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The influence of national culture on the success of digital transformation in organizations

Khalid H. Alshammari *

Department of Management and Information Systems, University of Hail, Hail, Saudi Arabia

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ABSTRACT

This study examines the relationship between Hofstede's cultural dimensions, namely power distance, individualism, masculinity, uncertainty avoidance, and long-term orientation, and digital transformation success in Saudi Arabian organizations. The study aims to assess how culturally embedded values are associated with digital transformation outcomes in this context. Data were collected through a questionnaire administered to 238 employees in Saudi organizations, and Structural Equation Modeling (SEM) using AMOS was employed to test the proposed conceptual framework. The findings indicate that power distance, masculinity, uncertainty avoidance, and long-term orientation are positively associated with digital transformation success, whereas individualism does not exhibit a significant relationship. These results suggest that digital transformation strategies may be more effective when aligned with context-specific cultural conditions. The study contributes to the literature by providing empirical evidence on the role of national cultural dimensions in digital transformation within the underexamined Saudi context and by proposing a conceptual model linking cultural values to transformation outcomes. The findings offer both theoretical and practical implications for organizations seeking to align digital initiatives with prevailing cultural conditions. However, these implications should be interpreted in light of the study's specific sample and single-country context.

1. Introduction

Organizations continually experience disruption driven by innovation, and such disruption reshapes their knowledge bases, capabilities, and competitive positions (Christensen, 1997). Among the earliest and most influential perspectives on innovation adoption is Diffusion of Innovations, which explains how new ideas and technologies spread across social systems and classifies adopters into innovators, early adopters, the early and late majority, and laggards (Rogers et al., 2009). Although this model remains highly relevant, contemporary organizations operate in an environment far more turbulent and interconnected than the one in which it was originally formulated. Under intensified market competition, supply chain interdependence, and global technological acceleration, even late adopters can no longer remain passive, as they are increasingly compelled to accelerate technology adoption in order to sustain relevance and competitiveness (Sternberg et al., 2021).

This transformation has extended beyond the simple adoption of isolated technologies into broader changes in managerial practice and workplace organization. The movement from paper-based routines to digital systems has not only altered tools and workflows but has also introduced fundamentally new ways of working, coordinating, and creating value (Bolisani et al., 2020). Earlier streams of research examined technology-related behavior through models concerned with attitudes, intentions, and usage decisions, including the Theory of Planned Behavior (Ajzen, 1991) and later the Unified Theory of Acceptance and Use of Technology developed by Venkatesh et al. (2003). However, many of these models were primarily designed to explain technology acceptance or digitization at the user level rather than the broader organizational transition involved in digital transformation.

In recent years, digital transformation has therefore emerged as a central concern for organizations across sectors. It is commonly

* Corresponding Author.
Email Address: khha.alshammari@uoh.edu.sa
https://doi.org/10.21833/ijaas.2026.06.017
Corresponding author's ORCID profile:
https://orcid.org/0000-0002-6533-9377

understood as the integration of digital technologies into all areas of the organization in ways that fundamentally alter operations and value creation (Matt et al., 2015). More broadly, digital transformation involves reconfiguring organizational processes, structures, and experiences in response to rapidly changing environmental demands (Hess et al., 2020). Technologies such as cloud computing, the Internet of Things, mobile platforms, social media, and advanced data-driven tools including business intelligence and artificial intelligence have become major enablers of this transformation process (Vial, 2021; Schwertner, 2017). Yet literature also makes clear that digital technologies alone do not guarantee successful transformation. Rather, successful transformation depends substantially on organizational and societal readiness to accept, interpret, and institutionalize change, and this readiness is deeply shaped by culture (Kane et al., 2015; Hartl and Hess, 2017).

Despite the broad recognition of digital transformation as a strategic imperative, there remains a limited understanding of how national culture influences its success, particularly in the Saudi Arabian context. Much of the existing literature has emphasized technological readiness, digital capabilities, or organizational resources, while paying comparatively less attention to cultural conditions that shape responses to authority, collaboration, risk, and long-term planning. These cultural factors are highly relevant because they influence how employees interpret change, how organizations coordinate implementation, and how digital initiatives are accepted or resisted in practice (Leidner and Kayworth, 2006). Prior research has also shown that national cultural patterns affect information systems development, implementation, and related organizational outcomes across contexts (Fang et al., 2016). In this respect, digital transformation cannot be understood solely as a technological or managerial project, because its success is also conditioned by the cultural environment in which it unfolds.

This issue becomes particularly salient in Saudi Arabia, where digital transformation is closely connected to the national modernization agenda articulated in Vision 2030. The Saudi context is characterized by cultural features that may shape digital transformation trajectories in distinctive ways, including relatively high-power distance, collectivist tendencies, and strong uncertainty avoidance. At the same time, the country has pursued ambitious state-led digital initiatives across public services, infrastructure, and business development. Existing studies suggest that technical readiness, cultural resistance, and socio-organizational adjustment remain important challenges in the implementation of digital initiatives in Saudi Arabia (Albukhitan, 2020; Alotaibi and Campbell, 2022). This makes Saudi Arabia a particularly important setting in which to examine how culturally embedded values relate to digital transformation success. Accordingly, this study addresses the following research question: How do Hofstede's national cultural dimensions influence the success of digital transformation in Saudi organizations? More specifically, the study examines the relationships between power distance, individualism, masculinity, uncertainty avoidance, and long-term orientation, on the one hand, and digital transformation success, on the other. Hofstede's framework is adopted because it offers widely used, conceptually established, and measurable dimensions for examining cultural variation in organizational research (Hofstede, 2011).

By linking digital transformation outcomes to national cultural dimensions in the Saudi context, this study seeks to contribute to the growing literature on the non-technological determinants of digital transformation. It also offers practical insight for managers and policymakers seeking to design digital initiatives that are better aligned with prevailing cultural conditions. In doing so, the study advances a more context-sensitive understanding of digital transformation, one that recognizes that technological change is not implemented in a cultural vacuum but within socially embedded systems of values, expectations, and institutional practices.

2. Literature Review

2.1. Digital transformation: Concept, scope, and organizational implications

Organizations in both public and private sectors are increasingly moving away from paper-based and fragmented operating models toward digitally enabled forms of organizing. This shift has intensified as data, connectivity, and platform-based business logic have transformed how organizations compete and create value. Digitally native firms such as Google, Meta, and Amazon illustrate how organizations built around digital architectures can rapidly dominate markets, while long-established incumbents have faced growing threats to traditional value propositions (Sebastian et al., 2020). The case of Kodak remains one of the most cited examples of this dynamic, whereas firms such as Uber and Airbnb demonstrate how digital technologies can reshape existing industries or create entirely new market spaces (Ahmad et al., 2021).

Digital innovation has therefore accelerated structural change across the business environment. Yet literature does not treat digital transformation as a single or narrowly defined phenomenon. Some scholars frame it primarily in strategic terms, emphasizing the reconfiguration of competitive positioning, organizational resources, and digital business strategy (Bharadwaj et al., 2013; Matt et al., 2015; Mithas et al., 2013; Hess et al., 2020). Other studies conceptualize digital transformation more broadly as a process of business model renewal, process redesign, and paradigm-level organizational

change (Agarwal et al., 2010; Loebbecke and Picot, 2015; Stieglitz and Brockmann, 2012). Taken together, these perspectives suggest that digital transformation should not be reduced to technology acquisition alone, but understood as a multidimensional organizational transition.

This understanding has become increasingly important because digital disruption exerts pressure on organizations to develop new business models and adapt to rapidly changing market and organizational conditions (Hess et al., 2020; Schwertner, 2017). Such disruptions are not confined to a single sector but extend across healthcare, banking and finance, logistics, manufacturing, transportation, telecommunications, e-government, energy, and utilities, among others (Demirkan et al., 2016). The enabling technologies behind this transformation include mobile technologies, the Internet of Things, cloud computing, data analytics, and artificial intelligence, all of which expand the scope and speed of organizational change (Ebert and Duarte, 2018).

As a result, digital transformation has become a major concern in management, information systems, and adjacent disciplines (Vial, 2021; Bharadwaj et al., 2013). Hess et al. (2020) argued that digital transformation concerns the changes digital technologies bring to a company's business model, including altered products, organizational structures, and automated processes. Kane et al. (2015) similarly contended that the transformative potential of digital technologies lies not in the technologies themselves, but in the ways organizations deploy and integrate them to reshape their businesses. In this sense, digital transformation can be viewed as an IT-enabled change process, but one that goes well beyond simply deploying IT capabilities. Earlier work by Benjamin and Levinson (1993) already warned that introducing technological capabilities alone does not guarantee meaningful organizational transformation, a point later echoed by Schwertner (2017). This is one reason why digital transformation continues to generate definitional plurality in literature.

Indeed, definitions vary in emphasis but converge around the idea of deep organizational change enabled by digital technologies. Liu et al. (2011) defined digital transformation as the integration of digital technologies into business processes, while Fitzgerald et al. (2014) described it as the use of digital technologies to enable major business improvements. Westerman et al. (2011) emphasized radical improvement in enterprise performance or reach, whereas Bharadwaj et al. (2013) viewed it as an organizational strategy executed through digital resources to create differential values. Schuchmann and Seufert (2015) stressed the realignment of technology and business models to engage digital customers more effectively, and Chanias and Hess (2016) highlighted the pervasive changes induced by digital technologies throughout the organization. Related definitions by Lucas et al. (2013) and Mithas et al. (2013), similarly point to the broad restructuring of capabilities, processes, relationships, and value creation logic. Although these formulations differ in focus, they converge in portraying digital transformation as organization-wide renewal rather than isolated digitization.

