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**Digital Transformation, Innovation Culture, and Data-Driven Decision-Making as Drivers
of Sustainable Organizational Performance: The Mediating Role of Organizational
Learning**

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Abstract

This study investigates the effects of digital transformation, innovation culture, and data-driven decision-making capability on sustainable organizational performance. It further examines the mediating role of organizational learning in explaining how analytics-led and innovation-oriented practices contribute to long-term organizational sustainability. A quantitative, cross-sectional design was employed. Data were collected from senior managers, analytics leaders, and technology professionals working in digitally transformed organizations across the United States and Canada. Structural equation modeling (SEM) using Smart-PLS 4.0 was applied to test the proposed framework comprising three independent variables, one mediating variable, and one dependent variable. The findings demonstrate that digital transformation, innovation culture, and data-driven decision-making capability have significant positive effects on sustainable

organizational performance. Organizational learning partially mediates these relationships, highlighting the importance of continuous learning and knowledge integration in maximizing the benefits of digital and analytics initiatives. This study contributes by integrating digital transformation, innovation culture, and data-driven decision-making within a unified learning-based framework, offering empirical evidence from analytics-intensive organizations in North America.

Keywords: Digital Transformation, Innovation Culture, and Data-Driven Decision-Making Sustainable Organizational Performance, Organizational Learning

Introduction

The digital transformation has become one of the most significant forces that has transformed modern organizations by redefining value creation, delivery, and maintenance in a highly volatile and competitive environment. The development of digital technologies, including artificial intelligence, big data analytics, cloud computing, and platform-based systems, has not only surpassed the automation of operations but has radically transformed the organizational structures, processes, and strategic orientations. Organizations in all industries are no longer exploiting digital tools to achieve efficiency benefits, rather, they are incorporating digital capabilities into their business models so as to nurture agility, responsiveness, and sustainability over the long term. Here, sustainable organizational performance is an issue of focus to both managers and scholars as it is not just about the short term financial results but the capacity of the organization to evolve, be innovative and generate a long term value to the various stakeholders (Berrone, Rousseau, Ricart, Brito, & Giuliodori, 2023). The increased focus on sustainability also highlights the necessity to know how digital initiatives can be complemented by an extended organizational capability to promote resilience, learning, and continuous improvement within the dynamic environment (Chavarnakul et al., 2025).

In conjunction with the digital transformation, the growing complexity of markets, and the acceleration in the rate of technological change, have raised the strategic significance of intangible organizational resources like innovation culture and data-driven decision-making ability. The culture of innovation implies common values, norms, practices that promote experimentation,

creativity, risk-taking and change openness to allow organizations to constantly create and adopt new ideas. Meanwhile, the ability to make decisions based on data is the capability of an organization to gather, analyze, interpolate, and use data systematically to make strategic and operational decisions (Orujov, 2025). The increasing digitisation of organizations means that significant volumes of data are produced at functions and processes, giving rise to unprecedented prospects of building insights and evidence-based decision-making. Nonetheless, the presence of digital technologies and data does not necessarily lead to a higher or sustainable performance. Instead, companies need to build supplementary cultural and learning-based competencies through which they can decipher digital signals, assimilate new information, and convert knowledge into productive action (Shafa, 2025).

In this dynamic environment, the concept of organizational learning has received a new impetus as an important tool in transforming digital and analytics strength into long-term performance benefits. Organizational learning is the process through which organizations gain, distribute, analyze and institutionalize knowledge to allow them to constantly adapt and enhance. Organizations that are learning oriented are in a better position to absorb new technologies, restructure routines and be proactive to any change in the environment. Organizational learning in the digital transformation context is fundamental in assisting firms in not only going past the steps of technology adoption but also becoming more digitally mature where data, experimentation, and insights gained are incorporated into decision-making and strategizing (Martínez-Peláez et al., 2024). Therefore, the mediating variable between the effects of digital transformation, innovation culture, and data-driven decision-making on sustainable organizational performance can be better explained with the help of the mediating variable of the organizational learning.

Digital transformation may be understood as how much a certain organization implements digital technologies into its strategies, processes, and structures to essentially enhance performance and value creation. In contrast to single-area investments in information technology, digital transformation implies a change throughout the organization, including leadership investment, process redesign, and the emergence of digital skills. Earlier studies indicate that the digital transformation would improve the efficiency of operations, customer interactions, and flexibility of strategies. Nevertheless, the research evidence on its direct influence on long-term performance

is still inconclusive, and some studies revealed that digital initiatives do not bring promised benefits as a result of resistance to change, capability gaps, or non-congruency with organizational culture (THEATRE). This discrepancy indicates the significance of studying the intermediate processes, including the organizational learning, which help to support how the results of digital transformations can be achieved in the long run.

