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Research Article

The role of human digital competence in the association of digital vision and strategy, and digital governance on organizational sustainability

Dijital vizyon ve stratejinin ve dijital yönetişimin örgütsel sürdürülebilirlikle ilişkisinde beşeri dijital yetkinliğin rolü

Adem Özdemir[1]

[1] Assist. Prof. Dr., Ağrı İbrahim Çeçen University, Ağrı, Türkiye,
aozdemir@agri.edu.tr

ORCID: 0000-0003-3127-6846

Abstract

This study investigates the association of digital vision and strategy (DVS) and digital governance (DG) on organizational sustainability (OS), with particular emphasis on the mediating role of human digital competence (HDC). Drawing on the natural resource-based view and the dynamic capabilities perspective, the study develops a framework explaining how digital strategic orientations and governance mechanisms contribute to sustainability outcomes through human digital capabilities. Survey data (N=481) collected from firms operating in Turkey were analyzed using PLS-SEM. The findings reveal that DG has a positive direct effect on OS, whereas DVS does not significantly affect OS directly. HDC negatively affects OS and mediates the relationships between both DVS and DG and organizational sustainability. These findings position HDC as a key mechanism through which digital vision, strategy, and governance are translated into sustainability outcomes. The study contributes to the literature by demonstrating the direct and indirect effects of digital governance on sustainability and extending resource-based and dynamic capabilities perspectives to explain the relationship between digital transformation and organizational sustainability.

Keywords: Digital Vision and Strategy, Organizational Sustainability, Digital Transformation

JEL Codes: M10, M12, M14

Öz

Bu çalışma, dijital vizyon ve strateji (DVS) ile dijital yönetişimin (DG) örgütsel sürdürülebilirlik (OS) üzerindeki etkilerini, özellikle insan dijital yeterliliğinin (HDC) aracılık rolüne vurgu yaparak incelemektedir. Doğal kaynak temelli yaklaşım ve dinamik yetkinlikler perspektifinden yola çıkan çalışma, dijital stratejik yönelimlerin ve yönetişim mekanizmalarının, insan dijital yetkinlikleri aracılığıyla sürdürülebilirlik sonuçlarına nasıl katkıda bulunduğunu açıklayan bir çerçeve geliştirmektedir. Türkiye'de faaliyet gösteren firmalardan toplanan anket verileri (N=481), PLS-SEM yöntemi kullanılarak analiz edildi. Bulgular, DG'nin OS üzerinde olumlu bir doğrudan etkiye sahip olduğunu, buna karşın DVS'nin OS'yi doğrudan anlamlı bir şekilde etkilemediğini ortaya koymaktadır. HDC ise OS'yi olumsuz etkilemekte ve hem DVS hem de DG ile örgütsel sürdürülebilirlik arasındaki ilişkilerde aracılık rolü oynamaktadır. Bu bulgular, HDC'yi dijital vizyon, strateji ve yönetişimin sürdürülebilirlik sonuçlarına dönüştürüldüğü kilit bir mekanizma olarak konumlandırmaktadır. Bu çalışma, dijital yönetişimin sürdürülebilirlik üzerindeki doğrudan ve dolaylı etkilerini ortaya koyarak ve dijital dönüşüm ile örgütsel sürdürülebilirlik arasındaki ilişkiyi açıklamak için kaynak temelli ve dinamik yetkinlik perspektiflerini genişleterek literatüre katkı sağlamaktadır.

Anahtar Kelimeler: Dijital Vizyon ve Strateji, Örgütsel Sürdürülebilirlik, Dijital Dönüşüm

JEL Kodları: M10, M12, M14

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Introduction

Digitalization has become a critical driver of organizational competitiveness and long-term sustainability, reshaping how firms design strategies, structure governance mechanisms, and mobilise human capabilities (Westerman et al., 2014; Özdemir & Tan, 2023). Beyond incremental process automation, digitalization has evolved into a comprehensive transformation that alters business models, decision-making structures, and value creation logics (Parviainen et al., 2017; Klein, 2020). In this context, digital transformation is no longer a purely technological issue but a strategic and organizational phenomenon in which vision, governance, and human capabilities jointly determine outcomes (Bharadwaj et al., 2013).

Existing research clearly shows that digital transformation can support organizational sustainability by enabling efficiency gains, data-driven decision-making, and environmentally oriented business models (Feroz et al., 2021; Choi & Yu, 2014). However, despite the growing volume of studies on digitalization and sustainability, important gaps remain. Prior studies have largely examined digital transformation either as a broad construct or through isolated dimensions such as technology adoption or innovation outcomes (Westerman et al., 2014; Kane et al., 2017).

From a strategic perspective, digital vision and strategy provide direction by articulating how digital technologies are expected to support long-term organizational goals (Hess et al., 2016; Kane et al., 2015). Yet, articulating a digital vision alone does not guarantee sustainable outcomes unless it is supported by effective governance structures and enacted through organizational capabilities (Weill & Ross, 2004). Digital governance plays a central role in aligning digital initiatives with organizational objectives by embedding transparency, accountability, and data-based decision-making into managerial processes (Van Grembergen & De Haes, 2009). At the same time, the success of both digital strategies and governance mechanisms ultimately depends on employees' ability to understand, use, and transform digital technologies, highlighting the importance of human digital competence (Özdemir & Tan, 2023).

