Jahangirnagar University Journal of Business Research (JUJBR), Vol. 24, No. 02, December, 2024
ISSN 1681-9748

# The Impact of Digital Leadership Dynamic Capabilities on Driving Digital Transformation and Innovation: The Moderating Role of Task Complexity

**JUJBR**

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***Abstract:*** *In the wave of digitalization, information technology (IT) sectors are playing a crucial role for thriving digital transformation (DT) and innovation, where digital leaders serve as the epitomes of success. This study aims to investigate the influences of digital leadership (DL) on thriving digital innovation (DI) by analyzing the mediating effects of DT in interlink between DL and DI, and the moderating role of task complexity (TC) between the relationship of DL and DT. To conduct this study, data were collected from 403 employees at different levels within IT organizations in Bangladesh using convenient sampling methods, and the analysis was performed with SPSS 23 and AMOS 24 software. The results demonstrate that DL has a substantial positive effect on DI, and DT plays partially mediating role between DL and DT. Also, TC plays a significant moderating role interlink between DL and DI. The findings highlight the dynamism of DL can foster DT which is conducive to innovation. To cope with TC, DL needs to embrace an adaptive and malleable digital transformational strategy to promote DI. To achieve organizational success, DL guides teams to enhance required digital infrastructure and capabilities which is favorable for innovation. This research is grounded in the dynamic capabilities view (DCV) and resources-based view (RBV) theories, and identifying factors could be crucial for IT organization management, policymakers, and relevant authorities to maintain unwavering organizational performance and gain competitive advantages.*

***Keywords:*** *Digital Leadership, Digital Innovation, Digital Transformation, Task Complexity, Bangladesh.*

## 1. Introduction

Digital technologies, like big data, IoT, AI, and cloud computing, are growing phenomenon that supports the digitalization of organizations. Following the global COVID-19 pandemic and under the pressure of ongoing global transformation; organizations are constantly changing, and business environment become hypercompetitive. The technological dynamism is also shaking Bangladesh and pressurizing it to become digitalized. For example, to provide IT support, numerous organizations in Bangladesh like Vivasoft, Brainstation 23, Enosis, TigerIT, Cefalo, SynthesisIT etc., are prominently obliged to engage their technology-experts or leaders to develop solutions that drive DT and foster DI

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DOI: https://doi.org/10.53461/jujbr.v24i02.62

(Top 20 Best Software Companies in Bangladesh, 2024). IT firms are also propelling to foster the digitalization of various sectors, such as banking, insurance, SMEs, NGOs, healthcare, and both profit and non-profit organizations. For these activities, Bangladesh is turned as home to approximately 4,500 software and Information communication and technology (ICT) firms that employ over 300,000 employees (BD, 2023) and numerous freelancers, and independent workers. In this context, Fitzgerald et al., (2014) demonstrated that IT organizations need to be succeed in a digitally volatile environment by embracing transformation by improving customer experiences and engagement, boosting operations, and developing innovative business models; otherwise, they risk for failure.

Additionally, in Bangladesh, the IT sector plays a fundamental role in the advancing the 'Smart Bangladesh,' initiative focusing on smart citizens, governance, economy, and societies, as outlined in the government's 'Smart Bangladesh Vision 2041.' Where, in pursuit of DT under the 'Digital Bangladesh,' vision, the country has launched a Satellite, developed a number of high-tech park and inaugurated software technology park (Saha, 2022) to drive digitalization. Digitalization involves the transition from physical to digital systems (Khan, 2016) mechanization, automation, or robotization, digitalization (Toduk, 2024). As new technologies continue to evolve, and they produce as by-product unknown challenges and drive environmental fluctuations. Due to the DT changing business processes, cultures, and organizational aspects to meet fluctuating market demands brought about by digital technologies (AlNuaimi et al., 2022). Based on the concept presented by Chen et al. (2024), TC link to technological changes can manifest three ways: first, component complexity, which includes proper execution of takes and the use of information cues; second, co-ordination complexity, includes encompasses the interdependencies among acts, information cues, and products; and third, dynamic complexity, supposed to adapt environmental changes. Digital leaders may be the right person to effectively manage DT, navigating task complexities, and drive DI. Despite a growing number of researches, the effect of digital leadership's dynamic capabilities (DC) on DT, and DI as well as moderating role of TC at the organizational level is yet unknown. Therefore, the question arises: ***What roles do the dynamic capabilities of digital leadership play in managing DT and fostering digital innovation in Bangladesh? Whether task complexity have significant effect in the relationship between DL and DT?***

Firstly, De Waal and Heijtel (2016) demonstrated, digital leadership (DL) is the blend of transformational leadership and digital skills. Apart from this, Zhu (2015) has characterized DL as visionary, inquisitive, thought leaders, effective communicators, collaborators, and creative. Besides this, DL also possess a vast amount of digital management experiences (Zeike et al., 2019), digital capabilities (Narbona, 2016), and social networking skills (Narbona, 2016). Thereafter, this research perceives DL possess a dynamic capability of leadership. Actually, the DC and digital knowledge of DL set them combination of

DOI: https://doi.org/10.53461/jujbr.v24i02.62

transactional, transformational leadership and authentic leadership styles (Prince, 2018). Secondly, DT infers planned change, including the shift of the organization system related to big data, cloud computing, and mobile technologies by using social media for providing goods and services (Bresciani et al., 2021). Also, AlNuaimi et al. (2022) explained, DT includes transformation of business processes, organizational culture and aspects for supporting changing market demand brought about by digital technologies. Thirdly, the DI refers to 'the creation of market offerings, business processes or models that result from the use of digital technology' (Nambisan et al., 2017); 'the development of new products, services, or solutions by using digital technology' (Khin & Ho, 2019). Finally, TC reflected by the structure of a task indicated by its structure, which includes the quantity of work elements, the number of sub-tasks, and the diversity of task elements, among other factors (Ham et al., 2011). In IT firms the task and sub-tasks can be varied and typically involve a mix of technical, project management, customer service, and strategic responsibilities.

After following the background and clarification of the variables, now there is a discussion of the research gap and contributions. There is a growing need for DL to adapt to digitally dynamic environment (Mollah et al., 2024) in order to enhance DT capabilities and foster DI for organizational success. DL possesses the ability to tackle diverse challenges and seize opportunities that arise from digital evaluation (Ismail et al., 2023). Ismail and Admajid (2007) theoretically proposed that, in the future, visionary leaders will play a significant role in fostering an innovation culture within organizations. Another study, Ko et al. (2022) mentioned that IT departments and their services are perceived less important in the context of DT. Additionally, the International Data Corporation (IDC) forecasted that global investment in DT will reach $2.3 trillion in 2023. Bangladesh is also investing a huge amount of money aiming adoption of DT. Where DT is driven by advancements such as personal computers, AI, virtual reality, big data, and various social networking sites (Hitt et al., 2016). However, all forms of transformation and innovation require careful planning, organization, expert leadership, and in time control of strategic activities.