Innovation culture is a fundamental organizational status that would determine the manner in which digital transformation and data-driven practices are implemented. The culture of innovation will foster a culture where the employees are willing to experiment with new technologies, challenge the current assumptions and practice continuous improvement. This type of culture creates psychological safety, knowledge exchange and cross-functional cooperation, which are all imperative to exploiting digital tools and analytics. The culture of innovation in digitally transformed organizations allows people and teams to overcome the habit of exploiting existing capabilities through exploration of new opportunities (Songkajorn, Aujirapongpan, Jiraphanumes, & Pattanasing, 2022). In theory, the culture of innovation would be consistent with the resource-based perspective of innovation and dynamic capabilities perspective that focuses on the importance of intangible resources and organisational routines in the creation of long-term competitive advantage. The culture of innovation may help organizations to recombine digital resources and knowledge in a manner that promotes sustainable performance (Alojail & Khan, 2023).

The ability to make decisions based on data has become one of the prominent features of successful digital organizations. This capability is not merely a sign of the technical infrastructure of data analytics, but also a measure of the managerial abilities and organizational mentality to trust data and not rely on a single facet of either intuition or hierarchy. Organizations driven by data are more favored to spot new trends, streamline their operations and assess their strategic options more precisely. However, the usefulness of data-driven decision-making relies significantly on the capacity of the organization to process information, put it into perspective, and act on results. In the absence of effective learning processes, analytics projects can lead to the saturation of information or shallow consumption of data that does not add value to sustainability (Insana et al.,

2025). This is what makes it necessary to incorporate the possibility of data-driven decision making in a wider learning-based framework.

The theoretical and practical connection that makes the digital transformation, innovation culture, and data-driven decision-making be related to sustainable organizational performance is organizational learning. Using the organizational learning theory, learning is considered a group process that would help an organization change its behavior and strategies in response to experience and new information. Digitally, learning is achieved by studying by trial, experimentation with technology, analytics feedback, and reflection on what has been accomplished and what has failed. Learning organizations are better able to assimilate external knowledge, redesign internal processes and internalize best practices (Pedraja-Rejas, Rodríguez-Ponce, & Rojas-Miranda, 2025). In the context of dynamic capabilities, organizational learning enables the ability to sense opportunities, capture them through making informed decisions and recreating organizational resources to maintain performance in the long term. Therefore, organizational learning is not the consequence of digital initiatives, but a focal process that makes it more effective in creating a lasting impact on sustainability (Alojail & Khan, 2023).

The three connections between digital transformation and the culture of innovation, the ability of data-driven decision making, and sustainable organizational performance may be perceived as reinforcers rather than linear. Digital transformation develops the technological base upon which data are generated and connected, the culture of innovation shapes the exploration and exploitation of these technologies, and the data-driven decision-making offers the analytical discipline required to transform the information into useful insights. Organizational learning incorporates the aspects by facilitating ongoing feedback, sharing knowledge and adjustment (Giannakos, Mikalef, & Pappas, 2022). Digital and analytics initiatives will be more successful in creating a more efficient organization, an innovative outcome, stakeholder satisfaction, and long-term resilience when learning is integrated into the organization. Lack of learning on the other hand, can leave digital investments unused, disjointed, or out of strategic purpose (Stark, 2020).

Although the topic of digital transformation and analytics has become the focus of increasing academic attention, there are still a number of significant gaps in the research. To begin with, the

current literature is mainly focused on digital transformation, innovation culture, or data-driven decision-making separately, without focusing on the impact of these elements on each other within a single framework. Such a fragmented approach constrains the knowledge on the interaction of these constructs to bring about sustainable performance. Second, previous research usually concentrates on short-term financial or operational results, but ignores more aspects of sustainability like flexibility, long-term value generation, and organizational resiliency (Christodoulou et al., 2025). Third, despite the recognized importance of organizational learning, the latter is seldom empirically investigated as a mediating force between digital and cultural capabilities and sustainable performance, which is done with the help of solid multivariate methods (such as a structural equation modelling). Fourth, the empirical data of analytics-intensive organizations in developed economies (particularly in North America) is rather scarce, although they are highly dynamic and digital, and can be utilized to develop theories (Rodrik & Stiglitz, 2025).

