in assets, resources, and existing knowledge in order to raise the level of efficiency and achieve realistic, applicable results. This model is likely to become a fundamental pillar in dynamic and competitive environments [11].

Third : Integration between the two styles

Although there is a certain degree of difference or contrast between the exploratory and exploitative modes of performance, they are understood as two complementary links rather than opposing alternatives. The combination of the two modes is referred to as dual creative excellence, which can be considered one of the most important indicators of sustainable innovative performance. The exploration mode provides the ability to acquire new knowledge, which can be converted into applications with organizational and economic dimensions through the exploitative mode .

Fourth : Determinants of creative performance patterns

The most important determinants of exploratory and exploitative creativity patterns can be summarized as follows:

-Knowledge flow determinant: This contributes to improving knowledge flows at the horizontal level within the organization, as well as bottom-up flows, which in turn enhance exploratory performance, while top-down knowledge flows enhance exploitative creative performance [12].

•Leadership style: The leadership style adopted performs a major role in the types of exploratory and exploitative performance, as the balancing process in leadership style, especially dual leadership between promoting creative ideas and

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monitoring the implementation of those ideas, greatly supports both types of creativity [13].

• Stages of the creative process: The research and creative idea generation stage promotes exploratory creativity, while the evaluation and implementation stage promotes exploitative creativity [14].

•Environmental factors: Environmental dynamics have a double effect on the returns of exploratory performance, while the intensity of competition and abundance are factors that enhance the effectiveness of investment performance.

Methodology:

A quantitative approach was adopted in preparing the research methodology, and the main tool used to collect data was a structured questionnaire designed for this purpose. The quantitative approach was chosen for the current work in accordance with the research objectives. It can be said that the quantitative approach is the best here, as it combines statistical aggregation and comparison and helps researchers by enabling them to analyze large samples using a predefined set of variables.

First : Research Problem

The communications environment in Iraq is undergoing rapid changes in the adoption of digital tools, forcing companies to reconsider their current leadership styles and take decisive steps to develop those styles to ensure the ability to invest in modern technologies to enhance organizational creative performance. It is no secret to those interested in this field that Asia Cell Telecommunications is one of the first institutions to adopt digital technologies, but the relationship between digital leadership styles and organizational creative performance needs to be studied to understand that relationship.

Therefore, the research problem consists of two main questions:

1- Is there a correlation between digital leadership and organizational creative performance?

2- Does digital leadership have an impact on organizational creative performance?

Second : Importance of research

The importance of the current work lies in its examination of the impact of digital leadership on enhancing creative performance in the organization under study. These organizations are of great importance because of the services they provide to society. The importance is reflected in several points, as follows:

1- This research is important because it addresses some contemporary administrative and informational concepts. Digital leadership has become a topic of concern for successful organizations, as this leadership style enables them to achieve their goals in the changing environment in which they operate.

2- Remaining competitive in the market and achieving sustainability and continuity are qualities directly related to creative performance trends that are indispensable if an organization wants to survive, grow, and succeed.

3- It contributes to highlighting the role and importance of digital leadership in enhancing creative performance in the organization under study.

Third : Research objectives

The research seeks to achieve the following:

1- To indicate the extent to which digital leadership and organizational creative performance are available in the field of study.

2- To test the extent of the impact and nature of the relationship between digital leadership and organizational creative performance.

3- To reach and identify a set of conclusions and recommendations.

Hypotheses Development

With reference to the theoretical framework of previous literature and research, as well as the research questions raised, this section focuses on developing hypotheses to uncover explainable interactions between independent and dependent variables. The successes achieved by service and production organizations in the modern era are among the most significant indicators and outcomes of implementing e-business models. This clearly demonstrates the added value gained from adopting information and communication technologies. Previous studies, such as Shaidullin, have covered the advantages of digital leadership, particularly in gaining competitive advantages and expanding market share. Auvinen agreed that digitalization has become essential for various organizational processes in both internal and external environments, as it is closely linked to achieving optimal efficiency, supporting task execution, and facilitating the monitoring and implementation of strategies [15].