There are many researches have explored interlink between DL and innovation (AlNuaimi et al., 2022; Fatima & Masood, 2024; Mihardjo et al., 2019). More details, AlNuaimi et al. (2022) found that digital transformational leadership positively influences DT and suggested that in future ‘innovation’ can be used for further extension of the research. Especially, Erhan et al. (2022) asserted that future research can expand on the role of DL by considering into necessary perspective. Besides this, Mihardjo et al. (2019) found that DL has a substantial effect on innovation in the telecommunications industry, while Benitez et al. (2022) demonstrated that DL has a substantial effect on innovation management in European firms. Along with this Senadjki et al. (2023) found that DL has a substantial effect on performance in Malaysia. Furthermore, in a previous study, Niu et al. (2022) found impact of DL on organizational innovation, contributing to organizational sustainability. There are few researches where TC is used a

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moderator while one study conducted and found TC effect in relationship between transformational leadership and organizational learning in micro SMEs among the IT managers (Tarliman et al., 2022). This research gap motivates to develop these research framework (Figure 1) and empirically test the results in the IT sector of Bangladesh, aiming to achieve following specific objectives:

(i) To explore the impact of digital leadership on digital innovation in the IT sector of Bangladesh.

(ii) To examine the mediating role of DT in the relationship between digital leadership and digital innovation.

(iii) To evaluate the moderating role of TC between digital leadership and DT.

In summary, this research considers the dynamic role of DL based on DCV and investigates DT abilities and DI from the perspective of RBV theory. And the key objectives of this research are to find the digital leader's DC in driving DI and examining the moderating effect of DT on the relationship between DL and DI. Additionally, it aims to investigate the moderating effect of TC on the relationship between DL and DT in the IT sector of Bangladesh. Thereafter, by applying DC of DL for managing DT and navigating TC; this research will contribute for strategic decision making and gaining competitive advantages by taking futuristic decision.

## 2. Literature Review and Hypotheses

### *2.1 Theoretical grounds*

This research is grounded based on DCV and RBV theoretical framework to address the research questions and objectives. The DCV theory is proposed by Teece (2007) to address dynamic environments. Previously Azzam et al. (2023) also used DL as based on DCV theory, which is also strategically supportive for developing RBV. According to Yu et al. (2018) DCV is the extension of the RBV theory, used to utilize the skills and knowledge for sustainable competitive advantages. The RBV theory explains that resources which are valuable, rare, inimitable, and non-substitutable are essential for gaining higher performance (Barney, 1991). Practically, in IT firms the capabilities of DL, DT effort, and the TC are highly dynamic and need constant adapt to the changing environmental factors. The DC of digital leaders enable them to integrate, build, and reconfigure internal and external competences, as outlined in Teece et al.'s (1997) concept. Integration of digital leaders' DC, effective management of DT, and the ability to navigate TC are all essential for thriving DI, generating additional resources, and for supporting the achievement of competitive advantages and organizational sustainability.

### *2.2 Relationship of digital leadership and digital innovation*

In the digital wave of DT, DL is crucial for driving innovation and organizational success. DL fosters a culture of agility, adopts advanced technology, empowering employees, and formulates malleable organizational strategies and structures. Notably, DL encompasses capabilities and skills in DT (De Waal & Heijtel, 2016) which also entail directing and influencing overall organizational strategies

DOI: https://doi.org/10.53461/jujbr.v24i02.62

(Porfírio et al., 2021). In addition, digital leaders are capable of handling digitally volatile environments and managing innovation (Mihardjo et al., 2019). Innovation involves utilizing information technology (IT) to create value (Saldanha et al., 2017). It emphasizes the significance of relational and analytical information processing in improving customer participation for processes and open platform structures (Appio et al., 2021). Actually, the relationship between DL and innovation is pivotal for nurturing a culture that encourages creativity, adaptability, and technological development (Ismail et al., 2023). In IT firms, digital leaders are focusing on DI by formulating strategies, developing organizational culture, and structure to achieve sustainable goals while satisfying customer demands in an increasingly digital landscape.

Moreover, digital technologies modernize organizations and enable the leveraging or creation of core skills, providing businesses with a competitive edge (Verhoef et al., 2019). For instance, Ding et al. (2014) mentioned that digital leaders make decisions based on their digital vision and capabilities. Additionally, Erhan et al. (2022) found that DL positively influences power for employees' innovative work behaviors, including idea generation, exploration, championing, and implementation. Khin and Ho (2019) found that DI positively influences on financial and non-financial performance in the IT sector. They also foster information sharing and invention to achieve open innovation, which is crucial for competing effectively and outperforming others (Wang et al., 2022). Also, DL is creating a vision for the upcoming future and, based on that vision, leading organizations toward achieving expected goals. However, research on the role of DL in driving DI within the IT sector of Bangladesh is still limited. Therefore, the succeeding hypothesis was posited:

***H1:*** DL positively influences innovation.

### *2.3 Mediating role of digital transformation capabilities*

In the era of the 4$^{th}$ Industrial Revolution and technological advancements, DL dynamic capabilities serve as a key enabler of organizational transformation and innovation. Importantly, transformation refers to the 'continuous recombination and reconfiguration of resources and structures under changing environments to support the business models' (Teece, 2007). DT is a procedure of integrating advanced technologies which enhances value for customers through novel solutions, improves the efficiency of the system (Attaran, 2020), and meets the growing needs of customers (Mak & Shen, 2021). IT system aligns with complex use of digital technologies for value construction, technology management, and the formulation of organizational strategies and culture (Saarikko et al., 2020). DL also possesses the capabilities to transform and integrate digital technology into corporate operations, serving as propeller for DT (Chanias et al., 2019). Research also reveals that a leader's effective leadership style and capabilities play a significant role in supporting DT in Portuguese (Porfrio et al., 2021). Additionally, it has been found that structure, culture, and leadership are key factors in success of DT (Leso et al., 2023). In the IT sector, as digital leaders play a key role, their DC may significantly impact the management of DT.

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Moreover, in a competitive environment, DT is critical for organizational success and makes a difference in competitive advantages (Schilke et al., 2018). The DC of the organizations are essential for 'addressing rapidly changing environments' (Teece et al., 1997). In IT firms, DC of digital leaders enhance the ability to quickly adapt to a volatile environment, which is supported by Breznik and Lahovnik (2016) by demonstrated that DC "hold the potential for a sustained competitive advantage, especially in a turbulent environment". Theoretically, DC involve three mechanisms: sensing, seizing, and transforming capabilities (Teece, 2007). As digital leaders possess multidimensional skills and digital expertise, they can effectively sense, seize, and transform IT firms in response to both global and local customer demands. To achieve this, IT organizations must prioritize on creativity and innovation, while DT emphasizes boosting productivity and innovation, enhancing both the quantity and quality of innovation (Chen & Kim, 2023). In Bangladesh, the activities of DT in the IT sector are supported by around 500 IT organizations and approximately 0.6 million independent workers (BD, 2023). Therefore, IT supports to modernize infrastructure, enhances data analysis capabilities, and establishes a more malleable and responsive organizational structure (Nadkarni & Prügl, 2021). Therefore, it indicates that the success of the DT is evidenced by the resulting of innovations.

