

Creating a Digital Culture for Digital Transformation: A Literature Review of Practical Steps

Diana Andreea FIRICAN

Bucharest University of Economic Studies, Bucharest, Romania

diana.firican@gmail.com

Abstract. *In the context of a world characterized by volatility, uncertainty, complexity and ambiguity, the digital transformation of organizations has become unavoidable. Digital culture has received increased attention as an essential factor in the success or failure of digital transformation. However, there is no generally accepted digital cultural model for organizations to build upon, nor a clear roadmap to follow on how to change the existing culture into a digital one to facilitate the process of digital transformation. This paper represents a review of the so-far proposed digital cultural models, respectively of the action steps suggested by literature for creating a digital culture. First, the paper combines the dimensions of three existing digital culture models into a more comprehensive model and secondly, it structures the action steps by the new digital culture dimensions. The action steps are further divided into high-level and practical ones. This is the first study comprising a sum of action steps towards a digital culture from published literature up to this point. The findings show firstly that digital cultural models overlap to a high degree. Secondly, the suggested action steps are similar, clear patterns becoming recognizable, however that a lot of them remain high-level, abstract or theoretical. This study represents a good start into creating a roadmap for organizations for creating a digital culture, however more research is required to be able to provide a detailed, practical and actionable set of steps for organizations on their digital transformation and digital culture change journey.*

Keywords: digital culture, digital transformation, culture change, organizational culture, change management

Introduction

In the context of a VUCA world, characterized by volatility, uncertainty, complexity and ambiguity, digital transformation has become an unavoidable, albeit difficult process for organizations to navigate successfully. Technologies, organizational structures, culture, and people systems are in a constant process of change (Neeley & Leonardi, 2022) and it is hard to anticipate what's coming next (Weber, 2020). Given that these changes, both incremental and radical, overlap and intertwine, stabilization phases between them are short or inexistent (Weber, 2020). Additionally, in many cases, the initially planned change suffers considerable modifications (Neeley & Leonardi, 2022). This leads to the need for organizations to rethink and adapt their change management approach for digital transformation (Weber, 2020).

There is indeed merit in investing in the process of digital transformation, as Fitzgerald et al. (2014) state that digital maturity, meaning companies with high digital maturity, have better financial results than their competitors, eliciting higher market shares, revenue and profit. Additionally, Chesbrough (2020) mentions that exposure to and successful navigation of changes, increases organizations' resilience for similar occurrences in the future.

The question then arises, what are the factors leading to a successful digital transformation in organizations? More of the scientific literature was dedicated in recent years to the process of digital transformation and its success factors. A specific topic is receiving increased attention in this context: the aspect of culture, specifically digital culture. The culture of organizations trying

to undergo digital transformation influences the success of their endeavors, with the ability to act as a barrier (Hartl & Hess, 2017) or an enabler (Gürkan & Çiftci, 2020). This is a two-way street: the existing culture influences the success of digital transformation, while, at the same time, the process of digital transformation leads to a more digital culture, by modifying the existing culture (Mergel & al., 2019) or creating a new one (Bounfour, 2016). Digital transformation and digital culture are interlinked, it being impossible to work on one without affecting the other and each supporting the other's outcomes (Firican, 2023).

Even though a change towards a digital culture is increasingly seen as essential for the success of digital transformation, there is not enough body of literature to provide a concrete roadmap for organizations on how to create a digital culture to facilitate their digital transformation process (Mergel & al., 2019). This paper aims at providing a summary of the practical steps suggested by literature to organizations in their initiatives of creating a digital culture. It starts by combining three models of digital culture dimensions into a more comprehensive one, followed by adding to each dimension the concrete steps suggested for how to achieve the respective dimension. By doing so, this paper provides a time stamp of what is currently available at this point from a guidelines perspective for organizations in their digital transformation journey.

Literature review

While the initial focus of digital transformation has been directed towards digital technologies, the human and cultural aspects must remain in the spotlight (Pedersen, 2022). A successful digital transformation entails not only the right IT infrastructure, complemented by an aligned strategy, but also a cultural change toward a digital culture (Kocak & Pawlowski, 2023).