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Grafström and Falkman affirmed that streamlining administrative procedures, achieving high performance, and enhancing efficiency are among the primary outcomes of digital transformation. Mollah argues that digital leadership has numerous positive effects on enhancing organizational efficiency and improving performance, highlighting the crucial role of human capital as an intervening variable. Furthermore, their research demonstrates that creative performance among employees can be significantly stimulated through the concept of digital leadership, particularly in the production sector. Turyadi discovered that digital leadership can boost employee performance levels and develop their digital skills. Yusuf in their research survey of approximately 765 public sector employees, confirmed that digital leadership plays a significant role in enhancing and improving the quality of institutional performance in preparation for digital transformation. In the other hand Chatterjee pointed out that the dynamic capabilities of business organizations play a vital role in the digital transformation process and positively enhance the quality of the work environment. Benitez argue that digital leadership is the primary catalyst and organizational framework for creative and innovative performance but achieving this requires a suitable technological infrastructure that ensures digital transformation. Meanwhile, Sadikin and Prayitno maintain that digital leadership has a significant impact on enhancing employee performance. This orientation could be reached through supporting digital leaders in order to empower their teams throughout: using UpToDate technologies, approaching an appropriate culture of novelty and collaboration, Ensuring the availability of digital assets, securing the existence of support and continuous feedback evaluation, and thus providing an ideal environment for working individuals and work teams to deliver their full potential in the field of work [16].

There is no doubt that the intellectual contributions clarified by previous cognitive studies are of high added value, highlighting the significant impact of the variables under study in current work on enhancing performance efficiency in various business organizations. However, a research gap was found, namely the lack of in-depth exploration of the impact of digital leadership on the two types of organizational creativity: 1- Exploitative creative performance (which involves improving the current situation) and 2- Exploratory creative performance (which involves identifying and attempting to discover new things). Furthermore, most of these studies were conducted in different industrial sectors, necessitating more specialized research that examines these relationships in dynamic and rapidly changing fields such as the telecommunications sector, which fundamentally relies on both types of innovation exploitative and exploration to ensure competitive survival. Therefore, this research paper seeks to bridge this gap by attempting to uncover how digital leadership stimulates both types of creativity in the telecommunications sector.

Data Analysis

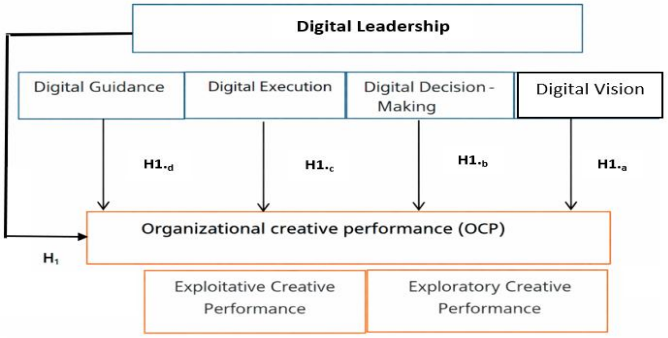
1. Research Methods

This research may have carried out a quantitative approach and designed cross-sectional research to collect data from the participants at one specific point in time to find out the positive relationship between digital leadership and organizational creativity. Data were analyzed by means of partial least squares structural equation modeling (PLS-SEM) through the use of SmartPLS software. The use of PLS-SEM is very appropriate for this study since it is of a predictive nature, it can develop complex research models, and it works well with small to medium sample sizes. In addition, PLS-SEM has the capability of processing non-normal data, thereby making it a very suitable method for organizational research based on surveys [17].

1.2 Proposed Research Model

The proposed research model was constructed according to the aims and hypotheses of the study and was built on scholarly publications related to digital leadership and organizational creativity. The model in question looks into the relationship between digital leadership and the creative performance of the organization. Digital leadership is a term that covers the whole range of digital vision, the decision-making, the execution, and the direction as the main components. The creative performance of an organization is evaluated as the combination of two types: the exploitative and the exploratory one. The model postulates a direct relationship between digital leadership and organizational creativity, as well as specifying the influence of each dimension of digital leadership on this performance. The diagram allows the identification to be made of both the total impact of digital leadership and the relative contributions of its dimensions to the development of creativity in the organization.

Figure 1. Proposed Study Model



Source: Researcher

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1.3 Study Population and Sample

1.3.1 Study Population

The research population was made up of the entire administrative staff of Asiacell Telecommunications Company located in the northern part of Iraq. The administrative personnel were chosen as the study sample because they were actively involved in the organization's functioning, they were practicing the leadership styles, and they were taking part in the decision-making processes that enhanced the organization's trustworthiness.