This distinction is important because many organizations continue to struggle with digital transformation despite substantial investments. Kane et al. (2015) argued that organizations often need to reshape internal practices and cultural orientations to support transformation, while Benjamin and Levinson (1993) emphasized the need to prepare and educate employees as the primary audience of change. Libert et al. (2016) further reported that many organizations fail to achieve their digital goals because of persistent confusion over what digital transformation actually entails. Accordingly, Vial (2021) argued that digital transformation should be understood as a multifaceted phenomenon in which technology is only one component of a broader organizational puzzle.

A useful way to clarify this phenomenon is through the distinction between digitization, digitalization, and digital transformation. Several studies conceptualize these as related but analytically distinct phases (Loebbecke and Picot, 2015; Matt et al., 2015; Hess et al., 2020). Digitization refers to the conversion of analog information into digital form, allowing it to be processed, stored, and transmitted more efficiently (Loebbecke and Picot, 2015). Li et al. (2016) described digitization as the conversion of analog tasks into digital ones, while Vendrell-Herrero et al. (2017) interpreted it more broadly as an enabler of more cost-effective resource configurations. Verhoef et al. (2021) similarly noted that digitization often improves internal and external documentation processes without necessarily altering the underlying value creation model.

Digitalization represents a more advanced phase, in which digital technologies are used to modify and optimize existing business processes (Li et al., 2016). In this phase, information technology functions as an enabling infrastructure for new organizational capabilities, whether in business and relationship management (Baraldi and Nadin, 2006), distribution (Leviäkangas, 2016), or communication and customer interaction (Ramaswamy and Ozcan, 2016). Pagani and Pardo (2017) argued that digitalization enables greater coordination efficiency and improved user experiences through the redesign of existing processes. Digital transformation, by contrast, involves organization-wide change that supports the development of innovative business models and new forms of value creation that may be novel to the firm or even to the industry itself.

In this broader sense, digital transformation extends beyond the modification of isolated processes or tasks. Amit and Zott (2001) argued that it affects the entire organization and its way of conducting business, while Zott and Amit (2008), Pagani and Pardo (2017), and Gölzer and Fritzsche

(2017) connected it to business model innovation and new modes of value creation and capture. Singh and Hess (2020) added that digital transformation enables organizations to strengthen cross-border interaction with customers, suppliers, and competitors. Recent evidence also suggests that managers increasingly perceive digital transformation risk as a primary concern, underscoring the strategic and organizational uncertainty associated with these initiatives (Zhao et al., 2022). Fitzgerald et al. (2014) therefore argued that organizations must pursue holistic business improvement rather than isolated technological upgrades, and Hess et al. (2020) reiterated that digital transformation concerns not only the digitalization of products and services but also broader changes to organizational business models and structures.

Based on this literature, the present study adopts the definition proposed by Hartl and Hess (2017), who conceptualized digital transformation as IT-enabled organizational change through the digitalization of products, services, core processes, customer touchpoints, and business models. This definition is especially appropriate for the current study because it captures the breadth of transformation while preserving the central insight that digital transformation is not simply technological implementation, but a wider process of organizational reconfiguration.

2.2. Culture and digital transformation

Although digital transformation is often discussed in strategic and technological terms, its outcomes are also shaped by cultural conditions. Hartl and Hess (2017) argued that culture plays a crucial role in digital transformation initiatives, while Leidner and Kayworth (2006) and Schmiedel et al. (2015) showed that culture is a multidimensional construct that operates at national, organizational, and professional levels. The present study focuses specifically on national culture, examining how shared values and norms may shape the adoption, implementation, and success of digital transformation initiatives.

Within this line of inquiry, Hofstede's framework remains one of the most frequently used approaches for examining cultural differences in organizational and information systems research. Hofstede (2001) defined national culture as shared mental programming that distinguishes one group from another, while Hofstede and Bond (1984) identified several dimensions through which cultural variation can be examined, including power distance, individualism versus collectivism, masculinity versus femininity, uncertainty avoidance, and long-term versus short-term orientation.

These dimensions are especially relevant to digital transformation because they shape how individuals and organizations respond to authority, collaboration, competition, ambiguity, and strategic time horizons.

In the context of digital transformation, cultural alignment matters because transformation initiatives often require changes in routines, roles, decision structures, and acceptance of uncertainty. Societal norms can therefore shape whether technological change is trusted, resisted, centrally managed, collectively supported, or strategically sustained over time. Prior research indicates that both organizational and national culture influence transformation outcomes. At the organizational level, culture affects business process management and broader digital initiatives (Schmiedel et al., 2015; Hartl and Hess, 2017). At the national level, culture shapes information systems development, implementation, technology-related trust, and other organizational outcomes across countries (Fang et al., 2016; Hallikainen and Laukkanen, 2018; Leidner and Kayworth, 2006). Collectively, this literature suggests that digital transformation success is not only a function of technology and capability, but also of the cultural environment in which change is pursued.

At the same time, recent literature has increasingly emphasized the importance of digital organizational culture. Ahmed et al. (2022) showed that business digitization mediates the relationship between business model innovation, digital organizational culture, and bank performance. Martínez-Caro et al. (2020) demonstrated that digital organizational culture helps explain the relationship between digital technologies and firm performance, while Malewska et al. (2024) argued that such culture may represent a missing link between digital transformation and business model innovation in energy SMEs. These studies are important because they show that cultural explanations of transformation can operate at more than one level. National and organizational culture should therefore not be seen as competing explanations, but as complementary lenses. Nevertheless, because the present study is concerned with culturally embedded values in a specific national setting, it focuses on national culture rather than directly measuring digital organizational culture.

Hofstede's framework is also suitable because it has been extensively used in information systems and organizational studies to explain how cultural dimensions shape technology-related behavior and organizational outcomes (Leidner and Kayworth, 2006; Obeidat et al., 2012). While these dimensions are not absolute and can vary within countries, they provide a useful comparative framework for understanding broad cultural tendencies that may influence digital transformation. This does not mean that Hofstede's framework is the only available option. Other influential cultural models include Schwartz's values framework (Schwartz, 1994), Trompenaars and Hampden-Turner's model of cultural dimensions (Hampden-Turner and Trompenaars, 1997), and the GLOBE project, which expanded cross-cultural analysis through nine cultural dimensions (House et al., 2004). These

frameworks have generated important insights into cultural variation and organizational behavior.

However, Hofstede's framework remains particularly appropriate for the present study for both theoretical and practical reasons. Despite longstanding criticisms, it continues to be among the most widely cited and empirically tested frameworks in international business and management research, offering a parsimonious and usable structure for cross-national analysis (Tung and Verbeke, 2010). It is also widely applied in management and information systems research, which strengthens the comparability of the present study with prior work (Leidner and Kayworth, 2006). In contrast to broader frameworks developed primarily for large-scale multinational comparisons, Hofstede's model offers dimensions that are relatively direct, measurable, and interpretable when examining how national culture relates to organizational phenomena.

This suitability is particularly relevant in the Saudi Arabian context. Research on Arab and developing-country settings has already used Hofstede's dimensions as a foundation for comparative cultural analysis (Obeidat et al., 2012). Moreover, Saudi Arabia is frequently characterized by cultural features such as relatively high-power distance, collectivist tendencies, and strong uncertainty avoidance, all of which may shape how organizations respond to digital transformation initiatives. These features are well captured within Hofstede's framework, making it a relevant lens for analyzing cultural influences on digital transformation in Saudi organizations (Aljlayel, 2020). For these reasons, and while acknowledging the value of alternative frameworks such as Hampden-Turner and Trompenaars (2011), the present study adopts Hofstede's dimensions as the most suitable theoretical lens for examining the national cultural determinants of digital transformation success in Saudi Arabia.

2.3. Hypotheses development

2.3.1. Power distance and digital transformation

Power distance refers to the extent to which members of a society accept and expect unequal distributions of power within institutions and relationships. As a cultural dimension, it is not merely an organizational characteristic but is shaped by broader socialization processes within families, schools, and social institutions, where individuals learn how authority should be exercised and how deference should be expressed (Dai et al., 2022). In this sense, early social and institutional experiences contribute to the development of enduring orientations toward hierarchy and authority, which later influence behavior in organizational settings. Kroik et al. (2022) similarly argued that individuals tend to reflect the broader principles and value structures embedded in their social environments. In high power distance societies, authority structures are more readily accepted, and decision making is often expected to remain concentrated at higher organizational levels. By contrast, lower power distance contexts tend to encourage flatter communication patterns, greater autonomy, and more open questioning of authority. Although such openness may appear favorable for innovation, digital transformation in hierarchical settings may also benefit from strong top-level direction, especially when transformation requires coordinated investment, formal mandate, and organization-wide compliance. This is particularly relevant in large organizations where transformation is not limited to isolated teams but requires cross-functional integration, standardized processes, and institutional legitimacy.

In the Saudi Arabian context, power distance is relatively high, with strong social emphasis placed on hierarchy, respect for authority, and deference to senior figures. These cultural characteristics may support digital transformation when change initiatives are endorsed and actively driven by top management or public leadership. Saudi Arabia has in recent years pursued ambitious digital initiatives across multiple sectors, including education, healthcare, and finance, making it important to examine whether a hierarchical cultural orientation facilitates the implementation of digital transformation through stronger centralized direction and reduced resistance to executive decisions. On this basis, the following hypothesis is proposed:

H1: Power distance has a significant positive effect on Digital Transformation.