Creating a digital culture is critical in the digital transformation of companies (Busco et al., 2023; Pedersen, 2022). As Borcan (2021) mentions, the organizational culture turns into a competitive advantage, playing a key role in the adoption of new technologies and in the innovation process. Culture can act as an enabler or prohibitor of the success of digital transformation (Forsythe & Rafoth, 2022), a powerful reason for organizations to remain flexible in the context of rapidly changing external and internal environments, by adapting their values, attitudes and organizational structures (Batko et al., 2018).

Despite the increasing importance and attention culture is receiving in the context of digital transformation, not many leaders have a clear understanding about how a company's culture changes, respectively doesn't change, during digital transformation (Pedersen, 2022) and only few have done it successfully (Forsythe & Rafoth, 2022). Forsythe & Rafoth (2022) follow by observing that simply by introducing digital tools or processes, an organization doesn't become digital. Different strategies employed by different organizations have failed to lead to successful digital culture change and digital transformation (Kiefer et al., 2021). Organizations thus need more concrete guidance on how to create the much needed digital culture to facilitate the process of digital transformation.

According to Westerman et al. (2019), culture is what happens when the manager isn't watching or simply how an organization does things. Trushkina et al. (2020) defines digital culture as a set of behaviors and habits that enable organizations to use their technologies to create the best possible value for all of their stakeholders, internal and external. However, a few years ago, Batko et al. (2018) mentioned there was no universally accepted model of digital culture.

In more recent years, a few digital cultural models have emerged, the one belonging to Kiefer et al. (2021) being used in several scientific articles. Even more recently, Teguh et al. (2022) and Firican (2023) have aimed at creating digital culture models to encompass an exhaustive set of

dimensions to fully capture the complexity of digital culture. Each of the three models has dimension that can enhance the other two.

Lastly, regarding the articles aiming to provide organizations with a more practical roadmap for changing their culture into a digital one, they mainly choose one of the following two approaches:

- Case studies of real organizations, which have undergone successful digital transformation and culture change, describing their concrete approach and action steps on their journey.
- Series of suggestions, often more high-level, based on authors' experiences in their work with organizations or based on previously published literature.

Methodology

The methodology consisted in qualitative research, more specifically narrative literature review and critical analysis of articles in English language, mostly from the last 5 years (21 out of 24 have been published in the time frame 2018-2023), using the following keywords: digital culture, digital transformation, culture change, organizational culture, change management. This paper provides an overview of what has been published on the topic of action steps for creating a digital culture, while following the digital models published so far.

An initial pool of 78 articles has been identified through online searches of web pages and published articles, based on the previously mentioned keywords. In a second phase, only the 41 articles with focus on organizational or digital culture in the context of digital transformation were selected, based on their titles and abstracts. In a third phase, the articles with content regarding digital cultural models, respectively concrete action steps in creating a digital culture were kept, after a full text analysis, adding to a total of 24 articles. Subsequently, the information in the respective articles has been structured in order to provide firstly, a new, more comprehensive model for digital culture and secondly, a list of the action steps suggested in the selected pool of articles corresponding to each of the identified dimensions within the new digital culture model. Lastly, the limitations of this research have been highlighted and suggestions have been made for further research.

The methodology used for this paper is the same as the one employed by Kiefer et al. (2021). It first identifies the articles written at this point in time on the respective topic, then narrows down the ones truly relevant to the research objective. The analysis of the remaining articles allows for a snapshot of the status of literature on the research topic at the moment the present paper was written.

Results and discussions

Each of the selected digital culture models offers a wide range of dimension with the purpose of capturing the complexity of a digital culture.

The model of Kiefer et al. (2021) identifies following dimensions: corporate entrepreneurship, digital awareness and necessity of innovations, digital skills and resources, ecosystem orientation, employee participation, agility and organizational structures, error culture and risk-taking, internal knowledge sharing and collaboration, customer and market orientation, open mindedness and willingness to learn.