Although the resource-based view (RBV) and dynamic capabilities (DC) perspectives emphasize that sustainable performance emerges from valuable, rare, and reconfigurable resources and capabilities (Das & Teng, 2000; Clauss et al., 2019), empirical research has rarely positioned HDC as a central explanatory mechanism linking digital strategies and governance to sustainability outcomes. In particular, there is a lack of empirical evidence examining whether DVS and DG influence OS directly or primarily through human-centered capabilities such as HDC. As a result, it remains unclear under what conditions digital strategies and governance arrangements translate into sustainable organizational outcomes.

Addressing this gap, the present study examines the role of human digital competence in the relationship between digital vision and strategy, digital governance, and organizational sustainability. Drawing on RBV and DC perspectives, the study argues that DVS and DG create value for sustainability primarily when they are internalized and enacted through human digital competences. Accordingly, the study aims (i) to analyze the associations of DVS and DG on OS and (ii) to investigate the mediating role of HDC in these relationships. To achieve these objectives, the study addresses the following research questions:

"RQ1.Does DVS affect HDC?

RQ2.Does DG affect HDC?

RQ3.Does DVS affect OS?

RQ4.Does DG affect OS?

RQ5.Does HDC affect OS?

RQ6.Does HDC mediate the association between DVS and OS?

RQ7.Does HDC mediate the association between DG and OS?"

By clarifying the distinct and interrelated roles of digital vision and strategy, digital governance, and human digital competence, this study contributes to the digital transformation and sustainability literature by offering a more fine-grained, human-centered explanation of how digital initiatives translate into organizational sustainability outcomes.

Literature review and hypothesis development

Digital vision and strategy, and human digital competence

Digital vision can be defined as a guide that sets out the future digital transformation goals of organizations, while digital strategy refers to the ways and means to achieve these goals (McDonald & Rowsell-Jones, 2012). Digital vision and strategy are a list of specific, clear actions needed to achieve a high level of digital maturity. The digital transformation strategy should not 'reverse' the strategy in the organization, it should organically build and enrich it, bringing the necessary changes, technologies and resources for the development and improvement of the performance indicators of the organization (Aslanova & Kulichkina, 2020). Digital vision and strategy refer to the medium and long-term perspective of the business on digital transformation. It means including digitalization and digital transformation in the strategic action plan determined within this perspective. With the determined digital transformation strategy, it develops business models, processes, products and services with the competitive actions determined by the enterprise and makes them available to its customers. In addition, businesses should be able to manage their business strategies through digital channels by identifying new opportunities according to competitive dynamics (Özdemir & Tan, 2023).

Perhaps ironically, digital transformation, and digital strategy, are more about human than anything else (Gobble, 2018). Changes in the organization are initiated by the top management and for this they need to be convinced of the necessity and positive aspects of change for themselves and their organization. Digital transformation is not possible without a leader who embraces digital transformation and mobilizes stakeholders (Sainger, 2018). To make digital transformation possible, a leadership skill that considers situations such as having an uninterrupted internet connection everywhere, using open-source technology, mobile devices and personalizing technology in accordance with the purpose is required (Sheninger, 2014). This type of leadership, possessing this skill, is called digital leadership.

A digital leader is a role model who ensures the digital maturity of an organization with a digital vision and strategy, and then takes the lead by engaging people, processes, technology, engagement model, operating structure and business model to realize this vision (Sainger, 2018). Digital leaders should have a clear vision to convey to employees the image of the organization that the business intends to have in the future. Leaders should emphasize that digital maturity is very important (Kane et al., 2017). The digital leader, who is a role model for employees and other stakeholders, should have a few characteristics. These characteristics include having digital and technical skills, having entrepreneurial skills, and having high collaboration and interpersonal communication skills. In addition, the fact that visionary individuals assume the leadership role is another important characteristic of digital leaders (Sainger, 2018).

Within the RBV framework, human digital competence (HDC) has been repositioned as a valuable, rare, difficult to imitate, and irreplaceable strategic resource for organizations (Barney, 1991; Das & Teng, 2000). In this regard, H1 hypothesis is theoretically justified based on the assumption that digital vision and strategy (DVS) are high-level organizational mechanisms that develop this critical human resource capable of creating sustainable competitive advantage. Thus, DVS is treated as a precursor that triggers the formation of strategic resources such as HDC, rather than directly producing performance, in line with RBV logic.

H1. *DVS is significantly associated with HDC.*

Digital governance and human digital competence

An effective digital governance structure helps organizations optimize their digital investments and manage technological risks (Van Grembergen & De Haes, 2009). In the literature, digital governance models are generally evaluated through elements such as strategic alignment, technology management, organizational processes and stakeholder engagement (Sambamurthy & Zmud, 1999). Especially in large-scale organizations, the integration of digital governance with corporate governance accelerates decision-making processes and increases transparency (Gregory et al., 2015). Digital competencies are defined in various ways, with Ferrari's (2012) definition in EU policies being one of the most widely recognized in academic literature. Digital competency is viewed as a multidimensional ability (Saltos-Rivas et al., 2023). According to UNESCO (2023), it encompasses the ability to use digital devices, communication tools, and networks to access and manage information. Sudaryanto et al. (2023) define it as the set of capabilities needed to operate electronic devices, programs, networks, and other technologies to retrieve and manage information. To maintain competitiveness, companies must continuously enhance and update their employees' digital competencies (Kinkel et al., 2022). Employees

should be ensured to take an active role in the digital transformation of the business by following digital technologies. Collaboration between employees should be supported by digital tools. Human digital competence skills required to evaluate business opportunities should be provided (Özdemir & Tan, 2023).