2.3.2. Individualism and digital transformation

Individualism refers to the extent to which people prioritize personal autonomy, self-expression, and individual goals over collective obligations. In organizational settings, individualistic orientations may matter for digital transformation because transformation often depends on initiative, experimentation, role flexibility, and willingness to challenge established ways of working. Solberg et al. (2020) noted that actors involved in digital transformation often work to instill a digital mindset within organizations and to manage the disruptions generated by new technologies. Such efforts require agency, initiative, and the capacity to advocate change across organizational boundaries.

This is also reflected in the emergence of formal roles dedicated to digital transformation. Albukhitan (2020) showed that assigning digital transformation responsibilities can signal strategic importance, while Kiron et al. (2016) suggested that such roles help align technological initiatives with broader organizational goals and facilitate collaboration across departments. These responsibilities often require proactive behavior, independent problem-solving, and a willingness to push organizational change, all of which may align more closely with

individualistic cultural tendencies than with highly conformity-oriented environments.

In Saudi Arabia, however, the relationship between individualism and digital transformation is theoretically more complex. Saudi society has traditionally been characterized by collectivist values, but recent changes suggest a partial shift toward greater autonomy, personal aspiration, and self-expression, especially among younger generations and urban populations. Al Lily et al. (2022) and Aljlayel (2020) indicated that internet access, social media exposure, and global educational influences have contributed to rising individualistic tendencies in some segments of society. Moreover, Vision 2030 has reinforced themes such as entrepreneurship, innovation, initiative, and performance-based advancement, all of which may strengthen the relevance of individual-level agency in digital environments. While these trends coexist with enduring collectivist norms, they suggest that greater individualism may positively support digital transformation by encouraging initiative, adaptability, and ownership of change. Accordingly, the following hypothesis is proposed:

H2: Individualism has a significant positive effect on Digital Transformation.

2.3.3. Masculinity and digital transformation

In Hofstede's framework, masculinity refers not to biological sex or the dominance of men, but to a cultural preference for achievement, competitiveness, assertiveness, performance, and visible success. This distinction is important in the context of digital transformation, because the relevant issue is not who leads transformation biologically, but whether a society or organizational environment rewards ambition, decisiveness, and competitive advancement. Alam et al. (2022) showed that information and communication technologies influence social behavior in complex ways, while Candelo et al. (2022) noted that digital communication environments alter how organizations interact with stakeholders and how participation is expressed. These changes increase pressure on organizations to respond quickly, signal competence, and maintain performance under heightened visibility.

This performance-oriented logic is particularly relevant in sectors facing rising customer expectations and growing digital competition. In Saudi Arabia, this is evident in the banking sector, where customers increasingly expect efficient, mobile, and digitally integrated service delivery. Studies by Alnemer (2022) and Abualsauod and Othman (2020) indicated that Saudi banking customers have become more digitally engaged, placing greater pressure on organizations to innovate and remain competitive. In such an environment, a cultural orientation that values achievement, performance, and decisive leadership may strengthen the organizational drive needed to pursue digital transformation rather than merely reacting to it.

In the Saudi context, masculinity may therefore support digital transformation to the extent that it aligns with broader expectations around competitiveness, goal attainment, status, and assertive leadership. These features can be particularly relevant in sectors such as construction, oil, finance, and government-linked institutions, where strong leadership and performance orientation are often culturally and organizationally reinforced. Vision 2030 further amplifies this logic by emphasizing national competitiveness, modernization, and measurable achievement. Although traditional social expectations continue to shape gender roles and public life in Saudi Arabia, the theoretical relevance of masculinity in this study lies in its value orientation toward success and assertive achievement rather than in gendered demographic composition alone. On this basis, the following hypothesis is proposed:

H3: Masculinity has a significant positive effect on Digital Transformation.

2.3.4. Uncertainty avoidance and digital transformation

Uncertainty avoidance refers to the extent to which members of a society prefer predictability, formal rules, and structured approaches to dealing with ambiguity and future uncertainty (Hofstede, 2001). This dimension is especially relevant to digital transformation because digital markets and technology environments are inherently dynamic. Digital technologies continuously reshape business boundaries, lower entry barriers, and enable new market actors to challenge established firms. Zaki (2019) noted that digital transformation creates new forms of strategic uncertainty, while Linder and Williander (2017) showed that firms can recombine products and services into new digital offerings that shift the basis of competition. Online platforms further accelerate these dynamics by enabling new market niches and lowering transaction frictions. Similarly, McMahon et al. (2021) showed that competition increasingly moves from the physical to the digital realm, while Ronteau et al. (2023) argued that digital marketplaces such as Amazon, AliExpress, and eBay have displaced traditional intermediaries in major sectors.

At first glance, high uncertainty avoidance might appear to inhibit digital transformation because transformation involves disruption, experimentation, and unfamiliar processes. In a context where rules, stability, and social predictability are valued, new technologies may be perceived as threatening existing routines, job security, or accepted norms. This is particularly plausible in Saudi Arabia, where strong uncertainty avoidance may generate resistance to ambiguous or poorly managed change. However, this does not necessarily imply that uncertainty avoidance

undermines digital transformation in all cases. In contexts where transformation is introduced through formal strategies, clear governance structures, risk controls, implementation roadmaps, and strong institutional sponsorship, high uncertainty avoidance may instead support transformation by creating demand for disciplined and carefully managed change.

This distinction is important for the Saudi context. Saudi Arabia's digital transformation agenda has been strongly linked to state-led planning, structured reform programs, and large-scale institutional initiatives. In such an environment, uncertainty avoidance may not simply translate into resistance to digital change. Rather, it may increase support for transformation when that transformation is framed as legitimate, formally governed, and strategically necessary. Thus, uncertainty avoidance may contribute positively to digital transformation when organizations reduce ambiguity through clear procedures, implementation frameworks, and institutional assurance. Accordingly, the following hypothesis is proposed:

H4: Uncertainty avoidance has a significant positive effect on Digital Transformation.

2.3.5. Long-term orientation and digital transformation

Long-term orientation refers to the extent to which a society values future-oriented thinking, persistence, adaptation, and the pursuit of longer-horizon goals over immediate short-term considerations. This dimension is theoretically relevant to digital transformation because transformation initiatives typically require sustained investment, strategic patience, organizational learning, and the delayed realization of benefits. Dicks et al. (2005) noted that digital technologies create value not only through immediate operational applications but also by enabling the storage, retrieval, and analysis of data for future organizational use. This future-oriented capacity makes digital transformation especially compatible with long-term strategic planning.

Zaki (2019) similarly argued that organizations pursue digital transformation not only for immediate efficiency gains but also to maximize the long-run value of their data, capabilities, and customer relationships. Through analytics and digital platforms, organizations can improve decision quality, tailor long-term service provision, and create more durable forms of competitive advantage. Binsawad (2020), for example, showed how Saudi hotels and restaurants use social media platforms such as Twitter and Facebook to monitor real-time customer sentiment and manage service interactions, illustrating how digital tools can support longer-term customer and organizational learning.

In Saudi Arabia, long-term orientation is particularly salient because digital transformation is closely tied to national development planning. The country has historically relied on long-range strategic planning through national development plans, and Vision 2030 represents a particularly clear expression of long-horizon modernization and economic diversification. Investments in digital infrastructure, e-commerce, human capital, and workforce development reflect a future-oriented commitment to building a more diversified and sustainable economy. In this sense, long-term orientation may support digital transformation by encouraging persistence, strategic continuity, and willingness to invest in capabilities whose benefits may unfold over time. Therefore, the following hypothesis is proposed:

H5: Long-term orientation has a significant positive effect on Digital Transformation.

2.4. Conceptual model

Digital transformation has become a central organizational imperative across industries and sectors, driven by the growing strategic importance of digital technologies and their capacity to reshape processes, structures, services, and business models (Vial, 2021; Hartl and Hess, 2017). However, although technological advancement provides the operational foundation for transformation, successful digital transformation also depends on the cultural context within which it is implemented. As Leidner and Kayworth (2006) argued, culture influences how individuals and organizations interpret, accept, and enact information systems and technology-related changes. In this respect, digital transformation should not be viewed solely as a technological phenomenon, but also as a culturally embedded organizational process.

To capture this cultural dimension, the present study adopts Hofstede's Cultural Dimensions framework, which conceptualizes national culture through five key dimensions: power distance, individualism, masculinity, uncertainty avoidance, and long-term orientation (Hofstede, 2001). These dimensions provide a useful theoretical lens for examining how culturally embedded values may shape organizational responses to digital transformation. Their relevance is particularly strong in the Saudi Arabian context, where hierarchical structures, collectivist tendencies, and strong uncertainty avoidance may affect how digital initiatives are interpreted, implemented, and sustained (Aljlayel, 2020).

Based on the preceding literature review and hypothesis development, the proposed conceptual model assumes that each of the five cultural dimensions is related to digital transformation success in Saudi organizations. More specifically, the model proposes that power distance may facilitate transformation through centralized authority and top-down coordination; individualism may support transformation through autonomy, initiative, and innovative behavior; masculinity may reinforce

achievement orientation, competitiveness, and decisive leadership; uncertainty avoidance may support transformation when change is structured, formally governed, and institutionally legitimized; and long-term orientation may strengthen transformation through strategic persistence, future-oriented planning, and sustained investment in digital capabilities (Hartl and Hess, 2017; Leidner and Kayworth, 2006).

Accordingly, the conceptual model presented in Fig. 1 positions the five Hofstede dimensions as independent variables and digital transformation success as the dependent variable. The model provides a structured framework for testing the extent to which national cultural dimensions are associated with digital transformation outcomes in the Saudi Arabian context. In doing so, it contributes to the growing literature on the non-technological determinants of digital transformation and offers a contextually grounded framework for examining how cultural values may enable or constrain organizational transformation initiatives.