1.3.2 Sample Size and Sampling Method

The sample for the study was determined by means of a questionnaire which was handed out to the administrative staff at Asiacell Telecommunications Company. Since the research dealt with one organization only, all the thirty employees available during data collection were given the questionnaire as the census approach was used.

A total of 95 questionnaires were sent out, and 88 complete and usable responses were included in the analysis after filtering out incomplete or invalid ones. By the tenfold rule, the final sample size was found to be sufficient for PLS-SEM analysis, therefore guaranteeing enough data for the structural equation modeling analysis.

1.4 Data Collection Procedures

Data was gathered using a structured questionnaire which was given to the research participants during the specific time frame. The questionnaire was made available electronically or in printed form to make it easier for a larger number of participants to respond and to guarantee the highest possible number of answers. The participants had full rights to take part in or not to take part in the study, and they were made aware that their answers would be kept secret and their rights would be protected. The researchers were very careful about the ethical issues involved and the data they collected was just for academic research purposes.

1.5 M easurement instrument and variable description

1.5.1 Measurement of Structure

The measurement of the constructs investigated in this research was done with multi-item scales that were modified from instruments already used and accepted in the literature; this was to grant content validity and reliability. Only minor changes in wording were applied where it was necessary to fit the study's context. Digital leadership was considered a major determinant that includes four elements: digital vision, digital decision-making, digital execution, and digital direction. The items and dimensions for the assessment of digital leadership were adopted from earlier research [18][19]. The creative output of the organization was treated as a multidimensional construct made up of two sub-constructs, i.e., exploitative creative performance and exploratory creative performance, which correspond to incremental and radical creative outcomes, respectively. The items for the assessment of organizational creative performance were taken from the literature that has already established concepts about organizational creativity along with the ability to hold two opposite views [20][21][22][23]. All the variables were measured on a Likert scale of five points, where 1 means "strongly disagree" and 5 indicates "strongly agree."

1.5.2 Respondent Demographics

To guarantee content validity and reliability, the constructs in this study were assessed through multi-item scales adjusted from instruments earlier established in the literature that is relevant. The context of the study was taken into account when making the alterations to the wording.

Demographic characteristics of the sample were analyzed by means of SPSS software and the resulting composition of the sample was summarized. The profile comprises gender, age, educational level and work experience of the 88 administrative staff who took part in the study.

The demographic results presented in Table 1 reveal that most of the participants were males (63.6%), and females accounted for 36.4%, which is in line with the prevailing gender distribution in the telecommunications sector. Concerning the age, the largest group of participants were aged 30–39 (38.6%), followed by the age group 40–49 (27.3%), which implies that the sample is largely made up of younger professionals. In terms of education level, the majority of participants had a bachelor's degree (55.7%), while a considerable portion had postgraduate degrees, thus indicating the presence of a well-educated group in the labor market. The largest share of the respondents had 5 to 10 years of work experience (42.0%) while those with over 10 years of experience came next (34.1%), therefore it can be said that the respondents are experienced enough to provide the study variables with informed and reliable insights (Table 1).

Table 1 Demographic Characteristics of Respondents

Variables	categories	Frequency	Percentage %
Gender	Male	56	63.6
	Female	32	36.4
Age	Less than 30 years	18	20.5

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	30-39 years	34	38.6
	40-49 years	24	27.3
	50 and over	12	13.6
Academic Qualification	Diploma	14	15.9
	Bachelor	49	55.7
	Master	22	25
	PhD	3	3.4
Job Experience	Less than 5 years	21	23.9
	5-10 Years	37	42
	More than 10 Years	30	34.1

Source: SPSS Output

1.5.3 Descriptive Statistics

For the measurement of the structures in this study, multi-item approaches were utilized that were taken over from the already existing instruments in the literature on the topic to make certain about the content validity and reliability. In some cases, the words were slightly altered in order to better fit the context of the study.

The demographic features of the subjects were initially analyzed using the SPSS software, and then a summary of the sample composition was given. This profile consists of gender, age, educational level, and work experience of the 88 administrative staff who participated in this research.