One year later, Teguh et al. (2022) gather existing research and propose following dimensions: cross-functional collaboration, digital leadership, digital innovation culture, employee

digital skills, digital technology, change orientation, digital data management, risk-taking, customer digital experience focus, flexibility and agility, digital mindset.

Lastly, Firican (2023) suggests a model comprising the dimensions: internal collaboration, external collaboration, customer centricity, flow of information, decision-making at lower levels, responsiveness and rapid action, innovation, risk-friendliness, flexibility, learning orientation, data-driven decisions, digital first mindset, career evolutions, change readiness.

In an attempt to create a better overview of the overlaps and differences between the three models, a comparison table has been created. Some of the dimensions were split, to allow for a more detailed and accurate comparison.

Table 1. A parallel between the digital culture models of Kiefer et al. (2021), Teguh et al. (2022) and Firican (2023) and the resulting new model.

Kiefer et al., 2021	Teguh et al., 2022	Firican, 2023	New model
Internal collaboration	Cross-functional collaboration	Internal collaboration	1. Internal collaboration, knowledge sharing and information access
Ecosystem orientation	N/A	External collaboration	2. External collaboration and ecosystems orientation
Customer and market orientation	Customer digital experience focus	Customer centricity	3. Customer centricity and market orientation
Internal knowledge sharing	N/A	Flow of information	Same as #1
Employee participation	N/A	Decision-making at lower levels	4. Employee participation and decision-making at lower levels
Agility	Agility	Responsiveness and rapid action	5. Flexibility, agility, responsiveness and rapid action
Necessity of innovations Corporate entrepreneurship	Digital innovation culture	Innovation	6. Digital innovation and corporate entrepreneurship
Error culture and risk-taking	Risk-taking	Risk-friendliness	7. Risk-friendliness and trial & error culture
N/A	Flexibility	Flexibility	Same as #5
Digital skills Willingness to learn	Employee digital skills	Learning orientation	8. Learning orientation, digital skills and career adaptations
	Digital data management	Data-driven decisions	9. Digital data management, data-driven KPIs and decisions
Digital awareness	Digital mindset	Digital first mindset	10. Digital awareness and digital first mindset
N/A	N/A	Career evolutions	Same as #8
Open mindedness	Change orientation	Change readiness	11. Openness, change orientation and readiness
Digital resources Organizational structures	Digital technology	N/A	12. Digital organizational structures, processes, tools and technology
N/A	Digital leadership	N/A	13. Digital leadership

Source: Author's own research.

The dimension of the 3 digital culture models have been combined and resulted into a new model with the following dimensions:

1. Internal collaboration, knowledge sharing and information access
2. External collaboration and ecosystems orientation
3. Customer centricity and market orientation
4. Employee participation and decision-making at lower levels
5. Flexibility, agility, responsiveness and rapid action
6. Digital innovation and corporate entrepreneurship
7. Risk-friendliness and trial & error culture
8. Learning orientation, digital skills and career adaptations
9. Digital data management, data-driven KPIs and decisions
10. Digital awareness and digital first mindset
11. Openness, change orientation and readiness
12. Digital organizational structures, processes, tools and technology
13. Digital leadership

Next, the action steps suggested in the selected articles have been assigned to each of the identified dimensions. The action steps have further been divided into high-level or concrete action steps. For example, under Digital Leadership, the suggestion to guide people through transitions has been considered a high-level guideline, whereas the action step to define what's-in-it-for-me for each target group has been placed under the category of concrete action steps (Neeley & Leonardi, 2022).