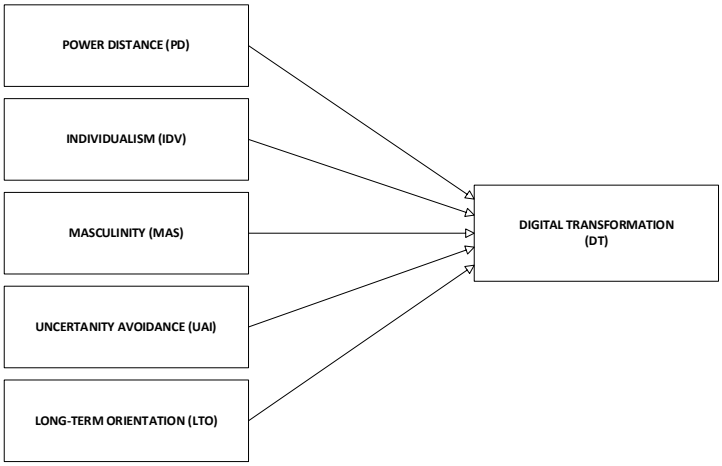

Fig. 1: Theoretical model

3. Methodology

3.1. Research design

This study adopts a quantitative research design to examine the relationships between national cultural dimensions, namely power distance, individualism, masculinity, uncertainty avoidance, and long-term orientation, and digital transformation success in Saudi Arabian organizations. A quantitative approach was considered appropriate because it enables the systematic testing of hypothesized relationships among theoretically specified variables and allows patterns across respondents to be examined in a structured manner. By focusing on the association between national cultural dimensions and digital transformation success, the study seeks to contribute to current understanding of how culturally embedded values may shape organizational transformation outcomes in the Saudi context.

The primary objective of the research was to examine whether Hofstede's cultural dimensions can help explain variation in perceived digital transformation success. To achieve this objective, the study drew on the existing literature to identify the most relevant constructs and to develop survey items aligned with the research question. The central research question guiding the study is as follows:

How do national cultural dimensions influence the success of digital transformation in Saudi Arabian organizations?

To address this question, a cross-sectional survey design was employed, and the resulting data were analyzed statistically. This design was chosen because it is suitable for examining hypothesized relationships among latent constructs across a relatively broad respondent base. The study is intended to generate insights of relevance to policymakers, managers, and other stakeholders concerned with improving digital transformation outcomes in contexts shaped by distinctive cultural values.

Although demographic characteristics such as age, gender, and organizational size were collected, these variables were used primarily to describe the sample and contextualize the findings rather than being incorporated into the structural model. The study remained centered on national culture as the primary explanatory lens. At the same time, previous studies suggest that perceptions of digital transformation and digital technologies may vary across demographic groups, including gender and age, which means these factors remain potentially relevant for future extensions of the model (Alam et al., 2022; Abubakar, 2025).

Hofstede's framework conceptualizes culture at the national level, whereas the present study collected data from individual respondents. The rationale for this approach is that individual perceptions can provide an empirical window into how broader cultural values are experienced and reproduced within organizational settings. In other words, the study does not claim to measure national culture directly at the macro level, but rather examines individual perceptions that are shaped by,

and interpreted within, a shared national-cultural context. This approach allows the study to explore whether culturally embedded value orientations are associated with perceived digital transformation success, while recognizing that such an approach does not eliminate the methodological limitations associated with inferring national-level patterns from individual-level responses.

3.2. Case study context

Saudi Arabia was selected as the case context because it offers a particularly important setting in which to examine the relationship between national culture and digital transformation. Under Vision 2030, Saudi Arabia is undergoing extensive economic and institutional reform, with digital transformation positioned as a central pillar of national development. At the same time, prior studies indicate that transformation efforts in the Saudi context are shaped not only by technological and managerial factors but also by cultural conditions, including resistance to change, hierarchical authority structures, and tensions between traditional values and modernization initiatives (Alshammari et al., 2024; Albukhitan, 2020; Alotaibi and Campbell, 2022).

Saudi Arabia is therefore analytically relevant because it combines an ambitious top-down transformation agenda with a cultural environment characterized by relatively high-power distance, collectivist tendencies, and strong uncertainty avoidance. These cultural traits are likely to shape how authority is exercised, how risks are perceived, and how collaboration and change are managed in organizations (Cassell and Blake, 2012; Alotaibi and Campbell, 2022; Aljlayel, 2020). Examining digital transformation in such a setting is particularly useful for understanding how cultural values may facilitate or constrain organizational transformation efforts.

Vision 2030 also provides an important contextual backdrop for the study. As a national development program, it seeks to diversify the economy, modernize public services, and strengthen innovation through investments in digital infrastructure, e-government, entrepreneurship, and human capital. By situating the study within this broader reform agenda, the research highlights how national development priorities and cultural values may interact in shaping digital transformation outcomes within Saudi organizations (Alshammari and Alshammari, 2023).

Although the study did not include organizational characteristics such as sector and size as explanatory variables in the structural model, these characteristics were collected to contextualize the sample. Prior research suggests that organizational size and sector can affect the adoption, pace, and outcomes of digital transformation initiatives (Valaskova et al., 2025). However, incorporating these characteristics directly into the model would have expanded the scope of the study beyond its central objective, which was to test the relationships between Hofstede's cultural dimensions and digital transformation success. Future research may therefore extend the framework by examining how organizational characteristics interact with cultural values in shaping transformation outcomes.

3.3. Instrument design

The survey instrument was structured into three sections to align with the study's objectives. Section A collected demographic and contextual information, including gender, age, nationality, education, experience with digital transformation, organizational size, and organizational sector. These items were intended to describe the respondent profile and provide contextual information for interpreting the findings.

Section B measured national cultural dimensions using 19 items adapted from Aljlayel (2020). These items were designed to capture the five Hofstede dimensions examined in the study, namely power distance, individualism, masculinity, uncertainty avoidance, and long-term orientation. Section C measured digital transformation success using seven items adapted from Pettersson et al. (2024), with the aim of capturing respondents' perceptions of digital technology adoption and related organizational outcomes.

All items were measured using a five-point Likert scale. Prior to full distribution, the questionnaire was pilot tested with members of the target population to assess clarity, wording, and contextual relevance. Revisions were made on the basis of this feedback to improve comprehensibility and alignment with the study context. The final questionnaire, including the items associated with each construct, is provided in Appendix A.

3.4. Sampling method and data collection

This study adopted a structured stratified recruitment strategy to obtain responses from employees involved in digital transformation across a range of Saudi organizational settings. To capture variation in organizational context, the sample was structured across sectoral categories, including public, private, non-profit, and semi-government organizations, as well as across organizational size categories, including small, medium, large, and giant organizations. This design was intended to ensure broad coverage of organizational environments that may differ in their digital transformation priorities, resources, and implementation practices.

Following this stratification logic, respondents were recruited from organizations representing these different categories, with particular attention given to employees whose roles involved digital transformation projects, digital initiatives, or related functions. This approach ensured that participation was drawn from individuals with relevant exposure to the phenomenon under investigation, thereby strengthening the substantive relevance of the data collected.

To support wide organizational reach, invitations to participate were distributed through organizational contacts, professional networks, and industry associations. This multi-channel recruitment process was used intentionally to access respondents across different sectors, organizational levels, and functional roles. As a result, the study was able to include participants beyond top management and beyond a single professional category, thereby capturing perspectives from both strategic and operational positions involved in digital transformation.

The final sample consisted of respondents drawn from multiple organizations of different sizes and sectors rather than from a single institutional setting. This diversity enhances the analytical value of the dataset by allowing the study to examine digital transformation perceptions across a broad range of Saudi organizational contexts. In this respect, the sampling approach was well suited to the study's objective of investigating the relationship between national cultural dimensions and digital transformation success within Saudi Arabia.

3.5. Rationale for sample size

The final sample consisted of 238 respondents. This size was considered adequate for the purposes of structural equation modeling. Kline (2023) noted that SEM commonly requires sample sizes of around 200 cases, although the adequacy of sample size also depends on model complexity, estimation strategy, and data quality. In the present study, the sample size was judged sufficient to support estimation of the proposed model and to allow the hypothesized relationships among the constructs to be examined with reasonable statistical stability.

The sample was also drawn from respondents with varied backgrounds in terms of sector, organizational size, and demographic profile, which provided a broader contextual basis for analysis. Nevertheless, the adequacy of the sample for SEM should not be conflated with statistical representativeness of the Saudi workforce as a whole. The sample size supports the analytical requirements of the model, but the transferability of the findings remains bounded by the characteristics of the actual respondents included in the study.

3.6. Data analysis

Data were collected through an online survey format, which facilitated access to respondents across different organizations and locations within Saudi Arabia. Online distribution was particularly suitable for this study because it enabled efficient administration, wider reach, and practical access to respondents involved in digital transformation across diverse organizational contexts.

The collected data were analyzed using Structural Equation Modeling with AMOS. SEM was selected because it allows multiple relationships among latent variables to be examined simultaneously, which is appropriate for a model involving several cultural dimensions and one outcome construct. This analytical approach enabled the study to assess the magnitude, direction, and statistical significance of the hypothesized relationships among the variables included in the conceptual model.

At the same time, the use of SEM in this study should be interpreted appropriately. SEM provides a useful method for testing theoretically specified relationships among constructs, but in a cross-sectional survey design it does not by itself establish causality in a strong sense. Accordingly, the analysis in this study is interpreted as evidence of statistically supported relationships consistent with the proposed model, rather than as definitive proof of causal effects.