Using the SPSS software, descriptive statistics methods were applied to calculate the measures, which allowed the researcher to evaluate both the centrality and spread of the study variables. The analysis provides the mean and standard deviation for each dimension in terms of the five-point Likert scale. According to the descriptive statistics in Table 2, the participants have the least understanding of all the study variables; hence, their mean scores fell between 3.69 and 3.87, all exceeding the middle point of the scale (3.00). The "Digital Vision" factor, where the Digital Leadership framework was applied, portrayed the most extensive mean score (3.87). This shows that the organization's managers indeed have a full and future-ready digital orientation. The next in line is the "Digital Orientation" factor (3.81), which seems to indicate that the management backing in the form of a guide is prevailing in the digital practices' adoption of the employees. The "Digital Implementation" facet had the lowest mean score (3.69), which could imply that this element is not as strong as the others in terms of digital strategies execution.

In this research, the constructs were assessed through the use of multi-item scales that had been adapted from past research that had been cited in the literature to affirm their content validity and reliability. Slight revisions to the phrasing were done if required for the study area.

The diverse characteristics regarding the participants' backgrounds were processed through the SPSS program which facilitated the researcher to prepare a profile of the sample. The profile contains the data on gender, age, educational level, and work experience of the 88 administrative staff who contributed to the research.

The researcher employed SPSS software to compute the descriptive statistics thus easing the process of identifying the central tendency and variability of the variables in the study. The output provides a summary of the mean and standard deviation for each dimension rating based on a five-point Likert scale.

As for the creative performance of the organization, both exploratory creative performance (mean = 3.83) and exploitative creative performance (mean = 3.76) scored quite high from the averages, meaning that the organization is keeping on one side of the road with the existing creative processes but at the same time looking for new ones through innovation. It is the case of the low standard deviations (0.64 to 0.73) that were recorded across all measures indicating high participants' agreement, hence their responses can be considered reliable and suitable for the next PLS-SEM analysis (Table 2).

Table 2 Descriptive Statistics

Construct	Mean	Standard Deviation
Digital Vision	3.87	.680
Digital Decision-Making	3.74	.710
Digital Execution	3.69	.730
Digital Guidance	3.81	.663

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Digital Leadership (Overall)	3.78	.651
Exploratory Creative Performance	3.83	.701
Exploitative Creative Performance	3.76	.722
Organizational Creative Performance (Overall)	3.80	.670

Source: SPSS Output

1.6 Results

1.6.1 Measurement Model Evaluation

Prior to investigating the structural relationships, the measurement model was assessed first in order to confirm that the reliability and validity of the latent variables were met. The assessment was done in accordance with PLS-SEM guidelines that emphasize four major criteria: the reliability of the indicators, the reliability of the internal consistency, the validity of the convergence, and the validity of the discrimination [24][25].

1.6.1.1 Indicator Reliability

The reliability of an indicator is defined as the amount of variance that is common to the observed variable (item) and the latent variable. The reliability was confirmed by checking the external loading coefficients of the indicators [26]. Hair state that external loading coefficients that are equal to or more than 0.70 imply that the variable accounts for at least 50% of the variance of the indicator. Indicators with loading coefficients of slightly less than 0.70 were kept if there was considerable theoretical backing for them and the reliability and integrity of the structure as a whole were not compromised, which is consistent with the recommendation made by earlier PLS-SEM studies (Table 3) (Fig 2).

Table 3 Indicator Reliability and Construct Validity

Construct	Indicator	Outer Loading	Cronbach's Alpha	Composite Reliability (CR)	AVE
Digital Vision (DV)	DV1	0.759	0.880	0.932	0.637
	DV2	0.840			
	DV3	0.849			
	DV4	0.807			
	DV5	0.770			
Digital Decision-Making (DDM)	DDM1	0.752	0.874	0.906	0.667
	DDM2	0.801			
	DDM3	0.826			
	DDM4	0.808			
	DDM5	0.803			
Digital Execution (DE)	DE1	0.786	0.889	0.921	0.699
	DE2	0.843			
	DE3	0.844			
	DE4	0.825			
	DE5	0.784			
Digital Guidance (DG)	DG1	0.716	0.898	0.940	0.649
	DG2	0.813			
	DG3	0.792			
	DG4	0.763			
	DG5	0.710			
Organizational Creative Performance	OCP1	0.716	0.873	0.909	0.598
	OCP2	0.813			
	OCP3	0.792			