H2. *DG is significantly associated with HDC.*

Digital vision and strategy, and organizational sustainability

Digital vision and strategy is one of the most important aspects in the digital transformation process of organizations. This vision can ensure sustainable growth by preparing organizations for the future. Furthermore, digital strategy shows that the use of technology is not only limited to operational efficiency but also has the potential to create new business models and transform customer relationships (Porter & Heppelmann, 2014). Digital strategy refers to the steps and methods that organizations determine to achieve their digital vision. The strategy involves making decisions about how and when to use digital technologies. Digital strategy includes elements such as digitalizing business processes, developing digital products and services, and establishing data-based decision-making mechanisms. Companies should not leave their digital strategies solely under the control of technology departments but should create a strategy culture at all organizational levels (Bharadwaj et al., 2013).

Adopting the right digital strategy can help organizations reach sustainability in a volatile, uncertain, complex, and ambiguous business environment (El Hilali & El Manouar, 2019). Digital strategies can foster sustainable initiatives in organizations through innovations in products, services, energy efficiency, and digital platforms supporting the circular economy (Arantes & Ferreira, 2025). Sustainability, digitalization, resilience and agility intertwine to help organizations become strategically resilient and achieve organizational sustainability (Miceli et al., 2021).

H3. *DVS is significantly associated with OS.*

Digital governance and organizational sustainability

Digital governance plays a crucial role in organizational sustainability and sustainable development in the digital age. It involves strategies to address challenges posed by digitalization, including social and environmental impacts (Linkov et al., 2018). Three main governance approaches have been identified: laissez-faire, precautionary, and stewardship, with adaptive governance necessary to tackle sustainability challenges (Eschenfelder et al., 2019). Digital transformation of governance mechanisms can promote inclusive societies and sustainable development, focusing on inclusiveness, trustworthy software infrastructures, and transparent institutions (Barbosa, 2017). A digitalized ecosystem based on service-dominant logic can facilitate sustainable governance models, reducing costs and fostering innovation (Aksin-Sivrikaya & Bhattacharya, 2017). For digital cultural heritage organizations, a nine-dimensional framework for sustainability has been proposed, encompassing technology, financial, management, disaster planning, assessment, and policy dimensions (Eschenfelder et al., 2019).

H4. *DG is significantly associated with OS.*

Human digital competence and organizational sustainability

Recent research highlights the importance of human digital competence for organizational sustainability. Digital maturity, particularly workforce digital skills, is crucial for business productivity and profitability (Esses, 2024). In higher education, digital teaching competencies are being applied to develop educational sustainability, with a focus on pedagogical skills over professional development (Colás-Bravo et al., 2021). A systematic review of human competences for sustainability management revealed a predominance of education-focused studies, with limited contributions from the management field (Galleli et al., 2019). The relationship between organizational competencies and sustainability is an area of growing interest, with research exploring how companies develop competencies aligned with economic, social, and environmental dimensions of sustainability (Kuzma et al., 2017). These studies underscore the need for organizations to cultivate digital and sustainability-related competencies to achieve business success and contribute to broader societal goals.

H5. *HDC is significantly associated with OS.*

Mediation effect of human digital competence

Digital competence and governance are crucial for organizational sustainability in the digital age. Digital strategic orientation positively impacts organizational performance through digital competence, which encompasses digital infrastructure, integration, and management (Yu & Moon, 2021). Transformational leadership is essential for developing digital competencies in human talent, driving

organizational competitiveness (Gilli, 2023). Companies can adopt various strategies to promote sustainable digitalization, including laissez-faire, precautionary, or stewardship approaches, while incorporating adaptive governance to address economic and social challenges (Linkov et al., 2018). Companies must review their organizational strategies to enhance innovation capacity and exploit digital technologies' potential (Kampylis et al., 2015). These factors collectively contribute to organizational sustainability in an increasingly digital world.

H6. *HDC mediates the relationship between DVS and OS.*

H7. *HDC mediates the relationship between DG and OS.*

Figure 1 shows the research framework.

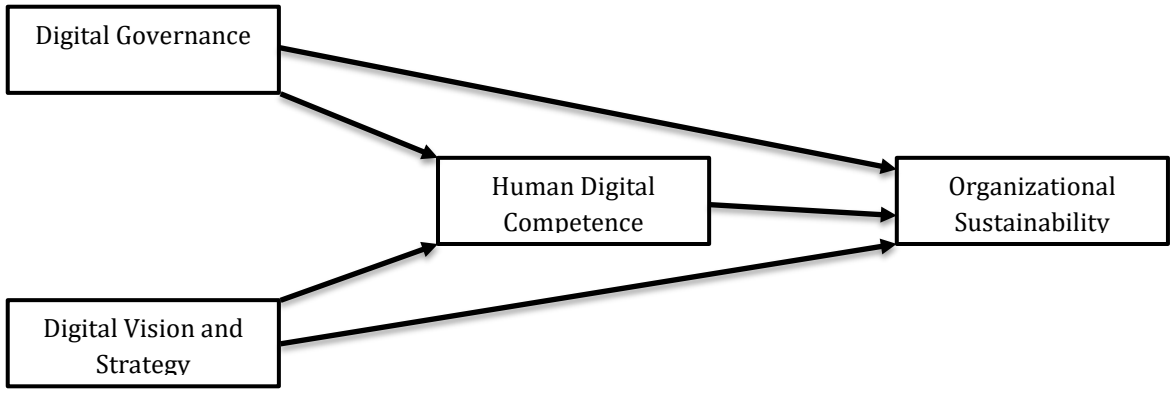

Figure 1: Research Framework

Research methodology

Sample and data collection

To conduct an empirical study in the research, data were collected by questionnaire method. The participants of this study consisted of managers of enterprises in different sectors operating in Turkey. This sample selection was made because the shaping and implementation of digital vision and strategy and digital governance across the organization largely occurs through managerial decisions and leadership practices. Furthermore, the ability to comprehensively assess concepts such as human digital competence and organizational sustainability at the organizational level ensures that managers are the most appropriate source of information on these matters.