4. Results

4.1. Demographic profiles

The statistical analyses were based on responses from 238 employees in Saudi Arabia. Table 1 presents the demographic profile of the respondents. Male participants constituted 85.7 percent of the sample (204 respondents), while female participants represented 14.3 percent (34 respondents). In terms of age, the largest group was 36 to 45 years old, accounting for 42.4 percent of the sample, followed by those aged 26 to 35 years at 35.3 percent. The majority of respondents were Saudi nationals, representing 92.4 percent of the sample.

With regard to educational attainment, 43.7 percent of respondents held a bachelor's degree, and 29.4 percent held a master's degree, indicating a relatively well-educated sample. In relation to experience in digital transformation, 26.5 percent reported having 1 to 3 years of experience and 26.1 percent reported 4 to 6 years of experience. Regarding organizational size, 4.2 percent of respondents worked in small organizations, 26.9 percent in medium-sized organizations, 33.2 percent in large organizations, and 35.7 percent in giant organizations.

In terms of sectoral distribution, 47.5 percent of respondents were employed in government ministries, 13.4 percent in government companies, 14.7 percent in semi-government agencies, 23.1 percent in the private sector, and 1.3 percent in non-profit organizations. This distribution indicates that the sample includes respondents from a range of organizational settings within the Saudi Arabian context.

4.2. Measurement model

Confirmatory Factor Analysis, using AMOS version 21, was conducted to evaluate the measurement model for each construct. CFA is used to assess whether the observed items adequately represent their underlying latent constructs, and it is an essential step in Structural Equation Modeling

because it allows the researcher to examine the adequacy of the measurement model before proceeding to the structural model (Awang, 2012).

To improve measurement quality, factor loadings were examined carefully, and items with factor loadings below 0.60 were considered for deletion in accordance with the guideline suggested by Awang (2012). This process helped refine the measurement model by retaining items that more adequately represented the constructs being measured. Model fit was then assessed using commonly accepted indices, including RMSEA, CFI, and TLI. Following Awang (2012), acceptable thresholds were RMSEA of 0.08 or below, and CFI and TLI values of 0.90 or above.

The final measurement model achieved an acceptable level of fit. Fig. 2 presents the final CFA model after the removal of problematic items. Based on the reported fit indices, the model was considered sufficiently consistent with the observed data, indicating that the measurement structure was appropriate for further analysis.

Table 1: Demographic profile

Characteristic	Category	Frequency	Percentage (%)
Gender	Male	204	85.7
	Female	34	14.3
Age	18-25	2	0.8
	26-35	84	35.3
	36-45	101	42.4
	46-55	44	18.5
	56-65	6	2.5
	More than 65	1	0.4
Nationality	Saudi	220	92.4
	Non-Saudi	18	7.6
Education	High School	14	5.9
	Diploma	30	12.6
	Bachelor	104	43.7
	Master	70	29.4
	PhD	20	8.4
Experience in digital transformation	Less than one year	47	19.7
	1-3 years	63	26.5
	4-6 years	62	26.1
	6-10 years	37	15.5
	More than 10 years	29	12.2
Organization's size	Small	10	4.2
	Medium	64	26.9
	Large	79	33.2
	Giant	85	35.7
Organization's sector	Government sector (ministry)	113	47.5
	Government company	32	13.4
	Non-for-profit organization	3	1.3
	Semi-government (authority or gov. agency)	35	14.7
	Private sector	55	23.1

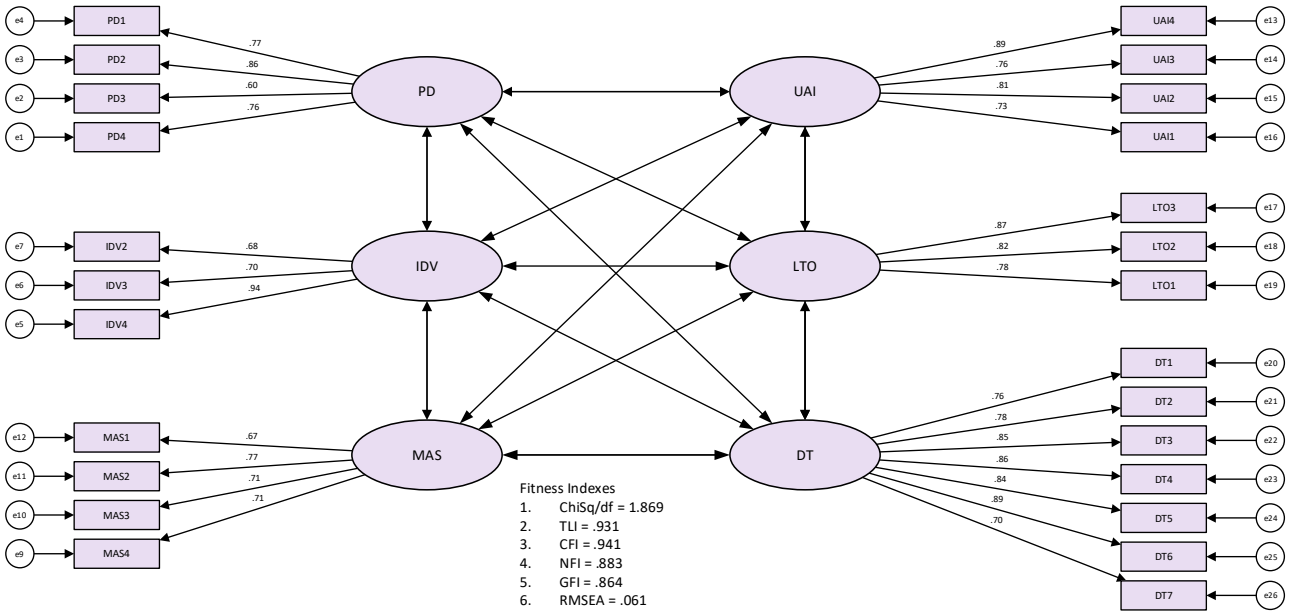

Fig. 2: Final measurement model

Based on the fitness indices illustrated in Fig. 2, the CFA model demonstrated acceptable fit to the data, consistent with the recommendations of Al-Mamary and Alshallaqi (2022) and Al-Mamary (2022). Specifically, RMSEA was below 0.08, ChiSq/df was below 3, NFI and GFI exceeded 0.80,

and both TLI and CFI were above 0.90. In addition, all retained items had factor loadings of 0.60 or higher. Following the guidelines of Al-Mamary et al. (2015), the measurement model was therefore considered adequate for representing the underlying constructs.

4.3. Reliability and validity

After completing the CFA procedure, the reliability and validity of the constructs were assessed. As noted by Awang (2012), measurement model assessment should include examination of convergent validity, discriminant validity, and construct reliability. Convergent validity is supported when the Average Variance Extracted exceeds 0.50, while construct reliability is supported when Composite Reliability exceeds 0.70.

The results indicate that the measurement model achieved acceptable reliability and validity. All constructs recorded AVE values above 0.50 and CR values above 0.70, as shown in Table 2, indicating satisfactory convergent validity and internal consistency. These findings suggest that the retained items adequately measure their intended constructs.

Discriminant validity was then examined using the square root of AVE criterion. As indicated by Awang (2012), discriminant validity is supported when the square root of AVE for each construct is greater than the correlations between that construct and the other constructs in the model. In Table 3, the diagonal values represent the square roots of AVE, while the off-diagonal values represent inter-construct correlations. Since each diagonal value exceeds the corresponding off-diagonal correlations, the results support discriminant validity.

Table 2: Summary of the CFA report

Construct	Item	Factor loading	CR (>= 0.7)	AVE (>= 0.5)
PD	PD1	0.77	0.840	0.570
	PD2	0.86		
	PD3	0.60		
	PD4	0.76		
IDV	IDV1	0.68	0.823	0.614
	IDV2	0.70		
	IDV3	0.94		
MAS	MAS1	0.67	0.810	0.516
	MAS2	0.77		
	MAS3	0.71		
	MAS4	0.71		
UAI	UAI1	0.89	0.875	0.638
	UAI2	0.76		
	UAI3	0.81		
	UAI4	0.73		
LTO	LTO1	0.87	0.863	0.678
	LTO2	0.82		
	LTO3	0.78		
DT	DT1	0.76	0.923	0.663
	DT2	0.78		
	DT3	0.85		
	DT4	0.86		
	DT5	0.84		
	DT6	0.89		
	DT7	0.70		

Overall, the reliability and validity assessments indicate that the measurement model was acceptable and suitable for testing the structural relationships proposed in the study.

4.4. Structural model

The structural model was evaluated using several goodness-of-fit indices, including GFI, NFI, TLI, CFI, ChiSq/df, and RMSEA. The proposed model demonstrated satisfactory fit, with GFI and NFI greater than 0.80, TLI and CFI greater than 0.90, ChiSq/df less than 3, and RMSEA less than 0.08. These findings indicate that the structural model fits the observed data at an acceptable level. Fig. 3 presents the revised structural model.

Table 3: Discriminant validity

	PD	IDV	MAS	UAI	LTO	DT
PD	0.755					
IDV	0.613	0.784				
MAS	0.557	0.555	0.718			
UAI	0.020	0.038	0.012	0.798		
LTO	0.026	0.016	0.003	0.606	0.823	
DT	0.053	0.104	0.165	0.635	0.732	0.814

Table 4 presents the results of hypothesis testing for the relationships between Hofstede's cultural dimensions and digital transformation in Saudi Arabian organizations. The estimates were obtained using AMOS. For H1, the relationship between power distance and digital transformation was statistically significant, with a t-value of 2.265 and a p-value of 0.024. Accordingly, H1 was supported

For H2, the relationship between individualism and digital transformation was not statistically significant, with a t-value of 1.821 and a p-value of 0.069. Accordingly, H2 was not supported.