***H2:*** DL has a positive influence on DT.

***H3:*** DT has a positive effect on DI.

Furthermore, Zhou et al. (2022) demonstrated DT has mediated by executive confidence, environmental technology innovation, and management innovation in Chinese public organizations. Besides this, Liu and Jung (2021) found that DT mediates the interlink between corporate social responsibility (CSR) and authenticity in Korean electronic products, while Tuyen et al. (2023) identified it as a mediating factor between CSR and corporate innovation in the context of Vietnam. In addition, a study conducted in Saudi universities found that DT serves as mediator between organizational culture and job satisfaction among faculty members (Zhou et al., 2022). Senadjki et al. (2023) confirmed DT acts as a mediator between DL and performance. However, there is still a lack of studies to explore the mediating role of DT between DL and innovation in IT sector from a Bangladesh perspective. So, proposes the following hypothesis:

***H4:*** Since DL has positive effect on DT, and DT has positive effect on DI, it can be inferred that DT mediates the association between DL and DI.

### *2.4 Moderating role of task complexity*

Task complexity is growing due to environmental dynamism and the need for rapid adaptation of new technology. Therefore, it is inevitable to enhance strategic change, and innovation capabilities through DT. Campbell (1988) defined TC as primarily focusing on tasks performed by individuals, without addressing the situation of collaboration. However, in the age of digitalization, collaborative work has increased; therefore, across the individual level of work

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complexity differs (Hærem et al., 2015). Additionally, TC encompasses both physical and biological sciences (Gell-Mann & Lloyd, 1996) as well as organizational studies (Zhou, 2013). Digitalization has also increased psychological pressure to achieve goals within limited resources; therefore, TC may impact DT and performance.

There are few studies on the role TC in organization. For example, Afsar and Umrani (2019) found that TC moderates the relationship between transformational leadership and employees' work motivation in the Pakistani manufacturing industry. Similarly, Wang et al. (2014) found that TC moderates the association between transformational leadership and creative role identification. However, the study Endris et al. (2017) study revealed that TC didn't significantly moderate the association between leadership self-efficacy and leadership effectiveness. Jung et al. (2022) found that TC moderated in the association between paradoxical leadership and creative self-efficacy. The rapid advancements in technology and continuously shifting environmental conditions are leading to further increase of the TC. However, no studies have examined the moderating role of TC in the association between digital leadership (DL) and DT within the context of Bangladesh or from an IT organizational perspective. Therefore, to address this research gap, this study posits the succeeding hypothesis:

***H5:*** TC moderates the association between DL and DT.

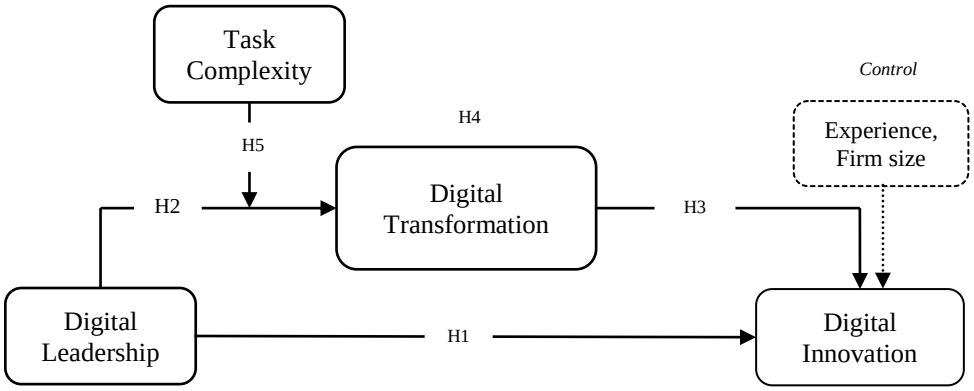


**Figure 1. Research Framework**

## 3. Methodology of the Study

This study employed a quantitative approach to explore the association among DL, DT, TC, and DI in the IT sectors of Bangladesh. To accomplish the study's objectives, primary data were collected by using purposive sampling methods based on the self-administering questionnaires. Questions were developed through a critical review of existing literature and data analyzed by using SPSS 23 and AMOS 24 to achieve research objectives.

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### *3.1 Sampling process*

The convenient sample data were collected from employees of various IT firms in Bangladesh by utilizing a web-based questionnaire in Google form. At a start, a small note was included related to study description and participant's willingness to take part in the study. Also, a pilot study with five questions to check for validity and reliability. The first five responses demonstrated consistent and reliable results (DL = 0.871; DT = 0.702; TC = 0.902; and DI = 0.795). Approximately, 1200 questions were distributed, yielding a response rate 35.5%. A total of 426 responses were collected employees of various levels of organization as cross-sectional samples. After data cleaning, 403 responses were deemed acceptable for analysis.

The outcomes showed that among the respondents, around 85% were male, and 15% were female. In terms of work experiences, 63.8% of the employees had between 1 to less than 6 years of experience, followed by 15.6%. with less than 1-year experience. Regarding firm age, results exhibited that 45.9% of IT establishments are operational for more than 5 years but less than 11 years, 25.1% for less than 5 years, and only 0.7% for more than 20 years. Finally, the organizations size analysis revealed that 46.7% had less than 100 employees, while 53.3% had more than 100 employees.

### *3.2 Measurement items*

To assess DL, this study employed six-item adopted from Erhan et al. (2022). Also, Shin et al. (2023) and Mollah et al. (2023) used it to measure organizational performance in Korean organizations, following a five-point Likert scale ranging from "1 = strongly disagree to 5 = strongly agree". Next, to measure DT, we used five items devised by AlNuaimi et al. (2022). For DI, six items were adopted from Paladino (2007) and Zheng et al. (2021). To assess TC, four items used by Sia and Appu (2015) with five-point Likert scale ranging from "1 = always to 5 = never." Additionally, two control variables-employee experience and firm size were included to control for the proposed model.

## 4. Results

### *4.1 Bias test and the measurement model analysis*

To assess the common method variance (CMV), this study followed the KMO test and Bartlett's test of sphericity. The KMO value is 0.913 ($x^2$ = 3609.160, $df$ = 210, $p < 0.001$), demonstrating that the relationship matrix is not an identity matrix. Harman's single-factor test depicted that the total variance explained by a single component was 36.40%, which is less than 50% threshold, suggesting that there is no CMV problem (Podsakoff et al., 2003). Additionally, to test the path analysis, a bootstrap of 5,000 was applied to assess SEM. Table 1 shows the outcomes, of a four-factor structure delivered the best fit for the data, with goodness-of-fit indices meeting or exceeding standard values (Hu & Bentler, 1999).