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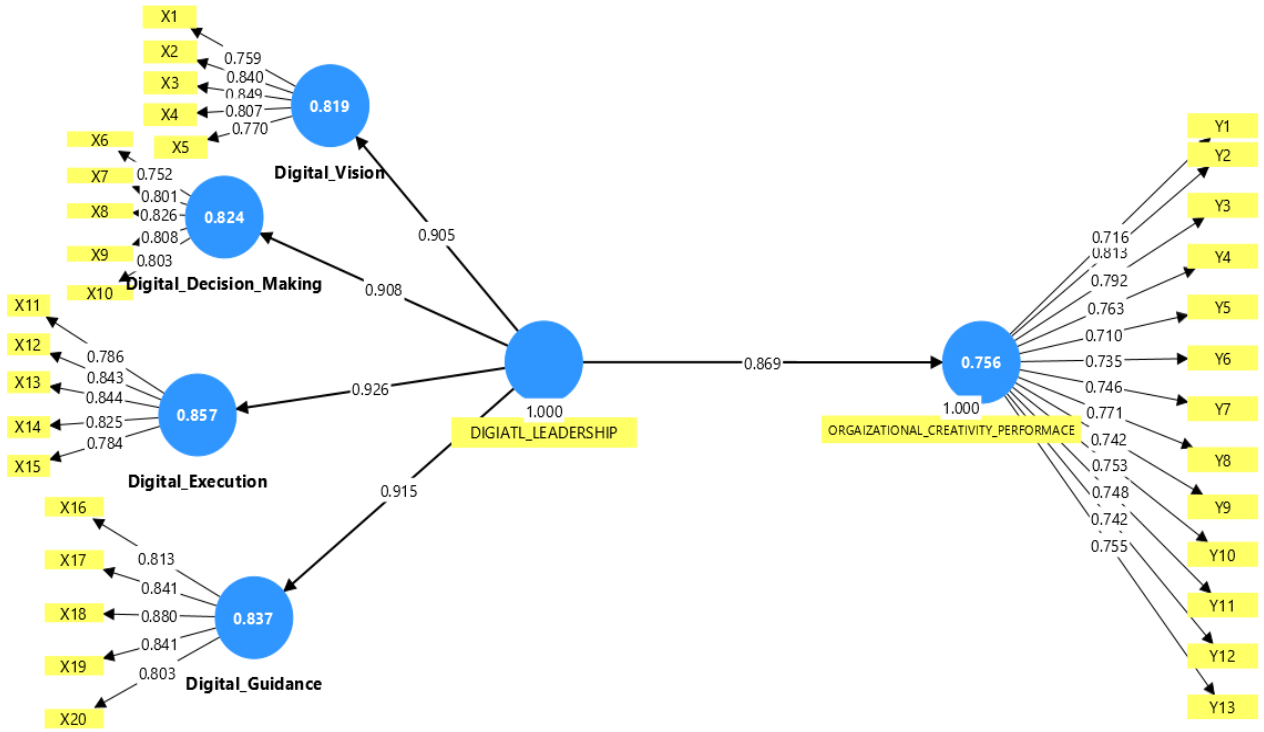
OCP4	0.763
OCP5	0.710
OCP6	0.735
OCP7	0.746
OCP8	0.771
OCP9	0.742
OCP10	0.753
OCP11	0.748
OCP12	0.742
OCP13	0.755

Source: Smart pls Output

Figure 2. Measurement Model Assessment



Source: Smart Pls

The reliability analysis performed on the indices presented in Table 3 and Figure 2 indicated that the external loading coefficients of all the measurement items were above the minimum limit of 0.70 which means that each indicator was a good representation of the structure [27]. Internal consistency reliability was also confirmed, and the results Cronbach's alpha and construct reliability (CR) values of all the structures were above 0.70 thus the indices are said to have very strong internal consistency.

1.6.1.2 Convergent Validity

Convergent validity is a measure of how well a construct can account for the variance in its indicators. The assessment was done using the extracted mean variance (AVE). An AVE value of 0.50 or above signifies that the construct accounts for over half the variance of its indicators thereby confirming the accepted convergence validity [28][29]. The extracted mean variance (AVE) was used for assessing the convergence validity, and the results in Table 3 reveal that all the constructs have values more than 0.50, which means that the construct accounts for over half of the variance of its indicators. To sum up, the results point out that the measurement model has good reliability and convergent validity, thus it is appropriate for the subsequent evaluation of the construct model.