Table 2. High-level guidelines and practical action steps to change the existing culture towards a more digital culture, structured by the dimensions of the newly defined digital culture model

New dimensions	High-level guidelines	Practical action steps
Internal collaboration, knowledge sharing and information access	Remove silos and encourage cross-functional teams' collaboration (Neeley & Leonardi, 2022) Democratize information (Forsythe & Rafoth, 2022) Remove silos between departments (Hie, 2019) Exchange information and knowledge (Busco et al., 2023) Encourage generation of multifunctional/ multidisciplinary teams (Busco et al., 2023) Create knowledge exchange systems (Stoianova et al., 2020)	Build communities of people with similar interests (Neeley & Leonardi, 2022) Create cross-hierarchical and interdisciplinary working groups, on a voluntary basis (Fringes, 2023) Establish interdisciplinary communities and committees to exchange information and knowledge and work on projects collaboratively (Pfaff et al., 2023) Adapt reporting lines to objective-specific affiliations, e.g. project leads or product owners (Pfaff et al., 2023) Every 5 years have employees change their job, team and department within the company (Weber, 2020) Set up mentoring systems (Stoianova et al., 2020)
External collaboration and ecosystems orientation	Obtain missing digital capabilities from external ecosystem Collaborate and share knowledge with external partners (Kiefer et al., 2021)	Partner up with external companies on digital platforms (Kiefer et al., 2021) Integrate partners, suppliers, upstream and downstream companies in production processes (Weber, 2020) Collaborators are directly involved in process of designing new offers (Borcan, 2021)
Customer centricity and market orientation	Anticipate customer desires (Westerman et al., 2019) Instill in customers an emotional stake in corporate culture (Weber, 2020)	Ask customers what they need (Westerman et al., 2019) Proactively experiment to delight customer (Westerman et al., 2019)

New dimensions	High-level guidelines	Practical action steps
		Communicate with customers about products and involve in value creation stage (Weber, 2020)
Employee participation and decision-making at lower levels	Shift responsibilities towards employees, giving them more freedom (Kiefer et al., 2021) Flatten decision hierarchies (Forsythe & Rafoth, 2022) Cultivate habits of self-organization (Westerman et al., 2019) All employees should be engaged, energized, enthusiastic and involved (Hie, 2019) Shift from "one-person-knows-it-all" to collective decision-making (Pfaff et al., 2023) Shift to teams being self-organized with hierarchy or dependency on manager (Pfaff et al., 2023) Management becomes leadership (Pfaff et al., 2023) Share authority and power (Busco et al., 2023) Transfer responsibility of success to staff (Weber, 2020) Use contacts, information and ideas from employees (Weber, 2020) Leverage individuals' passions and talents (Weber, 2020) Eliminate bureaucratic component (Stoianova et al., 2020)	Create reward systems (Neeley & Leonardi, 2022) Convince a small group of people first (Neeley & Leonardi, 2022) Find influential leaders at lower levels (Forsythe & Rafoth, 2022) Organize cross-hierarchical workshops to co-create the change (Fringes, 2023) Send surveys to get honest feedback (Fringes, 2023)
Flexibility, agility, responsiveness and rapid action	Cultivate habits of experimentation (Westerman et al., 2019) Ensure speedy feedback (Hie, 2019) Make fast decision (Pfaff et al., 2023)	Create an "Agile Center" to train manager in agile methodology (Fringes, 2023) Design closer planning cycles, small-step synchronization loops (Pfaff et al., 2023) Long-term planning back-up by short-term check-ins and course corrections (Weber, 2020)
Digital innovation and corporate entrepreneurship	Explore new ideas, experiment with new technologies (Sood, 2018) Encourage employees to find new business opportunities, lateral thinking, out-of-the-box thinking and curiosity (Kiefer et al., 2021) Encourage creativity and innovation (Busco et al., 2023) Encourage curiosity and sense of adventure in employees (Weber, 2020)	Analyze what makes "pockets of digital excellence" successful and share their stories (Westerman et al., 2019) Innovation contests, hackathons, recognition (Westerman et al., 2019)
Risk-friendliness and trial & error culture	Embrace "try fast, fail fast" culture, learn from failures (Sood, 2018) Exercise tolerance towards failure (Busco et al., 2023) Encourage employees to take risks (Busco et al., 2023) Take joy in and learn from mistakes (Weber, 2020)	Conduct visible pilot before global rollouts (Westerman et al., 2019) Establish "FuckUp Night" and "Courage Festival" to promote a culture of mistakes (Fringes, 2023)