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**Table 1. Model fit analysis**

| Model | GFI | AGFI | RMR | SRMR | CFI | RMSEA [90% of CI] | $X^2$/(d.f.) |
|---|---|---|---|---|---|---|---|
| 1 Factor (DL, DT, TC, DI) | .98 | .93 | .020 | .034 | .97 | .092 [.055; .133] | 4.40*** |
| 2 Factors (DL+DT, TC, DI) | .96 | .94 | .021 | .035 | .97 | .053 [.036; .070] | 2.14*** |
| 3 Factors (DL+DT+TC, DI) | .96 | .94 | .023 | .036 | .97 | .048 [.034; .060] | 1.91*** |
| 4 Factors (DL+DT+TC+DI) | 0.93 | 0.91 | .028 | .041 | .95 | .049 [.040; .057] | 1.96*** |
| Reference Standard | ≥0.9 | ≥0.8 | <0.08 | <.05 | ≥0.9 | ≤0.08 | ≤ 5 |

***Note(s):*** **p < .05, **p < .01, ***p < .001; GFI = Goodness of Fit Index; AGFI = Adjusted Goodness of Fit Index; RMR = Root Mean Squared Residual; SRMR = Standardized Root Mean Squared Residual; RMSEA = Standardized Root Mean Squared Residual; CFI = comparative fit index.*

To assess the convergent and discriminant validity, study model conducted tests of composite reliability (CR), average variance extracted (AVE), and Cronbach's alpha. All three measures fell within the suggested acceptable ranges (Fornell & Larcker, 1981) (CR > 0.70), AVE > 0.50), and Cronbach's a (> 0.70). It should be noted that, due to the low loading DL1 and TC1 were eliminated.

**Table 2. Convergent validity and reliability**

| Constructs | Items | Loading Value | AVE | CR | Cronbach's α |
|---|---|---|---|---|---|
| Digital Leadership | DL2 | 0.690 | 0.595 | 0.880 | 0.804 |
| | DL3 | 0.612 | | | |
| | DL4 | 0.641 | | | |
| | DL5 | 0.712 | | | |
| | DL6 | 0.709 | | | |
| Digital Transformation | DT1 | 0.758 | 0.616 | 0.889 | 0.837 |
| | DT2 | 0.728 | | | |
| | DT3 | 0.698 | | | |
| | DT4 | 0.691 | | | |
| | DT5 | 0.684 | | | |
| Task Complexity | TC2 | 0.661 | 0.592 | 0.812 | 0.763 |

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| Constructs | Items | Loading Value | AVE | CR | Cronbach's α |
|---|---|---|---|---|---|
| | TC3 | 0.753 | | | |
| | TC4 | 0.749 | | | |
| Digital Innovation | DI1 | 0.831 | 0.578 | 0.891 | 0.857 |
| | DI2 | 0.781 | | | |
| | DI3 | 0.670 | | | |
| | DI4 | 0.685 | | | |
| | DI5 | 0.600 | | | |
| | DI6 | 0.724 | | | |

***Note(s):*** *AVE = Average Variance Extracted; CR = Composite Reliability*

### *4.2 Descriptive statistics and discriminant validity analysis*

This study has tested mean, standard deviation, and multicollinearity (Table 3). Male respondents are 0.85 or 85% and female respondents are 0.15 or 15%, mean of IT experience 2.15 indicates employee's IT experiences centralized between 6 to 11 years. Similarly, mean of firm size is 1.53 indicates number of employees of the organizations concentrated within medium (49 to 99 employees) types of organizations. On the other hand, the mean and standard deviation of all latent variables (DL, DT, innovation and TC) are higher than their central response central values. As we have got response in a five-point Likert scale ranges from 1 (strongly disagree) to 5 (strongly agree) and middle value was 3 (Neutral). Therefore, higher than 3 indicates that most of the respondents have positive perceptions.

Additionally, results show that all the VIFs fall under 5, which indicates that this study has no multicollinearity issues as the VIF less than 10 (Hair et al., 2009). Researchers analyzed the association among demographic information and latent variables. The results revealed a positive correlation between firm size and experience with all other latent variables. DL is positively correlated with DT ($r = 0.55$, $p < 0.01$), TC ($r = 0.42$, $p < 0.01$), and DI ($r = 0.45$, $p < 0.01$). Similarly, Table 3 shows a correlation between all the latent variables. Furthermore, the assessment of discriminant validity revealed that the square roots of AVE outperform the other diagonal and horizontal correlation coefficients (Fornell & Larcker, 1981), thereby confirming the nonexistence of any discriminant validity matters in this study.

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**Table 3. Descriptive statistics and discriminant validity**

| Variables | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
|---|---|---|---|---|---|---|---|---|
| 1. Gender[a] | 1 | | | | | | | |
| 2. IT Experience[b] | .11* | 1 | | | | | | |
| 3. Firm Age[c] | 0.07 | .23** | 1 | | | | | |
| 4. Firm Size[d] | 0.07 | -0.04 | .40** | 1 | | | | |
| 5. Digital leadership | -0.05 | -.20** | -0.05 | .19** | **(.77)** | | | |
| 6. Digital Transformation | 0.02 | -.14** | 0.02 | .19** | .55** | **(.79)** | | |
| 7. Task Complexity | 0.02 | 0.03 | -0.04 | .15** | .42** | .43** | **(.77)** | |
| 8. Digital Innovation | -0.04 | -0.02 | -0.08 | .14** | .45** | .58** | .47** | **(.76)** |
| Mean | 0.85 | 2.15 | 2.35 | 1.53 | 4.32 | 4.24 | 4.06 | 4.04 |
| SD | 0.36 | 0.84 | 1.27 | 0.50 | 0.56 | 0.62 | 0.72 | 0.67 |
| Collinearity Test (VIF) | 1.02 | 1.15 | 1.31 | 1.29 | 1.60 | 1.57 | 1.36 | 1.02 |

**Note(s):** **p < .05; **p < .01; ***p < .001*; *[a]Coded O = Female, 1 = Female; [b]Coded 1 = Less than 1 year, 2 = More than 1 to less than 6 years, 3 = More than 6 to less than 11 years, 4 = More than 11 to less than 16 years, 5 = More than 16 to less than 20 years, 6 = More than 20 years; [C]Coded 1 = Less than 5 year, 2 = More than 5 to less than 11 years, 3 = More than 11 to less than 16 years, 4 = Less than 16 to more than 20 years, 5 = More than 20 years, [d]Coded 1 is Small= 1 to less than 49, 2 is medium = 49 to 99; 3 = 100 or more than 100 employees; The bold values in the parentheses are the square root of AVE for each variable.*