Turkey's acceleration of its national digitalization policies in recent years, particularly the increased corporate and environmental pressure to strengthen digital governance standards on businesses under the Digital Turkey initiative, has been decisive in selecting this country for the sample. Furthermore, the marked variation in digital transformation maturity levels among businesses operating in Turkey provides a suitable research context for a comparative examination of the effects of digital vision and strategy, as well as digital governance, on organizational sustainability.

The participants were selected using clearly defined inclusion criteria aligned with the purpose and level of analysis of the study. First, only firms that had already initiated digital transformation efforts were included, as the constructs examined—digital vision and strategy, digital governance, and human digital competence—presuppose the existence of at least a basic level of digitalization within the organization. Firms with no formal or informal digital initiatives were therefore excluded from the sample. Second, the unit of analysis of the study is the organization rather than the individual. For this reason, the respondents were limited to managers occupying middle- or senior-level positions who are directly involved in strategic decision-making, digital transformation processes, or governance practices. This criterion ensured that participants possessed a holistic and informed perspective on organizational-level phenomena such as digital vision, governance structures, and sustainability practices, which cannot be reliably assessed by non-managerial employees.

The contact information of the participating enterprises was obtained through Linkedin. Then, e-mails were sent to the enterprises one by one, explaining the details of the study and that their responses would be kept confidential. Before sending e-mails to the participants, a group of eight experts and academics were asked to evaluate the questionnaire and make the necessary adjustments (first pre-test). Then, 30 companies were purpose sampling method selected, and the questionnaires were sent to the company managers via e-mail. They were asked to complete the questionnaire and to indicate any

ambiguities regarding terms, meaning and issues (second pre-test). After receiving the feedback, the questionnaire was finalized by making the necessary changes.

Ethics committee permission was granted for this study by Ağrı İbrahim Çeçen University Scientific Research Ethics Committee with the decision dated 26.12.2024 and numbered 480.

Data were collected in seven months from July 2025 to the end of February 2026. A total of 624 enterprises operating in different sectors in Turkey were reached and 481 of these enterprises participated in the research. Accordingly, "the survey resulted in an effective response rate of 77%. When the sectors of the participating companies are analyzed, it is seen that 17.5% of them are in the defence industry, 16.3% in energy, 14.8% in automotive, 12.1% in construction, 9.2% in textiles, 8.4% in food, 7.3% in other manufacturing, 6.12% in white goods and 5.3% in packaging, and most of them have between 100 and 2,000 employees", and most of them have an average age of 20 years or more.

Measure of constructs

To collect data, a questionnaire form was used, in the first part of which the DVS and DG measurements of the enterprises, in the second part HDC measurements, in the third part OS measurements, and in the last part descriptive data of the participants. Fifteen-item scales developed by Özdemir and Tan (2023) were used to measure the DVS ($\alpha = 0.982$) variable, nine-item scales developed by Özdemir and Tan (2023) to measure the DG ($\alpha = 0.976$) variable, and twentyfive-items scale developed by Özdemir and Tan (2023) were used to measure the HDC ($\alpha = 0.983$) variable. Finally, OS ($\alpha = 0.951$) is measured using an eighteen-item scale adapted from the study by Sezen-Gültekin and Argon (2020). All items are measured on a five-point Likert-type scale, where 1 indicates "strongly disagree" and 5 indicates "strongly agree".

Analysis and results

Measurement model assessment

For the analysis of the data in this study, SmartPLS 4 analysis program based on partial "least squares structural equation modelling", which simultaneously estimates the relationships between variables and works with nonparametric data, that is, does not require normality assumption, was used (Dijkstra & Henseler, 2015). The measurement model is analyzed in the first instance, followed by the structural model relationships. During the measurement model's analysis, "Confirmatory Factor Analysis (CFA)", "reliability of constructs", "convergent validity" and "discriminant validity" are analyzed, as shown in Table 1. The value of the "Cronbach's alpha", "composite reliability and rho_A" values are >0.70. Although factor loadings of 0.70 or higher are preferred, it is not recommended that indicators falling below this threshold be automatically excluded from the measurement model. Hair et al. (2022) note that, in particular, the decision to remove items with factor loadings between 0.40 and 0.70 should be made only if doing so results in a significant improvement in composite reliability (CR) and convergent validity (AVE) and does not compromise the scale's content validity. In this study as well, some factor loadings remained below 0.70 (See Table 1). It was observed that removing the items in question did not result in a sufficient improvement in the overall reliability and validity indices of the measurement model. Therefore, the presence of factor loadings below 0.70 was evaluated in the context of the measurement model as a whole, and it was decided to retain the relevant items while maintaining a balance between theoretical content and empirical measurement quality. The measures appear to be reliable: Specifically, "Cronbach's alpha" values for DVS, DG, HDC and OS were 0.982, 0.976, 0.983 and 0.951, respectively. The "composite reliability" values exceeded 0.70, ranging between 0.961 and 0.984. The "Average Variance Extracted (AVE)" values are as follows: DG= 0.839, DVS= 0.800, HDC= 0.714 and OS= 0.545. As the AVE value is >0.50, it can be concluded that "convergent validity" is assured (Henseler et al., 2015).