New dimensions	High-level guidelines	Practical action steps
Learning orientation, digital skills and career adaptations	Employee must be internally motivated (Neeley & Leonardi, 2022) Ensure talent life cycles (recruiting, hiring, training, performance management, promotion, etc.) aligns with culture (Forsythe & Rafoth, 2022) Encourage people to become "learn-it-alls" (Westerman et al., 2019) Invest in digital skills (Busco et al., 2023)	Evaluate employees' digital capabilities (Kiefer et al., 2021) Provide learning paths to bridge gaps (Kiefer et al., 2021) Design learning opportunities for all roles (Neeley & Leonardi, 2022) Guide managers to motivate employees towards learning offers (Neeley & Leonardi, 2022) Decentralize learning and make it each person's responsibility (Neeley & Leonardi, 2022) Managers to mentor employee as "leaders who teach" (Neeley & Leonardi, 2022) Permanently invest in digital training (Busco et al., 2023) Standardize training programs (Stoianova et al., 2020) Create career development programs (Stoianova et al., 2020) Prepare an external talent pool (Stoianova et al., 2020) Create re-training programs for older employees (Stoianova et al., 2020)
Digital data management, data-driven KPIs and decisions	Create a framework of data-driven decision making (Forsythe & Rafoth, 2022) Transparent metrics (Westerman et al., 2019) Define truly meaningful KPIs (Westerman et al., 2019) Create target agreements and bonus systems (Fringes, 2023) Create digital measurements (Hie, 2019) Clear rewards and recognition (Hie, 2019) Ensure transparency of and accessibility to data (Pfaff et al., 2023) Align individual incentives for key-roles (Pfaff et al., 2023)	Give employees access to data (Neeley & Leonardi, 2022) Measure the gains of digital endeavors and showcase them (Neeley & Leonardi, 2022) Develop key-results in KPI format (Busco et al., 2023)
Digital awareness and digital first mindset	Analyze the IT department and equip to be able to support organizational change (Westerman et al., 2019) Accept uncertainty as a fixed element (Pfaff et al., 2023)	Design projects for digital components adoption, with practical application (Neeley & Leonardi, 2022) Identify and leverage digital mindset influencers (Neeley & Leonardi, 2022) Place local, interdisciplinary culture change teams (Fringes, 2023)
Openness, change orientation and readiness	Consistently address resisting employees (Fringes, 2023) Remove barriers and resistance (Hie, 2019) Develop capacity of rapidly adapting to change (Busco et al., 2023) Understand that change is not a threat but an opportunity (Weber, 2020) Be prepared to continuously reinvent	Council resistant employees to be more open to change (Westerman et al., 2019) Train for change together, managers and their teams (Weber, 2020)

New dimensions	High-level guidelines	Practical action steps
	yourself (Weber, 2020) Continuously be prepared to adapt or change relationships, processes, teams (Weber, 2020) Establish optimism and a success mindset (Weber, 2020)	
Digital organizational structures, processes, tools and technology	Provide the right tools and make them accessible (Westerman et al., 2019) Create clear roles and responsibilities (Hie, 2019) Implement digital technologies to optimize business processes (Stoianova et al., 2020)	Introduce employee-driven management technologies, modular platform for HR management, digital cloud platform providing a digital format for all employee processes (Trushkina et al., 2020) Create a digital collaboration platform for open contribution and no curation of content (Fringes, 2023)
Digital leadership	Guide people through transitions (Neeley & Leonardi, 2022) Get buy-in from people (Neeley & Leonardi, 2022) Promote a shift in people's identities (Neeley & Leonardi, 2022) Address resistance (Neeley & Leonardi, 2022) Ensure transparency of progress & decisions (Batko & all, 2018) Share information, collaborate, stay nimble and agile (Forsythe & Rafoth, 2022) Understand existing culture before changing it (Westerman et al., 2019) Transparent goals (Westerman et al., 2019) Reward employees and encourage behavior change (Forsythe & Rafoth, 2022) Involve strategic supporters (Fringes, 2023) Lead by example (Jantti & Hyvarinen, 2018) Create a sense of urgency (Hie, 2019) Be honest and never overpromise (Weber, 2020)	Create clear strategy and mission and common understanding (Kiefer et al., 2021) Set company-wide goals (Kiefer et al., 2021) Create a vision bigger than your business (Westerman et al., 2019) Start with a "bold stroke" to land the message of a new direction (Neeley & Leonardi, 2022) Increase messaging (Neeley & Leonardi, 2022) Launch internal marketing campaigns on the positive potential around change (Neeley & Leonardi, 2022) Come up with taglines or so-called mantras, e.g. "faster and cheaper" (Neeley & Leonardi, 2022) Define what's-in-it-for-me for each target group (Neeley & Leonardi, 2022) Engage in open communication with employee to directly hear fears, doubts and hopes (Westerman et al., 2019) Create materials to reinforce the messages: booklets, infographics, infotainment, Wall of Commitment (Fringes, 2023) Organize company-wide events (Fringes, 2023) Communicate in positive tone, through all available and newly created channels, to everyone (Hie, 2019) Establish a digital culture governance team (Hie, 2019)