1.6.1.3 Discriminatory Validity

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Discriminant was validated according to the Furnell-Larker criterion which determines the quadratic requirement of the extracted mean variance (AVE) for all desired constructs by facilitating its interactions with other dimensions. From this, the licensure enjoyment is validated when the Tri quartile of the extracted mean variance (AVE) for any construct is exceeding the strongest correlation for that dimension with another Ferrari [30]. In light of the results depicted in Table 4, the quadratic characteristic of the extracted mean variance (AVE) is estimated to defeat multidimensional correlations in the search, thus implying that each independent member is recognized and represents a separate concept in the search. Therefore, it allows for the establishment of adequate validity determination and is even more appropriate for the overall model assessment (Table 4).

Table 4. Discriminant Validity (Fornell-Larcker Criterion)

Construct	DV	DDM	DE	DG	ECP	ERP
Digital Vision	**0.865**					
Digital Decision-Making	0.623	**0.801**				
Digital Execution	0.587	0.642	**0.812**			
Digital Guidance	0.614	0.667	0.695	**0.798**		
Exploratory Creative Performance	0.556	0.559	0.602	0.613	**0.806**	
Exploitative Creative Performance	0.538	0.561	0.597	0.581	0.638	**0.841**

Source: Smart pls Output

1.7 Structural Model Assessment

1.7.1 Coefficient of Determination (R^2)

The coefficient of determination (R^2) was utilized as a means of analysis for the explanatory strength of the structural model, consequently uncovering how much the external variables were responsible for the explanation of the variance in the internal structure. R^2 values in partial least squares structural equation modeling (PLS-SEM) are representative of the model's accuracy in forecasting future observations. According to Chen (1998), R^2 values of 0.19, 0.33, and 0.67 were categorized as weak, moderate, and good explanatory power, respectively. The R^2 values resulting from the analysis of this research are indicative of a model that accounts for a big part of the variance of the internal structure, thereby providing sufficient explanatory power as well as backing hypothesis testing (Table 5).

Table 5. R-Square Test Results

Variable	R-Square	R -Square adjusted
Organizational Creative Performance	0.755	0.756

Source: Smart pls Output

The data presented in Table 5 show that digital leadership accounts for the 61.0% variance in the organization's creative performance (R^2 = 0.755), and this, per Chin (1998), is understood as possessing very high explanatory power. Furthermore, the adjusted R^2 value of 0.755 affirms the strength of the model despite its intricate nature. In conclusion, these findings imply that the offered model possesses great explanatory power and is suitable for hypothesis testing [31].

1.7.2 Effect Size (f^2)

The effect size (f^2) metric was used to evaluate the extent to which each digital leadership dimension contributed to the creative performance of the organization. Following Cohen's (1988) criteria, f^2 values of 0.02, 0.15, and 0.35 represent small, medium, and large effects, respectively. The results presented in Table 6 demonstrate that the digital orientation factor has the highest influence on organizational creative performance with an f^2 value of 0.204, corresponding to a medium effect size. It is then followed by digital decision-making (f^2 = 0.153), which also obtains a medium effect size. Digital vision has the smallest effect but still falls into the medium category (f^2 = 0.149), while digital execution has little effect (f^2 = 0.110). To recap, the findings highlight that digital orientation and digital decision-making have a more significant effect on organizational creative performance than vision and execution (Table 6).

Table 6 F-Square Test Results

Variables	Organizational Creativity Performance	Effect size
Digital Vision	0.149	Medium
Digital Decision-Making	0.153	Medium

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Digital Execution	0.110	Medium
Digital Guidance	0.204	Medium

Source: Smart pls Output

1.7.3 Predictive Significance (Q^2)

The predictive quality of the structural model was assessed by the Stone-Gesser Q^2 value, which was obtained using a fuzzy method. The experiment demonstrates that Q^2 for organizational creative performance is 0.750, which is a value a lot greater than zero, thus giving the model strong predictive value [32][33]. This means that when an organization's creative performance is perceived, the model is very accurate and it has a high level of predictive power based on past performance. The prediction error indicators in Table 7 (RMSE = 0.501; MAE = 0.337) are adequately powerful to endorse the model's predictive accuracy.

Table 7. Q-Square Test Results

Variables	Q2(=1-SSE/SSO)	RMSE	MAE
Organizational Creative Performance	0.750	0.501	0.337

Source: Smart pls Output

1.8 Hypotheses Testing

Statistical significance and strength were evaluated through hypothesis testing for the relationships that the research model had suggested. In the SmartPLS software, the Bootstrap randomization technique allowed the hypothesis testing based on path coefficients (β), t-statistics, and p-values. A hypothesis finds backing when the t-statistic exceeds 1.96 and the p-value is below 0.05, which means there is a statistically significant correlation between the variables (Table 8).