Table 1: Measurement Model Results

Latent Variable	Items	Factor Loadings	*p*-Values	Cronbach's alpha	rho_a	Composite reliability	AVE
Digital Vision and Strategy (DVS)	DVS1	0.872	0.000	0.982	0.984	0.983	0.800
	DVS2	0.863	0.000				
	DVS3	0.916	0.000				
	DVS4	0.927	0.000				
	DVS5	0.935	0.000				
	DVS6	0.865	0.000				
	DVS7	0.924	0.000				
	DVS8	0.885	0.000				
	DVS9	0.906	0.000				
	DVS10	0.874	0.000				
	DVS11	0.880	0.000				
	DVS12	0.907	0.000				
	DVS13	0.912	0.000				
	DVS14	0.853	0.000				
	DVS15	0.897	0.000				
Digital Governance (DG)	DG1	0.912	0.000	0.976	0.979	0.977	0.839
	DG2	0.935	0.000				
	DG3	0.940	0.000				
	DG4	0.947	0.000				
	DG5	0.929	0.000				
	DG6	0.909	0.000				
	DG7	0.824	0.000				
	DG8	0.924	0.000				
	DG9	0.915	0.000				
Organizational sustainability (OS)	OS1	0.615	0.000	0.951	0.955	0.961	0.545
	OS2	0.802	0.000				
	OS3	0.749	0.000				
	OS4	0.747	0.000				
	OS5	0.784	0.000				
	OS6	0.707	0.000				
	OS7	0.748	0.000				
	OS8	0.810	0.000				
	OS9	0.771	0.000				
	OS10	0.619	0.000				
	OS11	0.817	0.000				
	OS12	0.699	0.000				
	OS13	0.795	0.000				
	OS14	0.740	0.000				
	OS15	0.775	0.000				
	OS16	0.709	0.000				
	OS17	0.613	0.000				
	OS18	0.738	0.000				
Human Digital Competence (HDC)	HDC1	0.867	0.000	0.983	0.984	0.984	0.714
	HDC2	0.699	0.000				
	HDC3	0.751	0.000				
	HDC4	0.800	0.000				
	HDC5	0.821	0.000				
	HDC6	0.799	0.000				
	HDC7	0.840	0.000				
	HDC8	0.777	0.000				
	HDC9	0.876	0.000				
	HDC10	0.829	0.000				
	HDC11	0.808	0.000				
	HDC12	0.896	0.000				
	HDC13	0.879	0.000				
	HDC14	0.855	0.000				
	HDC15	0.873	0.000				
	HDC16	0.876	0.000				
	HDC17	0.841	0.000				
	HDC18	0.789	0.000				
	HDC19	0.834	0.000				
	HDC20	0.894	0.000				
	HDC21	0.930	0.000				
	HDC22	0.914	0.000				
	HDC23	0.870	0.000				
	HDC24	0.917	0.000				
	HDC25	0.848	0.000				

"Discriminant validity" is evaluated using the "Fornell–Larcker criterion" and "the heterotrait–monotrait ratio (HTMT)". As shown in Table 2, the "square root of the AVE" values along the diagonal exceeds the correlations among the latent constructs, satisfying the "Fornell–Larcker" condition. Additionally, the "HTMT values" are below the threshold of 0.85, further confirming "discriminant validity" (Henseler et al., 2015). In addition, Henseler et al. (2015) demonstrated that the Fornell–Larcker criterion is not sufficiently sensitive in identifying problems with discriminant validity and proposed the HTMT; they noted that discriminant validity can be considered present if HTMT values fall below the threshold.

Table 2: Correlations and Discriminant Validity Results

Latent variable	Mean	SD	1	2	3	4
1.Digital vision and strategy	4.45	1.26	***0.895***	0.811	0.825	0.546
2.Digital governance	4.35	1.26	0.881**	***0.916***	0.761	0.654
3.Human digital competence	4.41	1.12	0.888**	0.833**	***0.891***	0.449
4.Organizational sustainability	3.30	0.81	0.058	0.051	-0.037**	***0.738***

Note: "Correlation is significant at the 0.01 level (two-tailed); Diagonal and italicized elements are the square roots of AVE (average variance extracted); Below the diagonal elements are the correlations between the construct values; Above the diagonal elements are the HTMT values"

The statistical significance of the factor loadings of all related scale items loading on the latent variables was assessed using the "5,000 resampling bootstrapping technique" (Henseler et al., 2016). "T-values (Figure 2)" and "p-values (Table 1)" show that all items are statistically related to the relevant latent variables.