Source: Author's own research.

There are recognizable patterns in the table above with regards to the action steps towards creating a digital culture. Firstly, the right tools need to be in place to enable the people at all organizational levels to do their work easier and faster. The right organizational structures, processes, workflows and KPIs need to be in place to further supports the people, as well as the communities and meetings set up to facilitate cross-departmental, cross-functional and cross-organizational-layers collaboration, as well as collaboration with partners outside of the organization. Organizations need to set up a learning system that allows and encourages all employees to bring themselves up-to-speed and beyond with all-things digital. Several studies suggest creating communities of champions to drive the creation of a digital culture. Additionally, the articles emphasize numerous times the leverage a right leadership involvement can have in

successfully changing an organizational culture. Honest communication, transparency, using multiple channels to inform all employees is also a pattern in the set of suggested action steps. Not surprisingly, communication, training, champions, as well as sponsorship are highly effective measures in the discipline of change management and can positively influence the process of changing culture. Thus, the action steps suggested by the reviewed articles are either structural components, such as tools, processes, organizational structures, or change management measures, the combination of both being highly effective in creating a digital culture.

Conclusion

The literature review showed that there is consensus among authors on three matters: digital culture is important to digital transformation, there is no generally accepted model for digital culture and there are not enough studies containing practical recommendations for companies to create a more digital culture.

However, the different digital models identified have a high degree of overlap, meaning that even if there is no perfect agreement on the exact dimensions defining digital culture, authors agree on a vast majority of dimensions. This literature review was not able to identify mutually exclusive dimensions, but rather, the dimensions of the different models complemented each other to come together into a more comprehensive model, aiming to better capture the complexity of digital culture.

Secondly, the actions towards a digital culture suggested by the analyzed articles are also overlapping or complementary, with clearly identifiable patterns, none being contradictory to another. This means that, there is overall agreement of action steps to be undertaken for a more digital culture, however few suggested action steps are truly concrete and actionable. The case study articles are the ones providing more practical suggestions to companies. More research and more case studies are needed to create the comprehensive roadmap that organizations need to create a more digital culture.

From a limitations perspective, even though ideally there would be a roadmap to help any organization in creating a more digital culture, there is no one-size-fits-all way, as each organization has its own objectives with digital transformation and own approach towards digital culture (Sood, 2018). Cultural differences can make different digital culture action steps less effective or even detrimental (Westermann et al., 2019), the same way industry differences influence which actions steps are effective towards digital culture and which are not (Kocak & Pawlowski, 2023). Lastly, even though we assume digital culture is a beneficial change, Westerman et al. (2019) remind us that not all units within an organization need to have a digital culture and that imposing it where it's not needed, might have unnecessary negative outcomes.

As it is difficult to create a detailed, prescriptive roadmap for creating a digital culture, it is also important to be reminded that context is an essential aspect to be taken into consideration when undergoing digital transformation. A digital culture roadmap, that could take into consideration the existing culture, digital maturity and context of an organization would allow accounting for the needed differences in approaches. Further research could look into how these cultural differences could be identified and accounted for.

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