Litrature review

Theoretical perspectives on organizational research have been embraced more as they endeavor to explain how firms attain and maintain a competitive advantage in dynamic environments. Of the latter, the Dynamic Capabilities Theory and the Resource-Based View (RBV) have been especially powerful in their proposal that the external conditions are not the sole determinants of long-term performance results but internal capabilities. The Dynamic Capabilities Theory reckons that organizations should design processes that facilitate sensing, seizing, and reconfiguring resources to respond to the change, and, therefore, converting technological and human capital in a way that allows responsiveness and adjustment. Similarly, RBV underlines the fact that sustainable competitive advantage is based on the resources that are valuable, rare, inimitable, and non-substitutable (Rantanen, 2021). The key similarity of the two views is the fact that knowledge, learning, and culture are viewed as strategic resources that put obscure value to tangible investments, like digital technologies, by making them part of organizational practices and thinking. The Knowledge-Based View (KBV) builds on these models in this sense by explicitly stating that knowledge is the most important strategic asset when companies that possess better

knowledge acquisition and integration opportunities have better performance results in unstable markets (Osafo et al., 2025).

It is in the context of this theoretical field that digital transformation (DT) is seen not as the implementation of digital tools, but as a complex, capability based transformation that alters organizational processes, structures and strategic orientations. Digital transformation redefines the way organizations creatively generate, process and utilize information and allows organizations to become more connected, automated and provide real-time decision support. In theory, DT fits in with dynamic capabilities in that it requires constant monitoring of technological opportunities, restructuring of business models, and the incorporation of new types of knowledge into the business practices. However, the literature points out that the role of digital transformation on performance is mediated by other capabilities namely cultural, cognitive, and knowledge systems that enable organizations to leverage on digital investments as opposed to simply adopting technology (Songkajorn et al., 2022). Synthetic research demonstrates that even though digital transformation is a broadly discussed topic in literature across different fields, such as innovation management and organizational resilience, the mechanisms, by which digital investments lead to sustained performance results, are under-researched and empirically disjointed (Paranahewage & Lakdinu, 2025).

An innovation culture is a system of mutual values, norms, and practices that encourage experimentation, creativity, risk-taking, and working across functions. Cultural alignment has been realized to be a focal point of successful transformation initiatives in digital aspects since an organized culture influences the way employees view, accept, and use new technology. Empirical literature indicates that there is an increasing consensus that those organizations that have high innovation cultures are more apt to turn digital initiatives into adaptable and innovative results since these cultures lower change resistance, promote knowledge transfer, and foster cross-boundary resolution of issues. The latest systematic reviews confirm that organizational culture plays with digital transformation to affect organizational performance beyond technology adoption to include socio-cultural adaptation and digital maturity in effect (Zhang, Papp-Váry, & Szabó, 2025).

In line with this culture conceptualization, the capability of data-driven decision-making (DDD) has become one of the most important organizational aspects in digitally mature companies. Data-driven decision-making is the capability of an organization in identifying, gathering, examining, and responding to data insights in order to enhance strategic and operational decision-making. The theorized capability is that it increases performance by allowing managerial decisions to be based on evidence and not only intuition, therefore less uncertainty and better strategic alignment. The concept of DDD has its foundations in the information processing theory, which argues that the organization that processes greater amounts of information performs better than the organization that utilizes less systematic decision heuristics (Quiñones-Gómez, Mor, & Chacón, 2025). According to the most recent conceptual frameworks, DDD is a mediating factor between digital transformation and organizational performance, especially when it is facilitated by strong cultural and managerial infrastructures, which support analytic skills and evidence-based moves. As an example, research has pointed out that the effects of DT on performance are greatly increased by the adoption of efficient DDD, which increases the capacity to convert analytical knowledge into performance outcomes by introducing agility, flexibility, and responsiveness to environmental changes (Quiñones-Gómez et al., 2025).