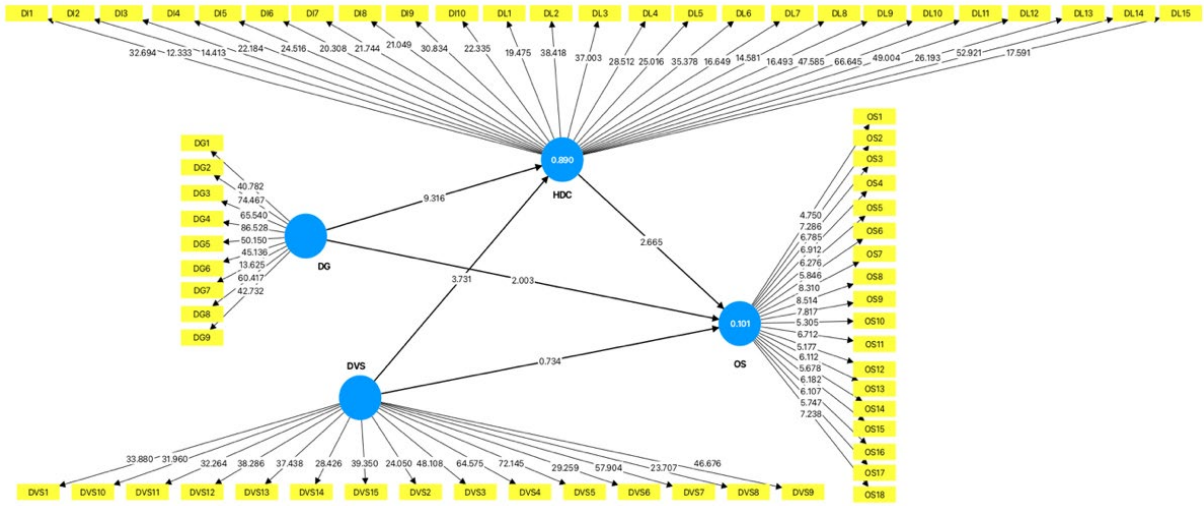

Figure 2: Evaluation of the Structural Measurement Model

Structural model assessment

In the measurement model analysis, it is established that all "latent variables" meet the "reliability and validity" criteria. Consequently, structural model relationships are analyzed. Initially, collinearity is tested by employing the "variance inflation factor (VIF)" value. As demonstrated in Table 3, all "VIF" values are found to be below the critical value of 10. In the context of "multiple regression analyses", it is widely accepted that "VIF" values should be below 10 (O'Brien, 2007). This suggests the absence of collinearity issues between the "latent variables" (Hair et al., 2019). The effect size value (f^2) of each predictor variable in the model varies between 0.015 and 0.927, effect sizes (f^2) were evaluated using the thresholds of 0.02, 0.15, and 0.35, representing small, medium, and large effects, respectively (Cohen, 2013; Hair et al., 2022). The "goodness of fit value" created with the "standardized root mean square (SRMR)" is 0.059, and the one created with the "normed fit index (NFI)" value is 0.95 (see Table 3). These results indicate that the research model aligns with the empirical data.

Table 3: Hypothesis Testing on the Direct Effect

Confidence interval (BC)							
Structural path	**Coef (*β*)**	**SD**	**T-values**	***p*-Values**	***f*²**	**VIF**	**Conclusion**
DVS →HDC	0.293***	0.079	3.731	0.001	0.175	3.476	H_1 Supported
DG →HDC	0.675***	0.072	9.316	0.001	0.927	3.896	H_2 Supported
DVS →OS	0.269	0.367	0.724	0.463	0.015	4.542	H_3 Not Supported
DG →OS	0.688*	0.344	2.003	0.045	0.061	5.214	H_4 Supported
HDC →OS	-0.955**	0.358	2.665	0.008	0.111	2.895	H_5 Supported

Notes: "SRMR=0.059; NFI=0.95; Results of bootstrapping with 5,000 sub-samplings; ***p<0.001; **p<0.01; *p<0.05 (two-tailed); BC= Bias-Corrected"

The research hypotheses are finally subjected to empirical scrutiny via a "bootstrapping technique (5,000 resamples)", thereby enabling the assessment of statistical significance. As demonstrated in Table 3, the analysis results indicate that the correlation between DVS and HDC ("DVS → HDC β; 0.293, t; 3.731, p; 0.001") is positively significant. This finding lends support to H1. In a similar manner, the association between DG and HDC ("DG → HDC β; 0.675, t; 9.316, p; 0.001") is also positively significant, thereby supporting H2. However, the analysis results in Table 3 show that the relationship between DVS and OS ("DVS→ OS β; 0.269, t; 0.724, p; 0.463") is not positively significant, thus not supporting H3. The relationship between DG and OS ("DG→ OS β; 0.688, t; 2.003, p; 0.045") is positively significant, thereby indicating that H4 is supported. However, the correlation between HDC and OS ("HDC→ OS β; -0.955, t; 2.665, p; 0.008") is negatively significant, and H5 is supported according to this finding.

The methodology proposed by Zhao et al. (2010) is utilized to assess mediating relationships. The bootstrapping analysis reveals that the relationships between DVS → HDC → OS ("β; -0.280, t; 2.247, p; 0.025") and DG → HDC → OS ("β; -0.644, t; 2.430, p; 0.015") is statistically significant. Consequently, it can be deduced that the "mediation impacts are statistically significant" (see Table 4) and hypotheses 6 (indirect only mediation) and hypotheses 7 (competitive partial mediation) are supported.

