A Framework for Managing Organizational Change in the Context of Digital Transformation

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Abstract. Today organizations have confronted a dynamic environment and open-end changes from the VUCA world; they must always competitively struggle to change themselves to increase operational efficiency, financial effectiveness, and strategic capabilities development for survival. Along with changes, they must maintain customer satisfaction and employee engagement in a manner with limited resources. Therefore, understanding the nature of organizational change, and the mechanisms of effectively managing change so that organizations can successfully achieve the goals of change is a vital field for management. For the question, the paper adopted the methodology of the exploratory approach; it examined the literature to present the dimensions and characteristics of organizational change and change management. To integrate all findings from the exploratory study into a unified form, the authors propose a system-based framework for managing organizational change, that hopes to help organizations increase their change success ratio when applying to their own contexts, especially in their digital transformation, which is considered the most complex, open-end and holistic change nowadays.

Keywords: Organizational Change · Change Management · Digital transformation

1 Introduction

The importance of change in societies is almost universally agreed to help companies maintain profitability and remain competitive [61]. However, change is the riskiest mission of any organization, with 70% of change initiatives being unsuccessful in pursuing their predetermined objectives [13], a low employee satisfaction rate, and other uncertain effects. Therefore, it is significantly vital to any management to understand the nature of changes and effectively manage them [19].

Moreover, despite a large number of theories of change, the aforementioned aspects are still seen to be rather broad in realities, especially for application in the context of Digital Transformation (DT) which is a holistic change challenging all firms today [20]. For this purpose, the remainder of this article is organized as follows. To provide the theoretical background that underpins the research, Sect. 2 outlines the dimensions and

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characteristics of organizational change and their concerns in the change management field. Section 2 also reviews the existing change management theories, their approaches, enablement factors, and resistance management strategies. Its content supports the need and opportunity to develop a framework for managing organizational change in the next sections. Section 3 shortly describes the DT from a change management perspective, and then proposes a framework for improvisationally managing organizational change in the context of DT. Lastly, Sect. 4 summarizes the main content of the research, including outlook research for the proposal framework.

2 Literature Review

2.1 Data Collection and Analysis

The authors collected papers that were peer-reviewed and published between 2000 and August 2022 through structured keyword search and cross-referencing to ensure the quality and reliability of this review. The keywords applied to search for articles in the database of Google scholar were: "*Change Management*" OR "*Change model*" OR "*Change process*". The authors limit sources of papers to several well-known databases, including Elsevier, EBSCOhost, Emerald, Taylor & Francis, AIS eLibrary, IEEE, and, ResearchGate. We also only considered results are articles in English, not literature review ones, and for enterprises. After carrying out screening titles, abstracts, and conclusions to choose the appropriate papers to review, we selected and reviewed 94 papers altogether.

The authors used the content analysis method [66] in investigating the collected papers. This method is very good at combining rich-meaning qualitative approaches with robust quantitative analyses by enabling (i) manifest content of text and documents and (ii) uncovering latent content and more profound meaning embodied in the text and document [30].

The research presents the analytics of literature into two groups: (i) organizational change, and (ii) change management. The analysis findings of these fields will be synthesized and linked to gain insights into critical points and states the need and opportunity to develop a framework for managing organizational change for DT.

2.2 Organizational Change

An organization can be seen as a complex system of roles and activities designed for people to perform their functions cooperatively to accomplish a shared purpose and achieve their individual goals [81]. Change can be defined as the shift to a new or different situation or state of affairs. Organizational change is an ever-present feature of an organization's life, both at its operational and strategic levels [23], and it has been identified by a number of dimensions [5, 79]; as depicted in Fig. 1.

a) Change Drivers: Due to the rapidity of technologies, the complexity and turbulence of events in the environment, organizations suffer many pressures for change, called the drivers of change (or forces of change), coming from the external and internal

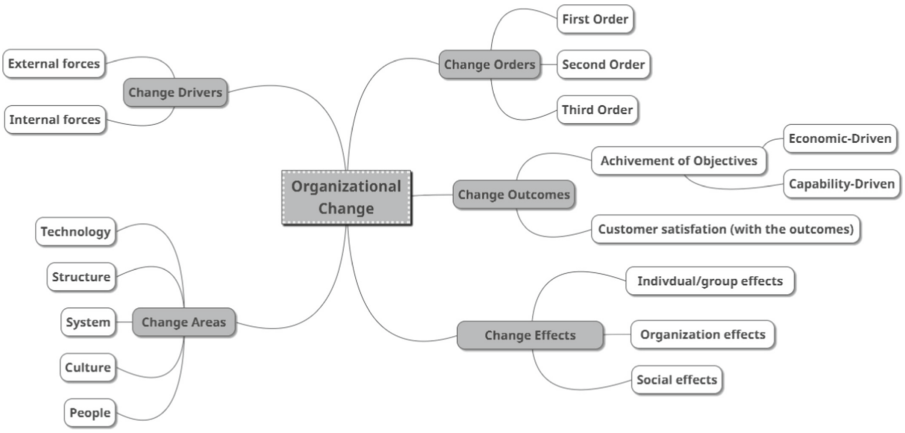

Fig. 1. Dimensions of organizational change. Source: The authors (2022).

environment of organizations [93]. Under the SWOT point of view, the PESTLE framework is recommended to monitor external opportunities and threats [44], which refers to political, economic, social, technological, legal, and environmental factors. Besides that, the specific environment elements, including suppliers, customers, competitors, and pressure groups (SCCP), also raise external pressure.