### *4.3 Hypothesis testing*

First, to test hypotheses H1, the results proved DL has a substantial effect on DI ($\beta = 0.128$, $p < 0.05$). Therefore, hypothesis H1 is supported. Second, the results from examining H2 found that DL has a substantial effect on DT ($\beta = 0.053$, $p < 0.001$), and H3 proved that DT positively influence DI ($\beta = 0.420$, $p < 0.001$). Therefore, H2 and H3 are supported. Third, the results for hypothesis H4 indicate that mediating effect of DT between DL and DI is significant ($\beta = 0.022$, $p < 0.001$). Since both direct and indirect effects are significant, this indicates that DT has a partial mediating effect between DL and DI. Therefore, H4 is accepted. Lastly, hypothesis H5 confirmed that TC significantly moderates between DL and DT ($\beta = 1.770$, $p < 0.001$). Therefore, H5 is supported (Figure 2). Finally, the control variables, IT experience ($\beta = 0.002$, $p > 0.05$), and organization size ($\beta = 0.058$, $p > 0.05$), show an insignificant impact on innovation indicates no controlling effect in the model.

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**Table 4. Results of the hypotheses**

| Hypotheses and Pathways | | Standard Estimates | | (95% of confidence interval) | | *P* vale | Results |
|---|---|---|---|---|---|---|---|
| | | Direct | Indirect | Lower Bound | Upper Bound | | |
| H1 | DL→DI | | .128* | 024 | .232 | .046 | S |
| H2 | DL→DT | .053** | | .020 | .101 | .003 | S |
| H3 | DT→DI | .420*** | | .301 | .555 | .000 | S |
| H4 | DL→DT→DI | | .022*** | .009 | .048 | .003 | S |
| H5 | DT×TC→DT | 1.770*** | | 1.652 | 1.892 | .001 | S |

*Note(s): *p < .05, **p < .01, ***p < .001; S/NS = Supported/Not Supported*

## 5. Discussions

This study is a successful endeavor to reveal the interactive roles of DT and TC in the association between DL and DI in Bangladesh's IT sector. IT organizations are increasingly relying on DL to steer their initiatives aimed at achieving these objectives. Traditional ways, Hambrick and Mason (1984) demonstrated that leaders typically operate at the upper echelons of organizations; however, in the digital age, DL can be found at any level within the organization. Such as DL may work various levels, including the Board of Directors and C-suite executives' level (Valentine & Stewart, 2015), senior and upper-level IT leaders (Zeike et al., 2019), IT leadership roles (El Sawy et al., 2016), organization level (Antonopoulou et al., 2021), and others levels (Narbona, 2016). Therefore, researcher gathered data from employees at various levels within the IT sector of Bangladesh and the general discussions are as follows.

First, the results align with past studies that demonstrated a substantial effect of DL on DI (Erhan et al., 2022). The results explain, DL is digitally capable, visionary, futuristic, thought leaders, collaborators, agile, and creative (Zhu, 2015). They possess extensive knowledge to handle volatile environments (Mihardjo et al., 2019), serves as a key driver for fostering innovation (Wang et al., 2022) in IT sectors of Bangladesh. This result highlighted that DC of digital leaders' support DT, navigating TC and enhancing innovation. Second, the results show DL has a substantial influence on DT. These findings provide similar results those of Benitez et al. (2022) that digital leaders play a vibrant role in DT and organizational adaptation. Also, digital leaders are proficient in ICT-based knowledge sharing and internet base management systems (Panir et al., 2018), which support different organizations through IT. Furthermore 'transformative vision and forward-looking perspective' of digital leaders drive cultural reform and enable quick adaptation in turbulent environments (Weill & Woerner, 2018). The discussion approves that digital leaders DC play crucial role

DOI: https://doi.org/10.53461/jujbr.v24i02.62

in upgrading infrastructure, improving data analysis capabilities, and developing a flexible strategy along with responsive organizational system to achieve competitive advantages.

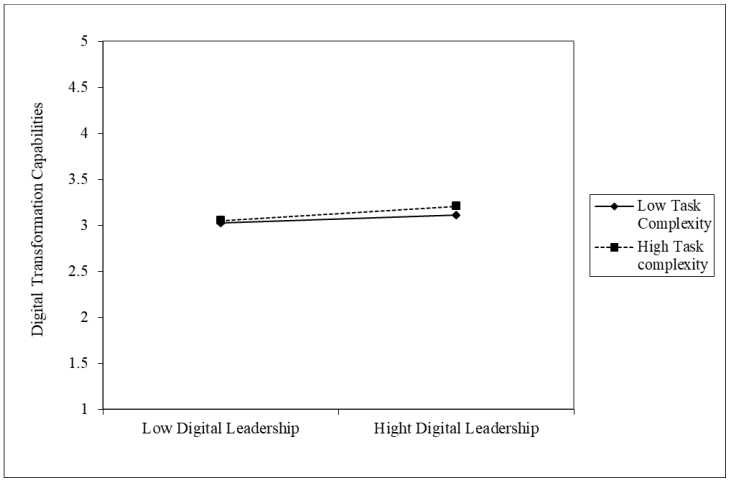


**Figure 2. The moderation effects**

Third, the results demonstrate that DT has partial mediating relationship between DL and DI, aligning with findings from previous studies (Zhou et al., 2022; Liu & Jung, 2021). Practically, these results indicate that DT plays an integral role in enhancing innovation, driven by DC of DL in the IT sector. Additionally, based on DCV, the digital leaders encompass investing in new technologies, cultivating digital competencies across the organization, and fostering a digital culture that embraces digital change. Lastly, the moderating role of TC in the relationship between DL and DT demonstrated significant contributes to enhancing originality in leadership research. To the best of our knowledge and findings, the moderating role of TC suggests that lowers levels of DL and lowers DT are moderated by TC. The findings also depict that lower level DL and DT significantly interact with TC suggesting that DL is capable of handling lower levels DT and TC. Lastly, the finding also revealed that DL are capable of managing volatile and turbulent environments, and handling TC to drive DT and enhance innovation performance for sustainability.

### *5.1 Implications of the study*

This study makes both theoretical and practical contributions. Theoretically, the results show a connection between DCV and RBV, highlighting that DCV has a significant impact on resource enhancement in IT sector. First, DL embody DC and vibrant roles in enhancing DT and innovation across various IT sectors, including support for the digitalization of banking, healthcare, SME, and more. IT also supports for the development of new processes or enhancing existing digital management processes in innovative ways to better serve customers, supporting software and web development, network administration, cybersecurity

DOI: https://doi.org/10.53461/jujbr.v24i02.62

enhancements, database management, and more. Second, due to globalization and digitalization, DT is valuable not only for perusing emerging opportunities but also for fostering innovation and ensuing sustainable performance (Mollah et al., 2023). Third, as DT mediates between DL and DI indicates that DT has influencing power of generating innovation in IT sectors of Bangladesh.