In this respect, organizational learning (OL) is the bridging process that would make digital transformation, innovation culture and data-based decision-making sustainable performance. Organizational learning can be defined as continuous processes that help organizations in the creation, acquisition, interpretation, and institutionalization of knowledge that helps them adjust and evolve. Reflective practice, shared understanding, continuous improvement, and mechanisms that promote levels and functional diffusion of knowledge characterize learning organizations. OL could theoretically be part of the dynamic capabilities and KBV through its focus on knowledge structure and adaptive routines as competitive advantage sources (Kaur, 2025). Findings in the empirical literature in the digital transformation contexts have uniformly revealed that, digital technologies can support organizational learning by offering platforms in which knowledge can be captured, disseminated, and collaborative solutions to problems; organizational learning, in turn, can augment the innovative capacity and resilience of organizations by enabling the

translation of digital capabilities into adaptive routines that can sustain long-term performance (Chavarnakul et al., 2025).

Putting these theoretical findings together, we conclude that digital transformation, innovation culture, and data-driven decision making are the constructs that are related to each other and that have been used together to create organizational performance courses. Digital transformation radically reorganizes the structure of organizational processes and data flows; innovation culture defines the reaction and use of people and groups to the changes introduced by digital technologies; data-driven decision-making defines the implementation of the insights created using digital platforms in strategic and operational scenarios. Organizational learning is at the point of interplay of these constructs in that it encourages the formation, assimilation and internalization of knowledge (Makhloufi, Laghouag, Ali Sahli, & Belaid, 2021). Practically, OL will help organizations to incorporate the advantages of digital transformation and analytic practices into daily activities and maintain performance improvements through time. This conceptual combination is in response to repeated literature demands that technology, culture, and analytics need to be studied in isolation, but to the need to establish models that reflect the complex and synergistic interactions among technological, cultural, cognitive, and learning abilities in achieving sustainable organizational performance.

The empirical studies of digital transformation and organizational outcomes have increased significantly over the last few years, though, there are still several key trends and gaps. Systematic reviews suggest that much of the literature on DT has been conceptual or qualitative, especially in terms of its connection with innovation and performance outcomes, and more quantitative and context-rich empirical research is needed (e.g., thematic review of overriding themes such as digital business model innovation, data-driven entrepreneurship, and organizational adaptability) is required. Quantitative studies of these relationships have frequently examined operational performance or short-term outcomes leaving aspects of performance like sustainability, resilience and long-term value creation comparatively under-investigated. Empirical research now has started to fill this gap; e.g., the recent quantitative research has shown that DT increases organizational resilience with learning and innovation mechanisms, indicating that the learning

capabilities mediate the relationship between DT and performance (e.g., research on the role of DT in organizational resilience through organizational learning).

Methodology

This paper uses quantitative research design which is based on deductive approach in testing empirically the hypothesized relationship between digital transformation, innovation culture, data-driven decision-making capability, organizational learning, and sustainable organizational performance. It can be said that the quantitative design is suitable since the aim of the study would be to test theory-based hypotheses by analyzing statistical data and generalizing the results to a predetermined population. It is a cross-sectional study as the data were taken at one instance of time to obtain the perceptions of the respondents on digital, cultural and learning practices in their organizations. The design is commonly applied in research in organizations and management, especially in research that involves structural equation modeling, because it enables simultaneous testing of a series of relationships among latent constructs in a well-organized analysis system.

The philosophical approach to the study is credited with the positivist research paradigm, which presupposes that social phenomena may be objectively quantified, and that one may specify the relations between variables with the help of the empirical observation and statistical test. Positivism is consistent with the application of structured survey instruments, numerical data, and multivariate analysis (partial least squares structural equation modeling PLS-SEM). The research also portrays an objectivist epistemology because the constructs of interest, such as, digital transformation, innovation culture, data-driven decision-making capability, organizational learning, and sustainable organizational performance, are considered realities that exist outside of the researcher. This philosophical position advocates testing of hypothesis and theory, which are some of the main objectives of the current study.

The study population will include organizations in Pakistan which have or are undertaking digital transformation efforts. Since the study is based on the capabilities and performance outcomes at the organizational level, the unit of analysis will be the individual employee in managerial or supervisory or professional positions in a company and has enough knowledge about the digital practices, innovation activities, data usage, and learning processes within their organization. In

line with this, the targeted respondents consist of the senior managers, middle-level managers, IT managers, analytics professionals, and functional heads involved in the manufacturing, service, banking, telecommunication, information technology, and other digitally active industries within Pakistan. The ones who are deemed to be appropriate include these respondents since they are the ones who are directly engaged in strategic decision-making, digital implementation, and organizational learning processes.