On the flip side, the internal strengths and weaknesses in efficiency and effectiveness in comparison with the organization's primary aims and objectives of an organization also create internal pressures for it to build new or reconfigure its strategic resources, which refers to assets, capabilities, competencies, resources (ACCR) of an organization [9].

b) Change Orders: From a processual perspective, change is differentiated between first-order, second-order, and third-order change [10]. First-order changes affect selective parts of an organization, e.g., certain business processes or departments. Second-order changes affect the entire organization and have the potential to change its core, i.e., its self-conception; change that also exceeds organizational boundaries is third-order change.

c) Change Areas: From the business strategy perspective, when implementing change, organizations should respect their McKinsey 7-S model's areas, including strategy, structure, staff, style, system, shared value, and skills [91]. Besides, the framework of configuration, coordination, culture and people, and information and technology as its main dimensions [90]. More precisely, they are identified by five main areas when carefully controlling them should bring more effectiveness in managing change [65, 36].

i. *Technology*: Technology is concerned with the design and layout of production facilities, type and mix of machines and equipment, product mix, the flow of data and sharing of information, the invention of automation, computer software and hardware, and control of production processes, maintenance, and simulation of

operations and facilities, and others. The technological change led to skill bias in both directions: it brings a more significant wage premium for skill, and by contrast, increases unemployment for less skilled laborers [18]. It is recommended to establish a meaningful dialogue with a group of three or four persons at different hierarchical levels to see the organization's needs before implementing the technology change [70].

ii. *Organizational systems*: This area is concerned with working practices and processes of organizations in production, material procurement, marketing, sales, maintenance, information technology, and so on. The new processes, those that have been developed for both cost reduction and reduction in the product life cycle, have impacts on the survival of the organization [33]. A system has been considered by three sub-systems in a system: technical, social, and power, and no change could convert an entire system instantaneously [25].

iii. *Organizational structure*: The structure of organizations includes hierarchical levels, administration, the span of control, workforce utilization, coordination, communication, and so on. In fact, "Structure is a means for attaining the objectives and goals of an organization. Any change in the structure must start with objectives and strategy" [27]. The concept of business process reengineering (BPR) is popularized [40], which refers to fundamentally rethinking and radical redesigning work processes that transform the company to become lean and quick in response. Then, successful reengineering requires a change in the company's whole structure, leading to downsizing and delayering [78].

iv. *Culture*: Culture includes flexibility, workplace environment, team spirit and behavior of individuals, group behavior, management commitment, belongingness, leadership, and interpersonal relationships in an organization. Employees should be engaged as meaningful contributors to cultural change [43]. The management should pay attention to four studied factors that help motivate employees for cultural change [72].

v. *People*: This area is related to the management of individual change in attitude, vision, objectives, mindset, resistance to change, motivation, developing skills, coordination, and the impact of group dynamics on the change process. Changing the mindset of employees at all levels involved in making a change in an organization requires extraordinary effort should be invested [11]. "The people side of change" is vital and should be taken care of in all changes [39].

d) Change Outcomes: Outcomes of a change project are defined as achievements received at the end of the project in comparison with its predetermined objectives. They are classified under two main categories: (i) Achievement of project objectives, and (ii) Customer satisfaction with the outcomes [2].

i. *Achievement of project objectives*: the change project to be completed or reach the change goals within the allocated cost and schedule. Regarding change goals, they have differed the goals into *economic-driven goals* and *capability-driven goals* [13]. The former targets operational efficiency, e.g.: operational excellence [1], customer experience [86], …, and financial effectiveness; the latter focus on the exploration of new opportunities, e.g.: business model innovation [58], …, or innovations [84].

ii. *Customer satisfaction about the outcomes*: the change outcomes to meet or exceed the expectations of the change team, change project sponsors, and organizational stakeholders.

e) Change Effects: Change in an organization makes impactions on stakeholders at all levels: (i) individual/group, organizations, and industry & society [63]. In the aspect of individual impactions, employees significantly influence employees' satisfaction, loyalty, work performance, and relations between employees [3]. Regarding impactions on organizations, the McKinsey 7-S model [91] suggests linkages between organizations' strategic areas. When one area changes, other areas should be adjusted promptly to maintain their equilibrium to gain optimal performance [15]. Lastly, organizational change can impact their employee's involvement and participation in external social issues [76]. It can also affect customer behavior, market disruption as well as its partners' network with its evolution in the value proposition under a third-order level change, like the DT [89].