Table 8. Hypotheses Test Results

Hypo.	Hypotheses Path	Path Coefficient	Standard deviation (STDEV)	T statistics (|O/STDEV|)	P values	Decision
H1	Digital Leadership-> OCP	0.869	0.068	46.628	0.000	Supported
H1a	Digital Vision-> OCP	0.239	0.081	5.421	0.000	Supported
H1b	Digital Decision Making -> OCP	0.256	0.053	5.444	0.000	Supported
H1c	Digital Execution-> OCP	0.213	0.116	4.512	0.000	Supported
H1d	Digital Guidance -> OCP	0.244	0.086	5.421	0.000	Supported

Source: Smart pls Output

Based on the findings depicted in Table 8 and Figure 3, it can be concluded that digital leadership has a very strong and significant effect on the organizational creativity performance (OCP), as indicated by a high coefficient value (β = 0.869, t = 46.628, p = 0.000) which confirms the first hypothesis (H1). This indicates that the company under study will be able to produce a great amount of creative output if it has a strong digital leadership [34].

The digital vision is, at the dimensional level, very much so positively linked to the organizational creativity (β = 0.239, t = 5.421, p = 0.000), thus supporting the first hypothesis (H1a) which states that clearly defining the digital vision is one of the most important factors in promoting organizational creativity performance. To add, the digital decision-making is positively correlated with the organizational creativity performance (β = 0.256, t = 5.444, p = 0.000), confirming the second hypothesis (H1b) which postulates that the data-driven decision-making based on technological knowledge aids in creating the environment for creativity [35] [36].

Aside from that, digital execution is also positively associated with organizational creativity (β = 0.213, t = 4.512, p = 0.000), which is suggestive of the fact that effective implementation of digital initiatives significantly boosts the performance of creativity thus, supporting the hypothesis H1c. Working alongside this, digital mentoring shows a strong and significant impact on the organizational creative performance (β = 0.244, t = 5.421, p = 0.000), which is presumably nothing but the confirmation of H1d hypothesis and guidance for leaders to provide mentoring and support to the digital staff for the purpose of creatively lighting up the atmosphere. To sum up, it can be asserted that digital mentoring reveals a tremendous and vital impact on organizational creative performance (Fig 3).

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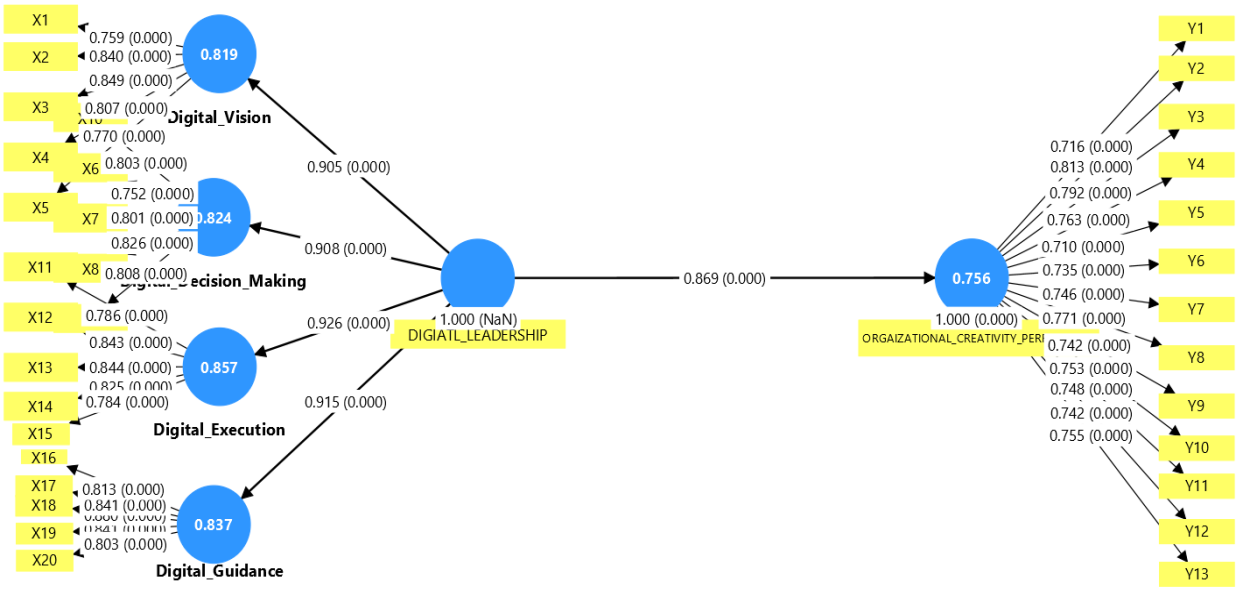
Figure 3. Hypothesis Estimation Model