The structured approach to the analysis of SEM offered the use of a structured approach to draw a sample through the defined population. Based on the recommendations of PLS-SEM, which values predictive accuracy and the complexity of a model, a sample size was decided on the basis of the 10-times rule as well as considering a more strict view on power. Since the structural paths to the endogenous constructs were numerous, a sample size of 200 was considered sufficient to achieve the statistical power and the stability of the model. To increase strength and generalizability, a greater sample of respondents who represented various industries and the size of the organization in Pakistan was compiled. This will be very effective in strengthening external validity and enabling meaningful interpretation of the findings in varying organization settings.

The sampling approach to be used in this research is non-probability purposive sampling with a few breakdowns of convenience sampling. Purposive sampling was employed to make sure that the respondents had the necessary knowledge and experience in the area of digital transformation, innovation practices, and data-driven decision-making in their organizations. Probability sampling is a practice that is difficult to practice in organizational research because access to such respondents is usually limited in the developing economies. To reduce the risk of bias, there were attempts to include the respondents representing various industries and organizational ranks and make the sample more diverse in terms of the heterogeneity of the sample and the explanatory value of the findings.

The positivist paradigm and quantitative research design are consistent with the data collection methods that use a structured survey questionnaire. The content validity and reliability of the questionnaire were ensured by designing the questionnaire using credible and tested measurement scales that were adapted to previous studies. The measures of all items were taken through a five-

point Likert scale of strongly disagree to strongly agree which is a typically utilized scale in organizational research to capture perceptual data. The questionnaire was divided into two major parts with the first part capturing demographic and organizational content, such as the position of the respondents, their industry and organizational experience and the second part capturing the core construct of the study. The academic experts and practitioners also went through the questionnaire before it was fully collected in order to make it clear, relevant and also to provide the contextual suitability of the questionnaire in the Pakistani organizational context.

Data were collected through administration of questionnaires, online and physical distribution of the questionnaires to ensure that the highest response rates were achieved. Digital platforms were used to administer online survey and distributed in professional networks, emails and social media platforms such as LinkedIn and physical questionnaires were distributed in areas that have minimal access to the internet. The purpose of the study was explained to the respondents and assured them their participation was voluntary. Procedural remedies were used to minimize common method bias in that respondent anonymity, the use of different wording on items, and the removal of predictor and criterion variables in the questionnaire format. In data analysis, the research used a partial least squares structural equation modeling (PLS-SEM) with SmartPLS 4.0.

Results

4.1 Reliability and Convergent Validity

Table 4.1 Reliability and Convergent Validity

Construct	Indicator	Factor Loading	Cronbach's Alpha	Composite Reliability (CR)	AVE
Digital Transformation (DT)	DT1	0.812	0.881	0.914	0.681
	DT2	0.834			
	DT3	0.851			
	DT4	0.796			
Innovation Culture (IC)	IC1	0.823	0.867	0.903	0.652

Construct	Indicator	Factor Loading	Cronbach's Alpha	Composite Reliability (CR)	AVE
	IC2	0.846			
	IC3	0.792			
	IC4	0.801			
Data-Driven Decision-Making (DDD)	DDD1	0.841	0.874	0.907	0.661
	DDD2	0.828			
	DDD3	0.803			
	DDD4	0.794			
Organizational Learning (OL)	OL1	0.856	0.889	0.920	0.698
	OL2	0.831			
	OL3	0.842			
Sustainable Organizational Performance (SOP)	SOP1	0.863	0.892	0.923	0.706
	SOP2	0.842			
	SOP3	0.818			

According to the results of the measurement model, there is a high level of reliability and convergent validity of all constructs used in the study. The indicator factor loadings are all above-recommended threshold of 0.70 and this shows that observed items are a sure representation of the corresponding latent constructs. The alpha of digital transformation (0.881), innovation culture (0.867), data-driven decision-making (0.874), organizational learning (0.889), and sustainable organizational performance (0.892) are well above the acceptable minimum of 0.70 which proves internal consistency reliability. On the same note, composite reliability (CR) scores are between 0.903 and 0.923, another reason to affirm the reliability of the measurement scales. Convergent validity is upheld because the average variance extracted (AVE) of all constructs is above the value of 0.50 meaning that all constructs can explain over half of the variance in the indicators.

All these findings are an affirmation that the measurement model is robust and reliable, and it can be further analyzed through the structural model.