In addition, to turn the 'Smart Bangladesh' vision into reality, IT firms are conclusively supporting IT-related development and implementation, while digital leaders are plying pivotal role in driving digitalization efforts (Ke & Wei, 2008). Fourth, TC moderates the relationship between DL and DT infers that DC of DL are exclusively managing TC while DT is evident. Hereafter, the findings of the study provide significant insights for managers and policymakers, indicating that IT firms must need to focus on organizational development and customer satisfaction alongside competitive service delivery. Ultimately, as organizations concentrate on DT and innovation to enhance competitiveness and sustainability, digital leaders emerge as the driving force behind successful transformation and innovation in Bangladesh.

### *5.2 Limitations and future research directions*

Though this study presents some notable implications; there are some limitations and conceptual arguments required to address. First, the unit of analysis was IT knowledge employees who have digital knowledge or are associated with digital activities in IT firms in Bangladesh. In future study needs to cover multiple sectors for generalization. Second, based on Erhan et al.'s (2022) suggestions, this study considered DL as predictive variable and DT as mediator, TC as moderator and digital innovation as dependent. In the future, other relevant constructs such as benevolent leadership, managerial support, AI, supportive culture, and creativity can be used for further research. In general, innovation encompasses product or service, process, and model innovation (Bresciani et al., 2021). However, this study did not separately analyze innovation in terms of product and service, which could provide more detailed insights. Future research could examine product and service innovation separately to gain deeper insights into their distinct impact. Fourth, as this study utilized a quantitative approach with 403 cross sectional data, future study could benefit for applying mixed methods for more comprehensive understanding. Also, longitudinal or comparative approaches that account for social, economic, and political perspectives can ensure further potential contributions.

### *5.3 Conclusion*

This research highlights the interconnectedness of DL, DT, and DI capabilities. By prioritizing the development of robust DL and enhancing comprehensive DT, organizations can effectively deal with TC in a digitally volatile environment, thereby ensuring their sustainability and adaptability. Furthermore, recognizing the DC of digital leaders in handling TC in expert hands can help tailor leadership approaches to different organizational contexts. This understanding can further enhance management efficiency and foster DI within organizations in

DOI: https://doi.org/10.53461/jujbr.v24i02.62

Bangladesh. In conclusion, IT organizations serve as the backbone of digital systems, with DL acting as the driving force behind effective management; therefore, to ensure sustainability, organizations need to stay tuned with DL.

## 6. Reference


Afsar, B., & Umrani, W. A. (2019). Transformational leadership and innovative work behavior: The role of motivation to learn, task complexity and innovation climate. *European Journal of Innovation Management*, *23*(3), 402–428.

AlNuaimi, B. K., Kumar Singh, S., Ren, S., Budhwar, P., & Vorobyev, D. (2022). Mastering digital transformation: The nexus between leadership, agility, and digital strategy. *Journal of Business Research*, *145*, 636–648.

Anderson, J. C., & Gerbing, D. W. (1988). Structural equation modeling in practice: A review and recommended two-step approach. *Psychological Bulletin*, *103*(3), 411–423.

Antonopoulou, H., Halkiopoulos, C., Barlou, O., & Beligiannis, G. N. (2021). Associations between Traditional and Digital Leadership in Academic Environment: During the COVID-19 Pandemic. *Emerging Science Journal*, *5*(4), 405–428.

Appio, F. P., Frattini, F., Petruzzelli, A. M., & Neirotti, P. (2021). Digital Transformation and Innovation Management: A Synthesis of Existing Research and an Agenda for Future Studies. *Journal of Product Innovation Management*, *38*(1), 4 –20.

Attaran, M. (2020). Digital technology enablers and their implications for supply chain management. *Supply Chain Forum: An International Journal*, *21*(3), 158 –172.

Azzam, I., Alserhan, A., Mohammad, Y., Shamaileh, N., & Al-Hawary, S. (2023). Impact of dynamic capabilities on competitive performance: A moderated-mediation model of entrepreneurship orientation and digital leadership. *International Journal of Data and Network Science*, *7*(4), 1949–1962.

Barney, J. (1991). Firm Resources and Sustained Competitive Advantage. *Journal of Management*, *17*(1), 99–120.

BD, B. I. (2023, March 16). *Top Software Development and IT Companies in Bangladesh*. Business Inspection BD. https://businessinspection.com.bd/top-software-development-and-it-companies-in-bd/

Benitez, J., Arenas, A., Castillo, A., & Esteves, J. (2022). Impact of digital leadership capability on innovation performance: The role of platform digitization capability. *Information & Management*, *59*(2), 103590.

Bresciani, S., Huarng, K.-H., Malhotra, A., & Ferraris, A. (2021). Digital transformation as a springboard for product, process and business model innovation. *Journal of Business Research*, *128*, 204–210.

Breznik, L., & Lahovnik, M. (2016). Dynamic capabilities and competitive advantage: Findings from case studies. *Management: Journal of Contemporary Management Issues*, *21*(Special issue), 167–185.

Campbell, D. J. (1988). Task Complexity: A Review and Analysis. *Academy of Management Review*, *13*(1), 40–52.


DOI: https://doi.org/10.53461/jujbr.v24i02.62

Chanias, S., Myers, M. D., & Hess, T. (2019). Digital transformation strategy making in pre-digital organizations: The case of a financial services provider. *The Journal of Strategic Information Systems*, *28*(1), 17–33.

Chen, P., & Kim, S. (2023). The impact of digital transformation on innovation performance-The mediating role of innovation factors. *Heliyon*, *9*(3), 1–11.

De Waal, A., & Heijtel, I. (2016). Searching for effective change interventions for the transformation into a high-performance organization. *Management Research Review*, *39*(9), 1080–1104.

Ding, F., Li, D., & George, J. F. (2014). Investigating the effects of IS strategic leadership on organizational benefits from the perspective of CIO strategic roles. *Information & Management*, *51*(7), 865–879.

El Sawy, O., Amsinck, H., Kraemmergaard, P., & Vinther, A. L. (2016). How LEGO Built the Foundations and Enterprise Capabilities for Digital Leadership. *MIS Quarterly Executive*, *15*(2), 141–166.

Endris, H., Schalk, R., Van Engen, M., & Assen, M. (2017). Leadership Self- Efficacy and Effectiveness: The Moderating Influence of Task Complexity. *Journal of Leadership Studies*, *11*, 21–33.

Erhan, T., Uzunbacak, H. H., & Aydin, E. (2022). From conventional to digital leadership: Exploring digitalization of leadership and innovative work behavior. *Management Research Review*, *45*(11), 1524–1543.