Table 4: Hypothesis Testing on Mediation

Structural path	**Coef (*β*)**	**SD**	**T-values**	***p*-Values**	**Conclusion**
DVS →HDC→OS	-0.280*	0.125	2.247	0.025	H_6 Supported (Indirect Only Mediation)
DG →HDC→OS	-0.644*	0.265	2.430	0.015	H_7 Supported (Competitive partial Mediation)
DVS →OS	0.269	0.367	0.724	0.463	

Notes: "***p<0.001; **p<0.01; *p<0.05 (two-tailed); Results of bootstrapping with 5,000 sub-samplings; BC= Bias-Corrected"

Discussion and implications

Research findings

The aim of this study was to examine the relationships between digital vision and strategy (DVS), digital governance (DG), human digital competence (HDC), and organizational sustainability (OS). The findings indicate significant positive relationships between DVS and HDC, and between DG and HDC. In addition, HDC indirect only mediates the relationship between DVS and OS and partially mediates the relationship between DG and OS. These results are consistent with prior studies addressing digital vision, digital governance, digital competence, and organizational sustainability (Gobble, 2018; El Hilali & El Manouar, 2019; Yu & Moon, 2021; Özdemir & Tan, 2023; Saltos-Rivas et al., 2023; Arantes & Ferreira, 2025).

The analysis further reveals a significant positive relationship between DG and OS. This finding aligns with the core logic of digital governance, as DG enhances sustainability by improving transparency, accountability, participation, and data-driven decision-making across organizational processes (Weill & Ross, 2004). Through the integration of digital tools, DG supports more efficient resource utilization and strengthens the management of environmental and social impacts. Moreover, digitalized governance mechanisms enhance information-based decision-making and enable organizations to respond more effectively to stakeholder expectations (Von Krogh, 2012). DG also facilitates early identification of environmental risks and supports flexible adaptation to sustainability-oriented strategies, particularly by linking environmental and social sensitivities with organizational performance indicators (Janssen et al., 2012). The integration of data analytics, artificial intelligence, and automation into decision-support systems further increases the traceability and measurability of sustainability practices, thereby strengthening strategic sustainability management (Schlecht et al., 2021). In this respect, DG emerges as a structural and strategic driver of organizational sustainability rather than merely a technological tool (Li et al., 2022; Parvin et al., 2023; Khan et al., 2024; Huang et al., 2024).

In contrast, no statistically significant direct relationship was found between DVS and OS. This result suggests that digital vision and strategy may not translate automatically into sustainability outcomes.

First, the strategy–implementation gap offers a strong explanatory framework. Strategic management literature consistently emphasizes that the articulation of a vision or strategy does not guarantee its effective execution. Digital strategies often remain abstract intentions unless they are translated into concrete routines, processes, and behaviors (Mintzberg, 1994; Hrebiniak, 2013). From this perspective, DVS may exist at a declarative or formal level, while sustainability outcomes require deep operational alignment. As a result, the absence of a direct effect may reflect the limited capacity of strategic intent alone to generate measurable sustainability performance. Second, the temporal lag inherent in strategic outcomes provides an important explanation. Organizational sustainability is a long-term construct encompassing environmental, social, and economic dimensions, whereas digital vision and strategy represent forward-looking orientations. Prior research suggests that the outcomes of strategic initiatives, particularly those related to digital transformation, emerge gradually and may not be observable in cross-sectional designs (Wang & Ahmed, 2007). Therefore, the non-significant DVS → OS relationship may indicate that the sustainability effects of digital strategies require longitudinal observation to be fully captured. Third, insights from the dynamic capabilities perspective suggest that strategies influence performance indirectly through organizational capabilities rather than directly. Teece (2018) argues that strategic visions shape sensing, seizing, and transforming processes, which in turn affect organizational outcomes. Similarly, Zollo and Winter (2002) emphasize that higher-order capabilities mediate the relationship between strategic intent and performance. In this context, DVS may contribute to OS only when it is embedded in enabling capabilities such as human digital competence, organizational learning, or innovation capacity. The absence of a direct effect is therefore theoretically consistent with a capability-mediated model. Finally, institutional theory provides an alternative explanation by highlighting the symbolic role of strategies. Meyer and Rowan (1977) argue that organizations may adopt formal strategies to gain legitimacy rather than to drive substantive change. In environments characterized by strong digitalization discourse, firms may articulate digital visions primarily to signal modernity and alignment with dominant norms. When digital strategies are decoupled from resource allocation and structural transformation, their impact on substantive outcomes such as sustainability is likely to remain limited. Under such conditions, DVS functions more as a legitimacy-enhancing mechanism than as a driver of organizational performance. Taken together, these theoretical perspectives suggest that the non-significant DVS → OS relationship should not be interpreted as a lack of importance of digital vision and strategy. Rather, it indicates that DVS operates as an enabling and indirect mechanism whose effects on organizational sustainability materialize through implementation processes, mediating capabilities, and long-term transformation dynamics.

The findings also imply that DVS influences OS indirectly through mediating mechanisms rather than directly. Consistent with the dynamic capabilities perspective, strategic initiatives often affect performance outcomes through intermediate capabilities such as learning, innovation, and knowledge integration (Zollo & Winter, 2002; Teece, 2018). Furthermore, in some organizations, digital strategies may remain largely symbolic and insufficiently supported by structural change or resource allocation, thereby limiting their impact on sustainability outcomes (Meyer & Rowan, 1977).

