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Article

Framework for Designing an Organizational Digital Culture for Innovation

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Abstract: Based on a literature review, a framework for digital organizational culture with a focus on innovation is proposed. This digital organizational culture becomes relevant today since digital transformation requires an appetite for risk and a willingness to undertake, aspects that are strengthened by an environment and atmosphere that motivate individuals to generate new ideas. The proposal begins with a diagnosis of the existing organizational culture, which allows identifying the differences between the components of the current organizational culture and the innovation-oriented digital organizational culture. Through this diagnosis, the gaps that need to be addressed to achieve a digital organizational culture with innovative characteristics are identified. In addition, specific recommendations are proposed to carry out this transformation. In the process, the assumptions underlying the current typology of the company's organizational culture are highlighted. The importance of integrating creativity, risk readiness, and entrepreneurial willingness into the digital organizational culture aimed at innovation is emphasized. These elements are essential for creating a conducive environment that stimulates the generation and development of innovative ideas in the digital organization context.

Keywords: organizational culture; digital transformation; digital culture; innovation; organizational change; innovation culture

1. Introduction

In today's digital era, organizational culture has become a determining factor for the success and adaptation of companies to a constantly changing environment. Digital transformation is not only about adopting new technologies, but also about developing a digital organizational culture that fosters innovation, collaboration, and agility. This article focuses on exploring the importance of digital organizational culture in today's business context and provides a detailed analysis of how organizations can build and strengthen this culture to remain competitive.

Digitalization has permeated every aspect of business life, from the way teams communicate to the way products and services are delivered to customers. However, technology, at the end of the day, is created by human beings for human beings.

human resources. For that reason, one of the top priorities of a technology leader should be to assemble the right team and create the right culture (Turri, 2018).

In this context, a digital organizational culture not only refers to the adoption of advanced technological tools, but encompasses a mindset that values adaptability, experimentation, and collaboration in an increasingly interconnected world (Gill, 2020).

Organizations create a digital culture by adapting their culture to the new format to succeed during this challenging process. Culture is the most important element for the continuity of core values and employee engagement with the least resistance (Cetin, et al., 2020).

Recent research highlights that companies with a strong digital organizational culture are more likely to continuously innovate (Westerman et al., 2014), attract and retain digital talent (Capgemini Research Institute, 2020), and respond nimbly to market changes (IBM, 2020). In addition, it has been observed that organizations with a well-entrenched digital culture are better prepared to face unexpected challenges,

However, building and maintaining a digital organizational culture is no easy task. It involves overcoming existing cultural barriers, fostering training and continuous learning, and promoting a mindset of innovation and collaboration.

Throughout this article, the importance of organizational culture for the effective adoption of digital transformation and how it influences the innovation results of the organization is examined; likewise, contributions from the literature on the dimensions of digital culture are explored. All this is the basis for creating a construct of dimensions of a digital culture from which key questions are proposed to identify the gaps in the organization with an ideal culture, which can become a baseline to design and implement strategies and key actions for cultural change.

2. Theoretical Framework

2.1. The Role of Organizational Culture, for Innovation and Digital Change

Organizational culture plays a fundamental role in organizations, insofar as it influences the behavior of the company as a whole (Dimitrova, 2008) and, therefore, its results, including its ability to innovate (Naranjo & Calderón, 2015; Khazanchi, Lewis & Boyer 2007). According to Hartmann (cited by Naranjo et al., 2011), this is because by influencing the behavior of employees, it is possible to get them to accept innovation as a fundamental value in the organization and commit to it.

Organizational culture is one of the determinants of the capacity for innovation in the organization as it is directly related to strategy and organizational structure (Zheng, Yang & McLean, 2010; Fegh-hi, 2010; Menguc & Auh, 2010), so it is proposed that it should provide the necessary ingredients to innovate and provide a "climate" in which individuals feel dynamic and oriented to the identification of opportunities and problem-solving in an alternative way to the usual.