Source: Smart pls Output

1.9 Discussion

The present study has presented strong proofs that digital leadership is a major factor in enhancing creativity and, thus, it has laid down the importance of digital leadership practices clearly in modern-day organizations. The same holds true for the assertion that technology-enabled business models and management practices are the sources of a certain set of organizational values [37].

The importance of digital leadership in the innovative performance is in accordance with the previous researches that have pointed out its strategic value. To give an example, a study by Sebastian Schedolin in 2023 showed that companies with digital leadership could tap the potential of technology for developing a competitive position in the marketplace. Likewise, the current study also came to a conclusion that digital leadership does not only contribute to the attainment of strategic outcomes but also directly stimulates organizational creativity [38][39].

The digital vision, decision-making, execution, and direction have greatly influenced the organizational creativity. Such results are in agreement with those of Ovinen, which have pointed out that a digital transformation is required for better task performance, supervision, and strategy execution [40]. In particular, the digital leadership and its implementation are credited with having a strong impact by supporting the results of Grafström and Falkman who stated that digital transformation leads to greater management efficiency and better-quality internal communication [41][42].

In this way, the present study supports the arguments made by Toriadi and Sadiqin, who maintained that digital leadership provides the necessary skills for recruiting and the flourishing of an innovative culture [43]. The suggested connections are in line with those of Mollah and Yusuf who pointed out that digital leadership plays a role that is akin to a catalyst for the organization's development through the skilful human resource and simultaneous digital transformation channel [44][45].

The present findings further associate with those of Benitez [46], who placed digital leadership in the center of the tech-supported organization's creativity and innovativeness. Thus, the current study not only aligns with the past literature but also contributes to it by offering empirical backing that the digital leadership and its critical attributes have a tremendous impact in promoting the creative output of organizations in the telecom industry in the scenario of developing economies [47].

1.10 Limitations and Recommendations for Future Studies

The research conducted has some limitations which are worth mentioning. First, the cross-sectional design used in the study limits the possibility of establishing causality. Hence, long-term follow-up studies are suggested to validate this research. Second, the restriction of the data collection to a single telecommunications company limits the possibilities of applying the results to other companies. It is suggested that future studies should compare different industries and geographies. Third, self-reporting is one of the most commonly encountered sources of methodological bias; thus, future research could either collect data from multiple sources or use a more objective approach. Finally, future research may explore deeper into the mediators or moderators (like digital culture or digital capabilities) to provide a clearer understanding of the linkage between digital leadership and creativity.

1.11 Implications

1.11.1 Theoretical Implications

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By means of this study, the literature on digital leadership gets not just enhanced but also empirically confirmed that digital leadership and its dimensions are major contributors to an organization's creative performance. This study, through the acknowledgment of digital leadership as a multidimensional construct and the provision of evidence from an emerging economic context, adds to the theory development, thereby bridging a gap left by prior studies.

1.11.2 Managerial Implications

The findings of the researchers emphasized the necessity for organizations to cultivate digital leadership capabilities like digital vision, decision-making, execution, and direction. Managers are called upon to allocate their resources to leadership training and digital infrastructure in order to establish a workplace that promotes creation and new thought.

1.12 Conclusion

The study examined the role of digital leadership in organizational creativity development at Asiacell Communications, Northern Region. Simultaneously, the major positive influence of digital leadership on the growth of the organizational creativity is very clear as all the related dimensions have made considerable contributions to the very final result. Therefore, the results imply the position of digital leaders as a crucial factor through which organizations can overcome the challenges of digital transformation and, at the same time, get more creativity produced by their employees. All in all, this research has not only offered theoretical and practical insights but has also set groundwork for future studies which will aim at exploring deeper the relationship between digital leadership and organizational creativity performance in terms of impact.

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