For H3, the relationship between masculinity and digital transformation was statistically significant, with a t-value of 2.615 and a p-value of 0.009. Accordingly, H3 was supported.

For H4, the relationship between uncertainty avoidance and digital transformation was statistically significant, with a t-value of 4.356 and a p-value below 0.001. Accordingly, H4 was supported.

For H5, the relationship between long-term orientation and digital transformation was statistically significant, with a t-value of 7.282 and a p-value below 0.001. Accordingly, H5 was supported.

Overall, the findings show that power distance, masculinity, uncertainty avoidance, and long-term orientation were significantly associated with digital transformation, whereas individualism was not significantly associated with digital transformation in the sample studied.

Table 4: Results of hypothesis testing

Path	STDEV	T-statistics	P	Results
DT ← PD	0.064	2.265	0.024	Supported
DT ← IDV	0.057	1.821	0.069	Not Supported
DT ← MAS	0.044	2.615	0.009	Supported
DT ← UAI	0.071	4.356	< 0.001	Supported
DT ← LTO	0.068	7.282	< 0.001	Supported

STDEV: Standard deviation

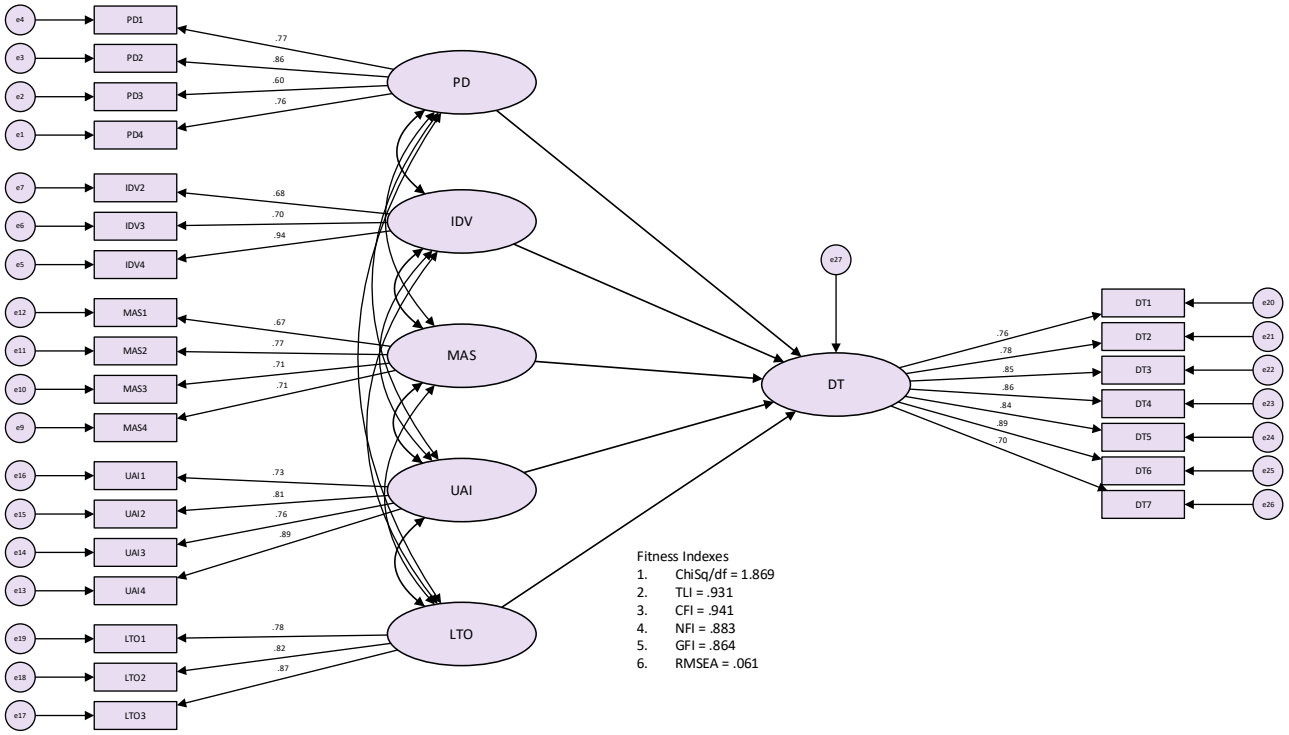

Fig. 3: Revised structural model

5. Discussion

The findings of this study show that four cultural dimensions, namely power distance, masculinity, uncertainty avoidance, and long-term orientation, were positively associated with digital transformation, whereas individualism was not significantly associated with digital transformation in the sampled Saudi organizational context. These findings suggest that digital transformation in Saudi Arabia is shaped not only by technological capability but also by culturally embedded patterns of authority, coordination, performance orientation, risk management, and future planning. In this sense, the study supports the broader proposition that digital transformation is a socio-cultural as well as technological process, which is consistent with Hofstede (2011) and with the growing body of work linking national culture to organizational change and digital transformation outcomes, such as Aljlayel (2020).

5.1. Power distance and digital transformation

The results support Hypothesis 1 and indicate that power distance is positively associated with digital transformation. In the Saudi context, this result is plausible because high power distance tends to normalize centralized authority, hierarchical coordination, and deference to senior leadership, all of which can facilitate the implementation of digital initiatives when transformation is driven from the top. As Hofstede (2011) argued, power distance concerns how societies manage interpersonal inequality and how authority is perceived and accepted. In settings where leaders are expected to direct organizational change, digital transformation may benefit from clearer mandates, faster formal decision-making, and stronger compliance once strategic direction has been established.

This interpretation is also relevant to the Saudi organizational environment. Aljlayel (2020) emphasized that power distance remains an important characteristic of Saudi national culture, while Alotaibi and Campbell (2022) showed that hierarchical authority structures continue to shape organizational responses to change in the Kingdom. In that sense, the positive effect observed here likely reflects the operational advantages of centralized leadership in coordinating complex digital initiatives across functions and levels. Abdullah et al. (2006) similarly noted that the redistribution and structuring of power across organizational levels can influence transformation processes, while Rice (2004) linked more structured and supportive work environments to innovation, learning, and quality improvement.

At the same time, this finding should not be interpreted to mean that high power distance is universally beneficial for all dimensions of organizational transformation. Rashad (2024) noted that Saudi organizational culture continues to place considerable value on hierarchy and obedience to authority, and while this may help align implementation efforts, it may also restrict bottom-up participation and reduce the contribution of employees in lower organizational positions. Therefore, the positive association found in this study is better understood as support for coordination and execution rather than as evidence that high power distance automatically enhances creativity or participatory innovation. The implication is that Saudi organizations may benefit from the implementation advantages of hierarchy,

but they should also create channels for broader employee involvement if they want digital transformation to remain adaptive and innovative over time.

5.2. Individualism and digital transformation

The findings do not support Hypothesis 2, indicating that individualism was not significantly associated with digital transformation in the present study. This result differs from expectations found in some earlier discussions of innovation and personal autonomy, including Espig et al. (2022) and Hofstede (2011), where individualistic values are often linked to initiative, independence, and self-directed behavior. However, in the Saudi context, the non-significant result is theoretically understandable and, in fact, quite revealing.

Saudi Arabia has long been described as a collectivist society in which loyalty to family, community, and other in-groups is highly valued, as noted by Cassell and Blake (2012). In such environments, organizational behavior is often shaped less by individual autonomy and more by relational obligations, shared norms, and collective coordination. This means that digital transformation may not depend primarily on the individualistic traits often associated with self-expression or independent initiative. Instead, transformation may proceed more effectively when framed around collective goals, shared responsibility, and group-based legitimacy.

This interpretation can be extended by considering how collectivism operates within organizational settings during periods of change. In collectivist environments, transformation is more likely to gain traction when it is embedded in shared goals, collective accountability, and socially legitimate coordination structures rather than in strongly individual-centered initiative (Dierdorff et al., 2011). This implies that innovation and change in Saudi organizations may be mobilized less through individual discretion and more through team-based alignment, institutional endorsement, and group-oriented commitment (Almatrodi and Skoumpopoulou, 2023). In this sense, the insignificance of individualism does not indicate that initiative is unimportant, but rather that initiative may need to be socially embedded to become effective during organizational transformation. This interpretation is also compatible with recent Saudi evidence showing that a strong digital culture can connect leadership initiatives to innovation and sustain transformation efforts.

This interpretation is consistent with the Saudi organizational setting, where collective alignment and consensus often remain important in decision-making and change implementation. Alotaibi and Campbell (2022) argued that organizational responses to transformation in Saudi Arabia remain deeply intertwined with broader cultural values, and the present finding suggests that digital transformation in this context is not significantly driven by individual-level autonomy alone. For that reason, the insignificance of individualism should not be interpreted as evidence that agency, initiative, or innovation are unimportant. Rather, it suggests that in collectivist settings such as Saudi Arabia, these qualities may matter most when they are embedded within group-oriented structures rather than expressed as purely individualistic behavior. This is an important contribution because it indicates that digital transformation strategies in Saudi organizations may be more effective when they mobilize collective commitment and institutional support instead of assuming that autonomy-driven models of change will operate in the same way as they do in more individualistic societies.

5.3. Masculinity and digital transformation

The results support Hypothesis 3 and show that masculinity is positively associated with digital transformation. This finding is consistent with Hofstede (2011), who associated masculinity with achievement orientation, competitiveness, assertiveness, and performance-driven behavior. In the context of digital transformation, such values may encourage organizations to pursue technological change more aggressively when it is framed as a route to competitiveness, efficiency, performance improvement, or national advancement.