Fatima, T., & Masood, A. (2023). Impact of digital leadership on open innovation: A moderating serial mediation model. *Journal of Knowledge Management*, *28*(1), 161–180.

Fitzgerald, M., Kruschwitz, N., Bonnet, D., & Welch, M. (2014). Embracing digital technology: A new strategic imperative. *MIT Sloan management review*, *55*(2), 1.

Fornell, C., & Larcker, D. F. (1981). Structural Equation Models with Unobservable Variables and Measurement Error: Algebra and Statistics. *Journal of Marketing Research*, *18*(3), 382–388.

Gell-Mann, M., & Lloyd, S. (1996). Information measures, effective complexity, and total information. *Complexity*, *2*(1), 44–52.

Hærem, T., Pentland, B. T., & Miller, K. D. (2015). Task Complexity: Extending a Core Concept. *Academy of Management Review*, *40*(3), 446–460.

Hair, Jr. J. F., Black, W. C., Babin, B. J., & Anderson, R. E. (2009). *Multivariate Data Analysis* (7th edition). Upper Saddle River: Pearson, NJ.

Ham, D.-H., Park, J., & Jung, W. (2011). A Framework-Based Approach to Identifying and Organizing the Complexity Factors of Human-System Interaction. *IEEE Systems Journal*, *5*(2), 213–222.

Hambrick, D. C., & Mason, P. A. (1984). Upper Echelons: The Organization as a Reflection of Its Top Managers. *The Academy of Management Review*, *9*(2), 193–206.

Hitt, M. A., Ireland, R. D., & Hoskisson, R. E. (2016). *Strategic management: Competitiveness & globalization. Concepts* (12e ed.). Cengage Learning.

Hu, L., & Bentler, P. M. (1999). Cutoff criteria for fit indexes in covariance structure analysis: Conventional criteria versus new alternatives. *Structural Equation Modeling: A Multidisciplinary Journal*, *6*(1), 1–55.

DOI: https://doi.org/10.53461/jujbr.v24i02.62

Ismail, A., Hidajat, T., Dora, Y. M., Prasatia, F. E., & Pranadani, A. (2023). *Leading the Digital Transformation: Evidence from Indonesia* (Delhi). Asadel Publisher.

Ismail, W. K. W., & Abdmajid, R. (2007). Framework of the culture of innovation: A revisit. *Jurnal Kemanusiaan*, *9*, 38–50.

Jung, K. B., Kang, S.-W., & Choi, S. B. (2022). Paradoxical Leadership and Involvement in Creative Task via Creative Self-Efficacy: A Moderated Mediation Role of Task Complexity. *Behavioral Sciences*, *12*(10), 1–16.

Ke, W., & Wei, K. K. (2008). Organizational culture and leadership in ERP implementation. *Decision Support Systems*, *45*(2), 208–218.

Khan, A., & Turowski, K. (2016). *A Perspective on Industry 4.0: From Challenges to Opportunities in Production Systems*. *2*, 441– 448.

Khin, S., & Ho, T. C. (2018). Digital technology, digital capability and organizational performance: A mediating role of digital innovation. *International Journal of Innovation Science*, *11*(2), 177–195.

Ko, A., Fehér, P., Kovacs, T., Mitev, A., & Szabó, Z. (2022). Influencing factors of digital transformation: Management or IT is the driving force? *International Journal of Innovation Science*, *14*(1), 1–20.

Leso, B. H., Cortimiglia, M. N., & Ghezzi, A. (2023). The contribution of organizational culture, structure, and leadership factors in the digital transformation of SMEs: A mixed-methods approach. *Cognition, Technology & Work*, *25*(1), 151–179.

Liu, H., & Jung, J.-S. (2021). The Effect of CSR Attributes on CSR Authenticity: Focusing on Mediating Effects of Digital Transformation. *Sustainability*, *13*(13), 7206.

Mak, H.-Y., & Max Shen, Z.-J. (2021). When Triple-A Supply Chains Meet Digitalization: The Case of JD.com's C2M Model. *Production and Operations Management*, *30*(3), 656–665.

Mihardjo, L. W. W., Sasmoko, S., Alamsyah, F., & Elidjen, E. (2019). The influence of digital leadership on innovation management based on dynamic capability: Market orientation as a moderator. *Management Science Letters*, 1059–1070.

Mollah, M. A., Amin, M. B., Debnath, G. C., Hosain, M. S., Rahaman, M. A., & Abdullah, M. (2024). Nexus among Digital Leadership, Digital Transformation, and Digital Innovation for Sustainable Financial Performance: Revealing the Influence of Environmental Dynamism. *Sustainability*, *16*(18), 8023.

Mollah, M. A., Choi, J.-H., Hwang, S.-J., & Shin, J.-K. (2023). Exploring a Pathway to Sustainable Organizational Performance of South Korea in the Digital Age: The Effect of Digital Leadership on IT Capabilities and Organizational Learning. *Sustainability*, *15*(10), 1–18.

Nadkarni, S., & Prügl, R. (2021). Digital transformation: A review, synthesis and opportunities for future research. *Management Review Quarterly*, *71*(2), 233–341.

Nambisan, S., Lyytinen, K., Majchrzak, A., & Song, M. (2017). Digital Innovation Management: Reinventing Innovation Management Research in a Digital World. *MIS Quarterly*, *41*(1), 223–238.

Narbona, J. (2016). Digital leadership, Twitter and Pope Francis. *Church, Communication and Culture*, *1*(1), 90–109.

DOI: https://doi.org/10.53461/jujbr.v24i02.62

Niu, S., Park, B. I., & Jung, J. S. (2022). The Effects of Digital Leadership and ESG Management on Organizational Innovation and Sustainability. *Sustainability*, *14*(23), 1-20.

Paladino, A. (2007). Investigating the Drivers of Innovation and New Product Success: A Comparison of Strategic Orientations*. *Journal of Product Innovation Management*, *24*(6), 534–553.

Panir, M. J. H., Xiaolin, X., & Zijun, M. (2018). Integration of ICT with knowledge management to foster digital innovation: The case of Bangladesh public sector. *International Journal of Managing Public Sector Information and Communication Technologies*, *9*(4), 01–16.

Prince, K. A. (2018). *Digital leadership: Transitioning into the digital age* [James Cook University]. https://doi.org/10.25903/5D2BDD672C0E5

Podsakoff, P. M., MacKenzie, S. B., Lee, J.-Y., & Podsakoff, N. P. (2003). Common method biases in behavioral research: A critical review of the literature and recommended remedies. *Journal of Applied Psychology*, *88*(5), 879–903.

Porfírio, J. A., Carrilho, T., Felício, J. A., & Jardim, J. (2021). Leadership characteristics and digital transformation. *Journal of Business Research*, *124*, 610–619.

Saarikko, T., Westergren, U. H., & Blomquist, T. (2020). Digital transformation: Five recommendations for the digitally conscious firm. *Business Horizons*, *63*(6), 825–839.