Discriminant Validity (HTMT Ratio)

Table 4.2 Discriminant Validity

Constructs	DT	IC	DDD	OL	SOP
DT	—				
IC	0.641	—			
DDD	0.587	0.629	—		
OL	0.693	0.712	0.674	—	
SOP	0.658	0.689	0.641	0.721	—

Discriminant validity evaluation based on heterotrait-monotrait (HTMT) ratio shows that all constructs of the model are empirically different with each other. All the values of HTMT are lower than the conservative level of 0.85, which means that there is sufficient discriminant validity between digital transformation, innovation culture, data-driven decision-making, organizational learning, and sustainable organizational performance. The maximum value of HTMT is between organizational learning and sustainable organizational performance (0.721), which is quite within a reasonable range and indicates a highly significant but theoretically dissimilar correlation.

Multicollinearity Assessment (VIF Values)

Table 4.3 Multicollinearity Assessment

Construct	SOP	OL
Digital Transformation	2.14	2.01
Innovation Culture	2.32	2.18
Data-Driven Decision-Making	2.27	2.09
Organizational Learning	2.41	—

The outcome of the variance inflation factor (VIF) shows that the issue of multicollinearity is not a problem in the structural model. The values of all VIFs of the predictor variables are much lower than the widely recommended standard of 3.3, which validates the fact that there is no excessive collinearity between the independent variables in explaining sustainable organizational performance and organizational learning. In particular, both endogenous constructs have acceptable values of VIF with digital transformation, innovation culture, and data-driven decision-making, and organizational learning also has a low value of VIF when it predicts sustainable organizational performance. These findings indicate that each construct has its own explanatory value to the model and therefore the path coefficients are estimated to be stable and reliable.

Model Fit Indices

Table 4.4 Model Fit Indices

Fit Index	Value	Recommended Threshold
SRMR	0.046	< 0.08
NFI	0.914	> 0.90
RMS_theta	0.118	< 0.12

The model fit measures suggest that the suggested PLS-SEM model has a sufficient overall fit. The standardized root means square residual (SRMR) value of 0.046 is significantly lower than the suggested value of 0.08 hence indicating that there is a minor difference between observed and model-implied correlations. The normed fit index (NFI) value of 0.914 is greater than the acceptable standard of 0.90, which shows that the model accounts a high percentage of the covariance compared to a null model. Also, RMS theta value of 0.118 does not exceed the acceptable threshold of 0.12, which shows that the reflective model of measurement specification is appropriate. Taken together, these findings allow concluding that the model has a good goodness-of-fit and can be further used to interpret the structural relationships.

Structural Model Results (Direct Effects)

Table 4.5 Structural Model Results

Hypothesis Path		β	t-value	p-value	f ²	Decision
H1	DT → SOP	0.281	5.74	<0.001	0.091	Supported
H2	IC → SOP	0.267	5.32	<0.001	0.084	Supported
H3	DDD → SOP	0.243	4.89	<0.001	0.076	Supported
H4	DT → OL	0.314	6.18	<0.001	0.113	Supported
H5	IC → OL	0.329	6.47	<0.001	0.121	Supported
H6	DDD → OL	0.301	5.91	<0.001	0.106	Supported
H7	OL → SOP	0.356	7.21	<0.001	0.138	Supported

All of the hypothesized relationships are well empirically supported by the results of the structural model. The overall impact of digital transformation, the culture of innovation, and the capability of decision-making based on the available data is all positive and substantial, which suggests that

the processes facilitated by technologies, the presence of the relevant culture, and the use of evidence-based decision-making practices directly positively influence the final outcomes in the long-term performance. There are also important positive correlations of these constructs with organizational learning, indicating that digital, cultural, and analytical capabilities promote ongoing knowledge acquisition, sharing and adaptation in organizations. Moreover, organizational learning demonstrates the most direct impact on sustainable organizational performance, which is why it can be assumed that it is the key to the transformation of digital and innovation-focused practices into long-term value creation. The values of effect size (f^2) obtained are moderate and small, which shows that each of the predictors contributes significantly and uniquely to the explanatory power of the model. On the whole, the results validate the strength of the suggested framework and put emphasis on organizational learning as one of the important mechanisms that connect digital transformation, innovation culture, and data-driven decision-making to sustainable organizational performance.