This interpretation is particularly relevant in Saudi Arabia, where success, achievement, and strong leadership are often culturally salient in organizational life. El Halabi et al. (2021) noted that gendered expectations and patriarchal social organization continue to shape the broader Arab environment, while Aladwey and Alsudays (2023) emphasized that assertiveness, competitiveness, and achievement remain visible features of workplace culture in Saudi Arabia. When digital transformation is associated with modernization, prestige, efficiency, and measurable success, a masculinity-oriented value environment may strengthen organizational willingness to pursue it.

However, this result must be interpreted carefully. In Hofstede's framework, masculinity is a cultural value orientation, not a direct reflection of the biological sex composition of the sample. Therefore, the finding should not be reduced to the fact that the sample contained substantially more male than female respondents. That issue is better treated as a limitation of sample composition rather than as the substantive explanation for the result itself. What the current finding more plausibly indicates is that performance orientation, competitiveness, and achievement-driven leadership may support the implementation of digital transformation in Saudi organizations.

At the same time, a strongly masculinity-oriented environment may also create tensions. Although such environments can accelerate implementation through goal focus and performance pressure, they

may underemphasize collaboration, inclusivity, empathy, and open communication, all of which are also important to sustainable transformation. The implication is that masculinity may support the mobilization and execution phases of digital transformation, but its benefits are likely to be strongest when complemented by organizational practices that also encourage participation, knowledge sharing, and long-term learning.

5.4. Uncertainty avoidance and digital transformation

The results support Hypothesis 4 and indicate that uncertainty avoidance is positively associated with digital transformation. At first glance, this may appear counterintuitive, because uncertainty avoidance is often linked to caution, low tolerance for ambiguity, and a preference for stability. Hofstede (2011) noted that in high uncertainty avoidance cultures, the willingness to take risks is often reduced and ambiguous situations are likely to generate concern. In principle, such a cultural profile could hinder digital transformation, which frequently involves experimentation, disruption, and unfamiliar technologies.

Yet the present finding suggests a more nuanced interpretation. In the Saudi context, high uncertainty avoidance does not necessarily imply resistance to digital transformation itself. Rather, it may increase support for transformation when change is introduced through structured planning, formal procedures, institutional guidance, and clear implementation frameworks. This interpretation is consistent with the broader Saudi environment, where predictability, stability, and legitimacy remain highly valued. Cassell and Blake (2012) described Saudi society as relatively high in uncertainty avoidance, and Alamri et al. (2014) similarly pointed to the importance of structure and predictability in responses to change.

Digital transformation may be positively related to uncertainty avoidance because, in Saudi Arabia, it is driven by formal national initiatives such as Vision 2030 rather than being viewed as uncontrolled change. As a planned and well-governed process supported by leadership and clear policies, digital transformation can reduce perceived uncertainty and increase acceptance. Therefore, the positive relationship found in this study does not suggest that uncertainty avoidance encourages experimentation. Instead, it indicates that structured and culturally aligned digital transformation can be accepted even in societies that are generally cautious about uncertainty.

5.5. Long-term orientation and digital transformation

The results also support Hypothesis 5 and show that long-term orientation is positively associated with digital transformation. This finding is consistent with Hofstede (2011), who connected long-term orientation to persistence, planning, and future-focused value systems. Digital transformation often requires sustained investment, organizational patience, and the willingness to accept that benefits may emerge gradually rather than immediately. For that reason, long-term orientation is theoretically well aligned with digital transformation as an extended strategic process rather than a short-term operational intervention.

This relationship is particularly meaningful in Saudi Arabia, where long-term planning has become central to national development strategy. Cassell and Blake (2012) highlighted the importance of long-range orientation in shaping economic and social priorities, and this is strongly reflected in the Vision 2030 agenda. The integration of digital infrastructure, human capital development, innovation policy, and modernization efforts within that national framework illustrates how digital transformation is embedded in a broader long-term trajectory rather than treated as an isolated technological project.

The positive association observed in this study therefore suggests that future-oriented planning, perseverance, and sustained commitment may provide a strong cultural foundation for digital transformation in Saudi organizations. At the same time, long-term orientation should not lead to excessive rigidity or slow responsiveness. For Saudi Arabia to continue advancing in the digital economy, long-term strategic commitment must be balanced with agility, learning, and adaptive capability. In that respect, long-term orientation appears to be a cultural asset for digital transformation when it supports sustained investment without suppressing responsiveness to technological and market change.

Taken together, the findings suggest that digital transformation in Saudi Arabia is more strongly associated with cultural dimensions that support hierarchy, achievement, structured change, and long-range planning than with individualistic autonomy. This pattern is theoretically coherent in a context characterized by relatively high-power distance, collectivist tendencies, strong uncertainty avoidance, and a national reform agenda centered on long-term modernization. The findings therefore reinforce the argument that digital transformation strategies should not be designed as culturally neutral managerial templates. Rather, they should be adapted to the value structures and institutional expectations that shape how change is perceived and enacted in specific contexts such as Saudi Arabia.

6. Implications

The findings of this study generate both practical and theoretical implications for understanding digital transformation in culturally distinctive organizational settings. More specifically, the results indicate that power distance, masculinity, uncertainty avoidance, and long-term orientation were positively associated with digital transformation, whereas individualism was not

significantly associated with digital transformation in the sampled Saudi context. These patterns suggest that digital transformation is not simply a technical or managerial undertaking but is also shaped by culturally embedded expectations regarding authority, coordination, performance, risk, and strategic time orientation, as also suggested by Leidner and Kayworth (2006), Hartl and Hess (2017), and Hofstede (2011).

6.1. Practical implications

From a practical perspective, the findings suggest that digital transformation strategies in Saudi Arabia are more likely to be effective when they are aligned with the cultural conditions within which organizations operate. In particular, the positive association between power distance and digital transformation indicates that transformation efforts may benefit from visible senior leadership sponsorship, clear strategic mandates, and formal implementation structures. In hierarchical contexts such as Saudi Arabia, organizational members often expect direction and legitimacy to come from senior authority, which means that digital initiatives are likely to gain traction when top management provides clear endorsement and when middle managers are empowered to translate strategic priorities into coordinated execution across operational levels (Aljlayel, 2020; Alotaibi and Campbell, 2022). The practical implication is not that organizations should rely on hierarchy alone, but that they should use hierarchy strategically while also maintaining communication channels that allow operational feedback and implementation learning.

The non-significant result for individualism carries an equally important practical implication. It suggests that digital transformation in Saudi organizations may not be best advanced through strongly autonomy-driven change models imported from more individualistic settings. Instead, managers may achieve better outcomes by framing digital initiatives around shared goals, collective responsibility, and group-based legitimacy. In collectivist organizational environments, change is often more effective when it is institutionalized through team structures, cross-functional coordination, and socially recognized commitment rather than through highly individualized initiative alone (Dierdorff et al., 2011). For Saudi organizations, this means that practices such as collective performance targets, collaborative implementation teams, shared accountability mechanisms, and group-oriented change communication may be more culturally effective than relying primarily on individual champions or highly individualized reward systems.

The positive association between masculinity and digital transformation suggests that managers can also mobilize digital change by linking it to performance, competitiveness, and achievement. In settings where success, decisiveness, and visible accomplishment are culturally valued, digital transformation can be framed as a route to higher efficiency, stronger service delivery, improved market position, and organizational prestige, which may increase managerial and employee commitment to implementation (Hofstede, 2011). At the same time, this finding should not encourage overly narrow performance framings that neglect collaboration, inclusion, and knowledge sharing. Rather, the practical lesson is that performance-oriented narratives can be useful for mobilization, but they should be balanced with organizational practices that sustain cooperation and long-term learning.

The findings on uncertainty avoidance are particularly important for implementation design. The positive association suggests that digital transformation in Saudi Arabia may be more acceptable when introduced through structured and well-governed processes rather than through highly ambiguous or experimental change. In contexts characterized by stronger preferences for predictability and formal guidance, organizations are likely to benefit from phased implementation plans, pilot projects, clear procedures, intensive user training, and explicit communication regarding risks, responsibilities, and expected outcomes (Hofstede, 2011; Cassell and Blake, 2012). For policymakers and senior leaders, this also implies the value of creating supportive standards, governance frameworks, and institutional signals that reduce uncertainty and increase confidence in digital transformation initiatives.

Finally, the positive relationship between long-term orientation and digital transformation suggests that successful digital change in Saudi organizations should be embedded in longer strategic horizons rather than treated as short-term technology projects. This is especially relevant in the context of Vision 2030, where digital transformation is linked to national modernization, capability development, and economic diversification. For organizational leaders, the implication is that investment in digital infrastructure should be accompanied by sustained investment in human capital, digital skills, leadership development, and organizational learning. For policymakers, the findings support continued emphasis on long-range institutional support, capability-building, and incentives that encourage organizations to integrate digital transformation into broader strategic planning rather than treating it as an isolated operational initiative.

6.2. Theoretical implications

This study also contributes theoretically by extending the conversation between national culture research and digital transformation research. Although digital transformation has often been examined through technological, strategic, or capability-based lenses, the present findings reinforce the argument that transformation outcomes are also culturally embedded. In this respect, the study supports the relevance of

Hofstede's framework as an analytical lens for examining how national value orientations may shape organizational responses to digital change, even in a contemporary transformation context characterized by rapid technological disruption (Hofstede, 2011; Leidner & Kayworth, 2006).