The Dynamic Capabilities (DC) perspective has been explicitly used to explain why the DVS–OS relationship is directly meaningless and to clarify the mediating role of HDC. According to the DC approach, strategic vision and governance structures do not directly affect performance; rather, they influence it through the organization's capacity for 'sensing, seizing and transforming' (Teece, 2007; 2018). In this context, it has been theoretically clarified that the impact of DVS on OS can only emerge through application-oriented capabilities such as HDC. In this study, HDC is framed as the fundamental dynamic capability that enables the operationalization of digital strategy (Zollo & Winter, 2002; Wang & Ahmed, 2007).

The mediating role of HDC provides further insight into these relationships. The finding that HDC indirect only mediates the association of DVS on OS highlights the critical role of human capabilities in transforming strategic digital intentions into sustainable organizational practices. Digital visions and strategies can only generate tangible outcomes when employees possess the necessary competences to understand, adopt, and effectively utilize digital technologies (Bharadwaj et al., 2013). Accordingly, without adequate human digital competences, the link between strategy and sustainability remains weak, resulting in indirect only mediation.

In the case of DG, HDC plays a partial mediating role in its relationship with OS. This suggests that while individual digital competences enhance the effectiveness of governance mechanisms, DG also exerts a direct influence on sustainability through organizational structures, processes, and decision-

making systems. These effects are shaped not only by individual capabilities but also by organizational culture, leadership, and institutional arrangements (Weill & Ross, 2004; Schlecht et al., 2021). DG's direct and indirect influence on OS through HDC has been linked to the fact that digital governance creates a dynamic set of capabilities embedded not only in individual competencies but also in organizational routines and decision-making structures (Weill & Ross, 2004; Helfat et al., 2009). Overall, the mediating role of HDC reinforces the view that digital transformation is a human-centered process, in which technological infrastructures must be complemented by continuous learning and capability development to achieve sustainable outcomes (Sousa & Rocha, 2019).

One of the notable findings of the study is the negative impact of HDC on OS. This can be explained as follows: HDC is not so much a resource that produces sustainable results as it is an "implementation capacity" whose impact is determined by strategy and governance. Competent employees may make more intensive use of data analytics, automation, artificial intelligence, or digital platforms; however, in the absence of sustainability goals, ethical principles, data standards, and accountability mechanisms, this use tends to be directed toward short-term goals such as speed, sales, efficiency, or control. This situation can increase sustainability costs such as energy consumption, e-waste, overproduction/overconsumption, data center usage, and pressure on employees (Charfeddine & Umlai, 2023). In other words, digital efficiency does not necessarily mean an absolute reduction in resource use.

Theoretical implications

This study makes an important theoretical contribution to the digital transformation and sustainability literature by modelling human digital competencies as a mediating variable for the first time in the impact of digital vision and strategy and digital governance on organizational sustainability.

First, the achievement of sustainable results of digital visions and strategies is directly related to the diffusion of these strategies within the organization and their integration into operational processes. At this point, human digital competences function as a transformative element that ensures the applicability of the vision (Li & Lin, 2024). Individuals' ability to adopt, apply and integrate digital technologies into processes plays a critical role in transforming strategic goals into sustainability outcomes. This finding supports individual-centered digital strategy approaches.

Secondly, the partial mediation of human digital capabilities in the relationship between digital governance and sustainability in the study shows that governance has not only a structural but also an individual-based component. In the literature, it is emphasized that governance is strengthened by digital capabilities and individuals' participation in decision-making processes, and this finding confirms this approach (Liang et al., 2024). Moreover, the indirect effect of HDC on OS shows that digital transformation is possible with human capital that can use, make sense of and direct these tools to create sustainable value rather than technological tools. Thus, the study presents a model that is in line with contemporary theoretical approaches that emphasize the human-centered nature of digital transformation (resource-based view and the dynamic capabilities approach). Finally, in addition to filling the gaps in the literature, this model opens new research avenues, especially in the triangle of digital leadership, sustainable strategy implementation and employee competencies. Testing this construct with variables such as sectoral differences, cultural variables or digital inclusiveness in future studies will contribute to a better understanding of the multi-layered nature of digital transformation.

Practical implications

HDC are competencies that should be present in employees and leaders in organizations. Digital leadership can affect OS directly and indirectly through digital skills. Therefore, strengthening the digital capabilities of leaders and employees is decisive for organizations to successfully implement their digital strategies (Cheng et al., 2025). In digitalization processes, employees' ability to acquire environmentally sensitive knowledge and develop innovative solutions plays a critical role for sustainable performance. HDC is becoming a supportive element of strategic sustainability. Integrating human resources into digitalization and guiding them through conscious leadership strengthens this association (Asbeetah et al., 2025). HDC can be a mediating element in the contribution of DVS and DG practices to organizational sustainability. Innovative organizations should consider this integration as a strategic advantage (Niu et al., 2022).

Limitations and future research

It is imperative that future studies consider the limitations of the current study. Firstly, the current research is based on the context of Turkish organizations. Therefore, the external validity of the results may be limited to the Turkish context. In future research, comparisons between countries can be made

by focusing on businesses in other countries. Secondly, the use of cross-sectional data to test the hypotheses is a limitation of the study. As a result, future studies may benefit from adopting a longitudinal design to capture more enduring relationships. Third, the current study relies solely on the survey method. In future studies, the integration of in-depth interviews, using case studies on Turkish enterprises, may facilitate a deeper understanding of the actual situation of enterprises regarding the relationship between DVS, DG, HDC and OS. Finally, it should be noted that research on HDC has not yet been developed. It is recommended that future researchers should investigate different antecedents and consequences of HDC.

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