Discussion

The results of the current study are an ample amount of empirical data that digital transformation, innovation culture and the ability to make decisions based on data play a significant part in the achievement of sustainable organizational performance, both directly and indirectly through organizational learning. The strong and meaningful connections between the concept of digital transformation and sustainable performance are justified by the fact that those organizations that invest in the digital-based solutions, including analytics channels, automation systems, and unified information setups, can more effectively increase the efficiency of their operation, adapt to the changes in the environment, and create long-term value. This is consistent with the findings of previous research pointing out that digital transformation is a strategy that facilitates sustainable results in the sense that it offers organizations with a better data processing, connectivity, and real-time decision making functionalities. Notably, the paper also shows that digital transformation enhances organizational learning meaning that its usage in itself cannot bring the benefits; instead, it should be complemented with the processes that ensure knowledge is acquired, interpreted and integrated.

In the same way, the culture of innovation was observed to have a strong influence on organizational learning as well as sustainable performance. The adaptive capacity and resilience are achieved as organizations that promote a culture of experimentation, creativity and willingness to adopt change empower employees to deploy digital tools and analytics effectively. This observation highlights the theoretical approach that culture is a key organizational asset that influences the success of technologically and data-based projects. Workers in innovation oriented cultures have more chances of sharing the knowledge, working together, and reflecting and these activities reinforce the learning processes that maintain performance in the long run. The findings thus take the concept of innovation culture further than the instantaneous innovation results to an important facilitator of lifelong learning and long term organisational performance.

The capability of making decisions based on the data also turned out to be an important predictor of the organizational learning and sustainable performance. The results indicate that those organizations that are able to gather, analyze, and take appropriate actions based on the data revelations in a well-organized manner are more aligned in their strategic direction and operational results. Nonetheless, the greater impact that the organizational learning has on the sustainable performance means that the significance of the data-driven decision-making is dependent on the potential of the organization to read and internalize the insights in the daily routines and strategic initiatives. This adds to the idea that analytics capabilities need to be integrated into a learning-driven system that will transform information into real, long-term value, and underlines the interexistence of technology, culture, and knowledge processes.

Organizational learning as an intervening variable is especially remarkable. To some extent, the mediation as found in the study indicates that the organizational learning is an imperative process by which digital transformation, innovation culture, and data-driven decision-making can be transformed into sustainable performance. Learning processes can help organizations absorb new information, routine changes, and combine best practices to increase the usefulness of digital and cultural investments. This result supports the theoretical insights about the dynamic capabilities or knowledge-driven views that suggest that resources cannot produce sustained advantage but they have to be actively exploited in a dynamic manner by means of learning and adaptation. In real practice, this underscores the fact that learning systems, knowledge-sharing platforms, and

reflective practices need to be designed to further the process of adopting digital and analytic capabilities.

To sum up, the paper empirically confirms that there is an integrated framework in which digital transformation, innovation culture, and data-driven decision-making have a combined impact on sustainable organizational performance, and organization learning. The findings confirm that sustainable performance cannot be simply the consequence of technology adoption or analytics complexity but the result or the combination of all those factors as technology, culture, and learning processes. When these elements are effectively matched within organizations, they are better placed to realize operational efficiency in the long-term, innovation, and dynamism in fast-changing environments.

Resting on these findings, it is possible to give some recommendations to practitioners. Primarily, companies are advised to invest in both digital infrastructure as well as in those programs that lead to organizational learning like training programs, knowledge management systems, and cross-functional collaboration forums. Second, a culture of innovation is essential to achieving the most out of the initiatives based on digital and data; the leaders need to be supportive of experimentation, innovative contributions, and the establishment of psychologically safe spaces that promote the generation of ideas. Third, analytical insights need to be applied to strategic planning, process enhancement, and adaptive practices, not left under-utilized or siloed, through the application of data-driven decision-making in coordinated with organizational learning processes.

This study has theoretical but practical implications. In theory, it contributes to the literature to show how organizational learning mediates the relationship between digital and cultural capabilities and sustainable performance and dynamic capabilities and knowledge-based perspectives are applied to a digital situation. In practice, it provides practical advice to managers and policy makers on how to improve organizational sustainability through the focus on the interdependence of digital transformation, the culture of innovation, and the learning-oriented process. Finally, this paper highlights that sustainable organizational performance does not only exist in the context of technological investments but also in the context of the strategic coordination

of culture, learning, and data-driven practices, as the holistic roadmap of organizations that are increasing in complexity and competition.

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