Felizzola, Y & Anzola O. (2017) propose 8 formative elements of an organizational culture for innovation, which involve aspects of organizational structure and team behavior and skills. These are described in Table 1.

Table 1. Components of an innovation culture.

COMPONENTS	DESCRIPTION
Strategy	Innovation is part of the company's philosophy and policies, which is identified by all its members. Innovation is included and valued as a strategic element, linking it to the company's to corporate policies and practices.
Organizational structure	In a culture of innovation, leadership creates an organizational climate and environment where employees apply innovative thinking to solve problems and to generate new ideas on an ongoing basis.
Communication and Collaboration	There is a continuous use of tools and channels to communicate internally the company's innovation philosophy so that it is effectively adopted by all its members and that they share its innovative thinking and generating new ideas.
Organizational structure	The areas, procedures, functions, and responsibilities are clearly defined to enable innovation management. Likewise, infrastructure and human resources are in place for the management and execution of innovation activities

Support for the innovation	The company has programs, areas, and projects to encourage and reward the generation of ideas that give rise to innovation and the appropriate resources to develop them.
Orientation of the organization	The company plans its strategy based on a deep understanding of the customer based on an interaction with him in his reality and environment. It applies to both external and internal customers.
Organizational behavior	The members of the company dare to experiment with innovation because feel free to decide how to approach their functions and to propose alternatives for improvement.
Creativity	Team members have innovative thinking skills: intuitive, not looking for "what has worked in the past" to solve problems, reviewing multiple possibilities and continuously questioning "what if". In addition, the company promotes the use of innovative thinking in its employees for problem-solving and the generation of new ideas.

Source: Own elaboration.

Although several studies address the relationship between innovation and organizational culture, some focus on a few characteristic traits such as creativity and entrepreneurial skills (Ahmed, 1998; Martins & Terblanche, 2003; McLean, 2005; Zibarras, Port & Woods, 2008; Jamrog et al., 2006; Waychal, Mohanty & Verma, 2011), organizational norms and values, or even a combination of different organizational traits (Naranjo & Calderón, 2015).

More recently, Pradana et al. (2022), consider innovation as the key factor in a company's success in improving its business performance, further highlighting the influence of organizational culture on positive innovation outcomes in organizations.

Now, the accelerated digital evolution of recent years has led to the development of business activities involving technology as an input -in many cases the main input-, especially in processes. However, the use of technology alone does not guarantee innovation (Lartey, 2021 cited by Pradana, 2022) and many companies fail because the organization cannot change the mindset of its employees or build a culture that promotes change (Pradana, 2022).

In this way, the organizational culture is essential to achieve not only the proper adoption of digital transformation processes but also to impact the business model through innovation.

In the case of digital transformation and technology adoption in organizations, organizational culture is critical, especially considering that organizations with a strong digital culture are more likely to innovate and thrive in the digital economy (Westerman, G. et al, 2014).

In the same vein Gill, A. (2020) explores how organizational culture evolves in the digital era and highlights the importance of an adaptive and collaborative mindset in digital organizations. The work provides an overview of how companies can embrace digital transformation from a cultural perspective.

In addition, although the study of digital culture in the organization is a recent subject, an approximation of its definition is as follows: the set of behaviors and habits to take the greatest potential of new technologies, to advance in the transformation of the business model or organizational models to create value for customers, employees, and stakeholders (Busco, 2023).

According to Martinez-Caro et al. (2020), digital culture can exist when the organization plans digital strategies in a rapidly changing environment (Martinez- Caro et al., 2020). Therefore, the existing organizational culture must foster accepted values and norms even if they emerge as challenges (Pradana et al., 2020) and is something that needs to be resolved before determining whether the digitalization initiative can be relevant.

2.2. Elements of a Digital Organizational Culture

To analyze the relationship between organizational culture and an organization's digital transformation strategy, some authors' approaches propose characteristics, elements, or traits that must be present in the organization so that the culture can be ideal for adopting digital transformation and technology to achieve innovation. These include collaboration and horizontal communication, agility and flexibility, and digitally minded leadership, to name a few.