A first theoretical contribution lies in showing that Hofstede's dimensions remain analytically useful when interpreted in relation to digital transformation rather than only in relation to more traditional organizational outcomes. More specifically, the findings suggest that power distance, masculinity, uncertainty avoidance, and long-term orientation may influence transformation through different mechanisms, including centralized coordination, performance orientation, structured change management, and future-focused commitment. This extends the application of Hofstede's framework into an area where organizational change is often discussed in technologically neutral or culturally universal terms.

A second contribution concerns the non-significant effect of individualism. Rather than simply treating this as a null result, the study suggests that assumptions commonly drawn from more individualistic settings should not be uncritically generalized to collectivist contexts. In collectivist organizational environments, digital transformation may be mobilized less through individual autonomy and more through shared goals, collective accountability, and socially legitimate coordination structures, which is consistent with work on psychological collectivism and group performance by Dierdorff et al. (2011) argument that collectivist orientations are closely linked to prosocial and organizationally embedded forms of behavior. Theoretically, this means that the relationship between culture and digital transformation should be understood as context contingent rather than universal.

A third contribution arises from the positive result for uncertainty avoidance. In much of the literature, uncertainty avoidance is often treated as a cultural barrier to innovation and change. The present findings suggest a more refined interpretation. In the Saudi context, uncertainty avoidance may support digital transformation when change is structured, formally governed, and institutionally legitimized rather than left ambiguous or weakly coordinated. This implies that cultural dimensions may not exert fixed effects across settings but may instead operate differently depending on how transformation is framed and managed. That is an important theoretical insight because it shifts the discussion from simple cultural support versus cultural resistance to a more conditional understanding of how national values interact with implementation design.

More broadly, the study contributes to the literature by reinforcing the need to connect national culture with organizational and digital transformation research rather than treating these as separate domains. At the same time, the findings also point to the need for more multi-level theorizing. As argued by Hartl and Hess (2017) and further reflected in recent work on digital organizational culture by Ahmed et al. (2022), Martínez-Caro et al. (2020), and Malewska et al. (2024), transformation outcomes are likely shaped not only by national culture but also by organizational cultural arrangements that support agility, innovation, and digital orientation. The present study therefore contributes by clarifying the role of national cultural values while also opening a theoretical pathway toward more integrated cultural models of digital transformation.

7. Limitations and directions for future research

This study should be interpreted within the boundaries of its research design. First, the study was conducted in Saudi Arabia, which provides a contextually rich setting for examining the relationship between national culture and digital transformation under Vision 2030. At the same time, the findings are grounded in this specific national context and should therefore be interpreted primarily in relation to Saudi organizations. Given the composition of the achieved sample, the findings are most directly informative for Saudi employees in government and government-linked organizational settings, and future research should examine whether similar patterns hold in more gender-balanced and private-sector samples. Future research could extend this line of inquiry through comparative studies across different national settings, particularly across Arab contexts or between collectivist and more individualistic societies.

Second, the study employed a cross-sectional quantitative design based on survey data. This design was appropriate for examining the hypothesized relationships among the cultural dimensions and digital transformation, but it captures these relationships at one point in time. Future research could build on this study through longitudinal designs that examine how the influence of cultural dimensions evolves as digital transformation initiatives mature over time.

Third, the study focused specifically on national culture through Hofstede's framework. This focus was intentional and consistent with the study's objectives, but digital transformation is also shaped by organizational-level factors, including digital organizational culture, leadership, and internal change capability. As noted by Hartl and Hess (2017), digital transformation is closely tied to broader organizational change processes, while more recent studies by Ahmed et al. (2022), Martínez-Caro et al. (2020), and Malewska et al. (2024) suggested that digital organizational culture can play an important role in shaping transformation outcomes. Future research could therefore integrate national and organizational cultural perspectives to provide a more comprehensive understanding of digital transformation success.

Taken together, these directions provide a useful basis for extending the present study. Comparative, longitudinal, and multi-level research designs would help deepen understanding of how cultural factors shape digital transformation across different institutional and organizational settings.

8. Conclusion

This study examined how Hofstede's national cultural dimensions are associated with digital transformation in Saudi Arabian organizations. In doing so, it responded to the need for a more context-sensitive understanding of digital transformation, one that recognizes that transformation is shaped not only by technology and strategy but also by the cultural environment in which it is implemented, as emphasized by Hofstede (2011).

Using AMOS version 21 to test the proposed model, the study found that power distance, masculinity, uncertainty avoidance, and long-term orientation were positively associated with digital transformation, whereas individualism was not significantly associated with digital transformation. These findings show that digital transformation in the Saudi context is more closely aligned with cultural patterns that support hierarchy, performance orientation, structured change, and long-range planning than with strongly individualistic forms of autonomy. In this respect, the study extends current understanding of how national cultural values shape organizational transformation outcomes in non-Western settings, particularly in Saudi Arabia.

The study also shows that cultural influences on digital transformation are neither uniform nor simplistic. Power distance appears to support digital transformation through centralized coordination and leadership legitimacy. Uncertainty avoidance appears to support transformation when change is structured and well governed rather than ambiguous or weakly managed. Long-term orientation reinforces the strategic and future-focused commitments required for sustained digital development. At the same time, the non-significant result for individualism suggests that digital transformation in Saudi organizations may depend less on individual autonomy alone and more on collective alignment and institutionally supported implementation.

From a practical standpoint, the findings highlight the importance of aligning digital transformation strategies with the cultural conditions of the Saudi organizational environment. For policymakers and organizational leaders, this means that digital transformation is more likely to succeed when it is supported by clear authority structures, collective commitment, structured implementation processes, and long-term strategic investment. These priorities are especially relevant in the context of Vision 2030, which positions digital transformation as a central component of national modernization and economic diversification.

Overall, this study contributes to the growing literature on digital transformation by showing that national culture remains a meaningful explanatory lens for understanding why transformation succeeds differently across contexts. In the Saudi case, digital transformation is not simply a matter of technological adoption. It is also shaped by culturally embedded expectations regarding authority, coordination, risk, and future orientation. By clarifying these relationships, the study offers a stronger basis for both scholarly understanding and contextually grounded digital transformation practice.

Appendix A. Measurement items

This appendix presents the questionnaire items used to measure the study constructs. The items assess power distance, individualism, masculinity, uncertainty avoidance, long-term orientation, and digital transformation. Table A1 presents the measurement items and their corresponding sources.

Table A1: Measurement items and sources for the study constructs

Construct	Items	Source
Power distance (PD)	PD1: I have a boss (direct superior) whom I can respect. PD2: My boss consults me on decisions involving my work. PD3: In my experience, subordinates are often afraid to contradict their boss. PD4: An organizational structure in which certain subordinates have two bosses should be avoided at all costs.	Aljlayel (2020)
Individualism (IDV)	IDV1: I have sufficient time for my personal or home life. IDV2: I have security of employment. IDV3: I do work that is interesting. IDV4: I have a job that is respected by my family and friends.	
Masculinity (MAS)	MAS1: I get recognition for good performance. MAS2: I have pleasant people to work with. MAS3: I live in a desirable area. MAS4: I have chances for promotion.	
Uncertainty avoidance (UAI)	UAI1: I feel calm in most situations UAI2: Overall, my state of health is good. UAI3: A manager can be good without having a precise answer to every item raised by subordinates. UAI4: An organization's rules should not be broken, even when an employee believes doing so would be in the organization's best interest.	
Long-term orientation (LTO)	LTO1: I value doing a service to a friend. LTO2: I value thrift and avoid spending more than needed. LTO3: I am proud to be a citizen of my country.	
Digital transformation (DT)	DT1: Our firm is driving new business processes using technologies such as big data, analytics, cloud, mobile, and social media platforms. DT2: Our firm is integrating digital technologies such as social media, big data, analytics, cloud, and mobile technologies to drive change. DT3: Our business operations are increasingly making use of digital technologies such as big data, analytics, cloud, mobile, and social media platforms. DT4: Digital technologies have improved business decision-making. DT5: Digital technologies have increased efficiency (e.g., automation, timely access to expertise and communities). DT6: Digital technologies and capabilities are very important to our organization. DT7: My organization's leadership has a clear understanding of relevant digital trends and emerging technologies.	Pettersson et al. (2024)

List of abbreviations

AMOS	Analysis of moment structures
AVE	Average variance extracted
CFA	Confirmatory factor analysis
CFI	Comparative fit index
CR	Composite reliability
DT	Digital transformation
GFI	Goodness-of-fit index
GLOBE	Global leadership and organizational Behavior effectiveness
IDV	Individualism
IT	Information technology
LTO	Long-term orientation
MAS	Masculinity
NFI	Normed fit index
PD	Power distance
RMSEA	Root mean square error of approximation
SEM	Structural equation modeling
STDEV	Standard deviation
TLI	Tucker-Lewis index
UAI	Uncertainty avoidance
ChiSq	A statistic used to assess the discrepancy between the observed data and the model-implied data
p-value	Probability value
T-statistics	Test statistics used to assess significance

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Compliance with ethical standards

Ethical considerations

This study adhered to established ethical standards for research involving human participants. Participation was voluntary, and informed consent was obtained from all respondents prior to data collection. Participants were informed about the purpose of the study, the nature of their participation, and their right to withdraw at any time without negative consequences. No personally identifying information was collected, and anonymity and confidentiality were maintained throughout the study. The data were used exclusively for research purposes, stored securely, and made accessible only to authorized researchers. Findings were reported in aggregate form to avoid identification of individual participants or organizations. The study was reviewed and approved by the Research Ethics Committee (No. H-2025-600). Ethical procedures were designed to ensure that participants were not exposed to unnecessary risk, discomfort, or coercion, and the research was conducted in accordance with institutional ethical requirements and broader standards for responsible research practice.

Conflict of interest

The author(s) declared no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

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