Saha, T. (2022). Effects of Digital Presence on Business Development: A Study from the Perspectives of Pandemic Situation in Bangladesh. *Canadian Journal of Business and Information Studies*, *4*(6), 125–136.

Saldanha, T. J. V., Mithas, S., & Krishnan, M. S. (2017). Leveraging Customer Involvement for Fueling Innovation: The Role of Relational and Analytical Information Processing Capabilities. *MIS Quarterly*, *41*(1), 267–286.

Schilke, O., Hu, S., & Helfat, C. E. (2018). Quo Vadis, Dynamic Capabilities? A Content-Analytic Review of the Current State of Knowledge and Recommendations for Future Research. *Academy of Management Annals*, *12*(1), 390–439.

Senadjki, A., Au Yong, H. N., Ganapathy, T., & Ogbeibu, S. (2023). Unlocking the potential: The impact of digital leadership on firms' performance through digital transformation. *Journal of Business and Socio-Economic Development*, *4*(2), 161–177.

Shin, J., Mollah, M. A., & Choi, J. (2023). Sustainability and Organizational Performance in South Korea: The Effect of Digital Leadership on Digital Culture and Employees' Digital Capabilities. *Sustainability*, *15*(3), 1-15.

Sia, S. K., & Appu, A. V. (2015). Work Autonomy and Workplace Creativity: Moderating Role of Task Complexity. *Global Business Review*, *16*(5), 772–784.

Tarliman, R. M., Purba, J. T., Sudibjo, N., & Meilani, Y. F. C. P. (2022). VUCA Transformational Leadership Towards Indonesian Micro and SMEs: Mediating Role of Organizational Learning and Dynamic Capabilities. *Italienisch*, *12*(2), 105–112.

Teece, D. J. (2007). Explicating dynamic capabilities: The nature and microfoundations of (sustainable) enterprise performance. *Strategic Management Journal*, *28*(13), 1319–1350.

DOI: https://doi.org/10.53461/jujbr.v24i02.62

Teece, D. J., Pisano, G., & Shuen, A. (1997). Dynamic capabilities and strategic management. *Strategic Management Journal*, *18*(7), 509–533.

Toduk, Y. (2023). Lideri dijital çağın liderlik sırları. *İstanbul: Doğan Egmont Yayınları*.

*Top IT Services Companies in Bangladesh—Nov 2024 Rankings | DesignRush*. (n.d.). Retrieved November 1, 2024, from https://www.designrush.com/agency/it-services/bd

Tuyen, B. Q., Phuong Anh, D. V., Mai, N. P., & Long, T. Q. (2023). Does corporate engagement in social responsibility affect firm innovation? The mediating role of digital transformation. *International Review of Economics & Finance*, *84*, 292–303.

Valentine, E., & Stewart, G. (2015). Enterprise Business Technology Governance: Three Competencies to Build Board Digital Leadership Capability. *2015 48th Hawaii International Conference on System Sciences*, 4513–4522.

Verhoef, P. C., Broekhuizen, T., Bart, Y., Bhattacharya, A., Qi Dong, J., Fabian, N., & Haenlein, M. (2021). Digital transformation: A multidisciplinary reflection and research agenda. *Journal of Business Research*, *122*, 889–901.

Wang, C.-J., Tsai, H.-T., & Tsai, M.-T. (2014). Linking transformational leadership and employee creativity in the hospitality industry: The influences of creative role identity, creative self-efficacy, and job complexity. *Tourism Management*, *40*, 79–89.

Wang, T., Lin, X., & Sheng, F. (2022). Digital leadership and exploratory innovation: From the dual perspectives of strategic orientation and organizational culture. *Frontiers in Psychology*, *13*, 1–20.

Weill, P., & Ross, J. W. (2009). *IT Savvy: What Top Executives Must Know to Go from Pain to Gain*. Brighton, MA: Harvard Business Press.

Yu, W., Ramanathan, R., Wang, X., & Yang, J. (2018). Operations capability, productivity and business performance: The moderating effect of environmental dynamism. *Industrial Management & Data Systems*, *118*(1), 126–143.

Zeike, S., Bradbury, K., Lindert, L., & Pfaff, H. (2019). Digital Leadership Skills and Associations with Psychological Well-Being. *International Journal of Environmental Research and Public Health*, *16*(14), 1–12.

Zheng, L. J., Xiong, C., Chen, X., & Li, C.-S. (2021). Product innovation in entrepreneurial firms: How business model design influences disruptive and adoptive innovation. *Technological Forecasting and Social Change*, *170*, 120894.

Zhou, P., Zhou, S., Zhang, M., & Miao, S. (2022). Executive Overconfidence, Digital Transformation and Environmental Innovation: The Role of Moderated Mediator. *International Journal of Environmental Research and Public Health*, *19*(10), 5990.

Zhou, Y. M. (2013). Designing for Complexity: Using Divisions and Hierarchy to Manage Complex Tasks. *Organization Science*, *24*(2), 339–355.

Zhu, P. (2015). *Digital Master: Debunk the Myths of Enterprise Digital Maturity*. Lulu Publishing Services.

DOI: https://doi.org/10.53461/jujbr.v24i02.62

## Appendix: Questionnaire

| Sources | Variables and items |
|---|---|
| Erhan et al. (2022); Mollah et al. (2023) | **Digital Leadership** |
| | Supervisor/leader raises the awareness of the employees of the institution about the risks of information technologies |
| | Supervisor/leader raises awareness of the technologies that can be used to improve organizational processes |
| | Supervisor/leaders determine the ethical behaviors required for informatics practices together with all its stakeholders. |
| | Supervisor plays an informative role to reduce resistance to innovations brought by information technologies |
| | Leaders share his/her own experiences about technological possibilities that will increase the contribution of his colleagues to the learning of organizational structure |
| | In order to increase participation in the corporate vision, a digital leader guides the employees of the institution about the technological tools that can be used |
| AlNuaimi et al. (2022) | **Digital Transformation** |
| | Digitalize everything that can be digitalized. |
| | Collect large amounts of data from different sources |
| | Aim is to create more robust networking with digital technologies between the different business processes |
| | Aim is to enhance an efficient customer interface with digitality |
| | Aim at achieving information exchange with digitality |
| Sia and Appu (2015) | **Task Complexity** |
| | Found my job very complex |
| | Task is mentally demanding |
| | Task required a lot of thought and problem solving |
| | Found job to be a challenging task |
| Paladino (2007) | **Digital Innovation** |
| | The quality of digital solutions is superior compared to our competitors |
| | The features of digital solutions are superior compared to our competitors |
| | The applications of digital solutions are totally different from our competitors |
| | Digital solutions are different from our competitors' in terms of product platform. |
| | New digital solutions are minor improvements of existing products |
| | Digital solutions are new to the market at the time of launching |

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