According to Capgemini (Capgemini, 2017), there are seven dimensions of digital organizations: customer orientation, innovation, data-driven decision-making, collaboration, open culture, agility and flexibility, and a digital-first mindset. Through actions in each of these, such as designing new metrics focused on behaviors rather than successes or failures, investing in digital skills, and deploying change agents for digital culture, a digital DNA is codified in the organization that makes change and leadership visible and possible.

On the other hand, according to Busco, et al. (Busco, et al, 2023) among the factors that favor the acquisition of digital culture in the organization are: developing the ability to provide quick and efficient responses to customers; generating spaces for inter-hierarchical communication about digital transformation; developing virtual spaces to work collaboratively; conducting experiments or prototypes with digital technologies; promoting the use of digital tools in the company without the need for advanced knowledge in programming; creating support groups for intergenerational digital learning; and identifying resistance to change among employees.

In addition, the organizational culture must contain other characteristics that drive and support innovation with the use of technology and digital transformation, such as customer orientation, internal and external collaboration networks, communication, and collaboration, as well as tolerance for risk-taking (Jamrog et al., 2006); all of these can be taken as a starting point for defining the organization's values and norms. To this, must be added the existence of an organizational structure that allows identify good ideas, has the resources to carry them out, and can measure the results.

In this sense, organizations that have integrated structures with multiple links inside and outside the organization, with diversified teams and "collective pride", with faith in the talents of their collaborators, and that achieve horizontal communication -typical of matrix organizations-, will be more likely to have creativity and innovation (McLean, 2005).

3. Methodology

The proposed scheme is built from the questions, How to enable the adoption of digital transformations in the organizational culture of companies? How can gaps be identified between a current organizational culture and an organizational culture for appropriate digital transformation?

To answer these questions, a literature review and analysis of the organizational culture for innovation and digital transformation began. Digital culture is defined as the type of organizational culture that adopts digital transformation and technology to deploy innovation.

Subsequently, 7 dimensions of digital organizational culture were defined as shown below:

Table 2. Dimensions for a digital organizational culture.

DIMENSION	DESCRIPTION
User-centric	Use of digital solutions to expand the customer base, transform the customer experience, and co-creating new products
Innovation	prevalence of behaviors that support risk-taking, disruptive thinking, and the exploration of new ideas
Data-driven decisions	Using data and analytics to make better business decisions

Collaboration and communication	Skilled teams support each other and operate in a cross-functional way to execute actions in the company.
Agility and flexibility	Speed and dynamism in decision-making coupled with the organization's ability to adapt to the demands of the market and changing technologies
Digital leadership	Leaders create an environment for thinking innovative problem-solving and solution generation with a digital orientation
Digital Mindset	A mindset where digital solutions are the default path to follow

A survey format was also designed, consisting of 30 questions distributed in such components (see Table 3. Survey structure) with 5-value Likert-type responses.

Table 3. Survey structure for the Digital organizational culture.

DIMENSION	QUESTION
User-centric	<p>There is a clear company strategy to take the user into account in the actions and goals.</p> <p>The company has mechanisms in place to gather feedback and opinions from users about its products or services.</p> <p>The company plans its strategy based on customer needs and external changes.</p> <p>The company has training programs for personnel focused on improving customer service.</p>
Innovation	<p>There is a specific area that leads innovation activities within the company.</p> <p>The company has facilities and installations that support innovation activities.</p> <p>The work teams in the company are cooperative and have autonomy in the development of their activities.</p> <p>The company relies on external collaboration networks for innovation and research activities.</p> <p>Innovation-related activities are led by a specific area within the organization.</p> <p>Incentives and recognition are available for people who come up with ideas that can be developed innovatively.</p>
Data-driven decisions	<p>There is a dedicated team of data analysis specialists within the company.</p> <p>Predictive analytics techniques are used in the company to identify future opportunities or risks</p> <p>The company uses metrics or key performance indicators (KPIs) to evaluate the success of its decisions.</p> <p>In strategic areas, data from external and internal reports are used for planning and decision-making.</p>
Collaboration and communication	<p>The areas of the company communicate openly to achieve support in the execution of activities.</p>

	<p>Members of the company belonging to one area support the others without the need for a formal order from the person in charge of their area.</p> <p>Some digital spaces or platforms foster communication and collaboration among employees.</p> <p>There are regular meetings or sessions to discuss and solve challenges or problems collaboratively.</p> <p>The company has formal programs or initiatives in place to facilitate collaboration and knowledge-sharing among employees</p>
Agility and flexibility	<p>Agile methodologies, such as Scrum or Kanban, are implemented in the company and used for the teams.</p> <p>The company has empowerment mechanisms in place to enable employees to make decisions and contribute new ideas.</p> <p>If they want to make improvements in their activities, the members of the company are guided by their intuition and dare to experiment with new proposals.</p> <p>The company has the tools to act and to adapt quickly to changing customer and market needs.</p>
Digital mindset	<p>Technology and digital tools are widely used in the company to improve efficiency and productivity in the organization.</p> <p>The company has a leadership style that dares to take risks</p> <p>A continuous learning mentality concerning digital technologies is encouraged in companies</p> <p>There is a focus on the digital transformation of the company's processes and services.</p>
Digital leadership	<p>The company has a leadership style that dares to take risks</p> <p>Leadership style in the enterprise encourages individuals to collaborate, experiment, and be agile.</p> <p>Leadership at all levels of the organization is carried out with the use of new digital technologies.</p>

The results can be averaged to obtain an overall value of the type of organizational culture, which determines the distance of the current organizational culture from a digital organizational culture. For this purpose, three typologies of organizational culture are proposed:

- Conservative organizational culture (1.0 - 2.7): Manuals, procedures, and hierarchies are strictly followed and strict control is exercised - especially in a centralized manner - over activities. Leadership is imposing, decisions are made based on previous data, and work teams relate through formal channels, generally following the indications and instructions of their immediate bosses.
- Organizational culture in transition (2.8 - 3.7): In this type of culture the company performs some activities on digital transformation for decision-making, but does not achieve an adoption of the tools throughout the organization. There are informal relationships between certain areas but strict hierarchical control prevails.

- Digital organizational culture (3.8 - 5.0): The company reacts quickly to external changes and can be flexible with procedures and manuals to achieve such reactions using digital tools. The organization favors continuous learning of its workers who relate in a more informal and close way, although they continue with the formal work. Virtual tools are used for communication and agile project management. Members are committed to digital transformation and are open to creative work and the generation of sustainable ideas, and the company has incentives to reward this behavior.

4. Conclusions

The objective of this article was to design a proposal for a digital organizational culture that favors the adoption of digital transformation and technologies in the company, which in turn has an impact on its innovative activity, the development of products or services, their introduction, and exploitation in the market. To this end, firstly, a search was made in the literature on organizational culture and its relationship with innovation and the adoption of digital transformation, which was the basis for the development of a construct of the components that help the formation and establishment of a digital organizational culture.

Subsequently, based on the construct, 7 components that form a digital organizational culture were defined and a Diagnostic Instrument of the company's base culture was designed, composed of different questions that allow exploring the state of the company's organizational culture and its closeness or remoteness to a digital culture.

With these results, an organization can identify its gaps and propose actions to prioritize actions for change and the advancement of its organizational culture towards digital. Two aspects can be highlighted from the proposal in this article: 1) it integrates leadership and communication as a trainer of digital culture, which is not so clearly identified in the literature explored on the subject; and 2) it becomes a methodology that can be implemented in any type of company.

Finally, the digital organizational culture model may provide the opportunity to create the space and climate in which a creative and innovative attitude is rewarded and in which ideas for the development of new products, services, and processes continuously arise, which represent profitability to the company and help in the consolidation of a business strategy based on technology and digital tools for innovation.

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