2.3 Change Management

Although some changes have a low impact on organizations and are often referred to as management fashions [61], many other changes significantly impact organizations' business continuity on how they stay relevant and competitive [46]. Hence, it is so vital for the organization to successfully identify where its position in the future and how to get there [24].

There have been many definitions of change management, such as from [8, 23, 26, 34, 51, 59]. The definition from Hiatt & Creasey [39], the most well-known and recent one, is "Change Management is the application of processes and tools to manage the people side of change from a current state to a new future state so that the desired results of the change (and expected return on investment) are achieved." The definition will be used in the paper for analyzing the Change Management structures and characteristics; as depicted in Fig. 2.

a) Change types: There are various types of changes have been introduced by different authors, and are classified into three main groups: (i) by occurrences, (ii) by scales, and (iii) by the ways change coming [24].

First, regarding change types by occurrences, changes are divided into continuous change and discontinuous change. Continuous change is the ability to change continuously in a fundamental manner in the scope of organizations (departmental, operational) to keep up with the fast-moving pace of change [22]. Meanwhile, discontinuous change is referred to as a kind of "change, which is marked by rapid shifts in strategy, structure or culture, or in all three" [60]. Discontinuous change is cost-effective and creates less turmoil than continuous change because it does not adversely raise a number of costly change initiatives [60].

Secondly, change based on the scale could be separated into fine-tuning, incremental adjustment, modular transformation, and corporate transformation [29]. Fine-tuning, a type of change can happen in all areas but with a small impact. Meanwhile, Incremental-adjustment is a type of change that is not radical, yet the organizational strategies and

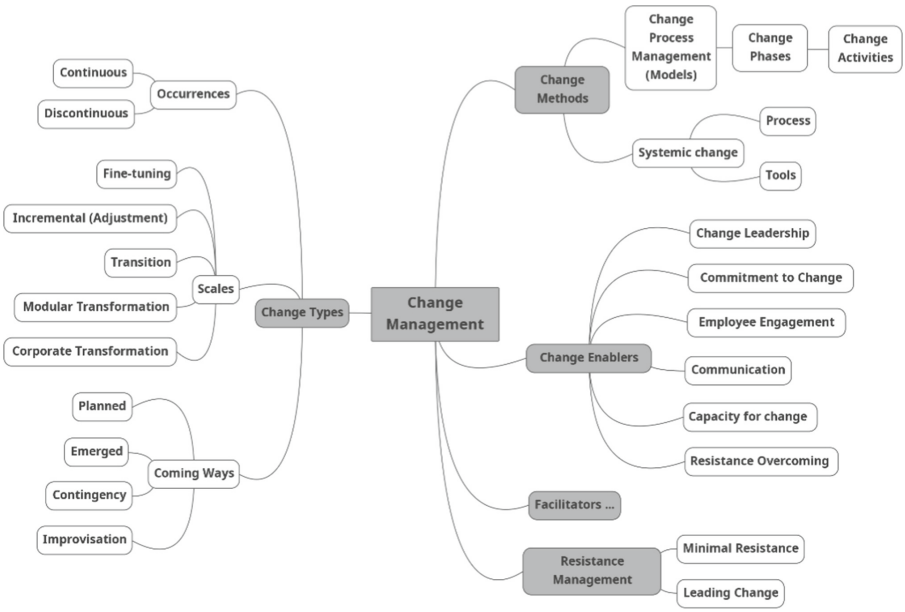

Fig. 2. Components of change management. Source: The authors (2022).

working processes are modified. Incremental change happens all the time in organizations and helps improves or modify an existing product, process, procedure, or system. It slightly increases the efficiency or effectiveness of a process and makes the current conditions better to adapt to the constantly changing environment. Incremental change is more common and is commonly used to maximize short-term performance [45]. In contrast, incremental change is radical change, which fundamentally redefines what the organization is or changes its basic framework and impacts the whole system of the organization. Radical change is used to address more fundamental problems, especially in response to serious external events or strategic problems. If the radical change takes place in one or more departments (First Order), the change is considered modular transformation, and if it happens in a whole organization (Second Order), then called corporate transformation [29]. Somewhere between the extreme of incremental change and radical change is transitional change [4]. Transitional change involves situations where the organization needs to fundamentally redesign which will require changing what currently exists and simultaneously implementing something new [47].

Thirdly, a change could be also identified as proactive change versus reactive change [74]. Reactive change is a change response to a situation and is primarily an unplanned event from external forces [17]. Management does not have time to analyze the situation and prepare a well-conceived plan and has to make changes to deal with the problem quickly and routinely. On the other hand, in the case of proactive change, managers make a vision of the "need for change" before taking action to address or improve the current situation. The planned change [59] is a proactive response that aims to develop an organization's capabilities and core competencies before implementation [8]. It focuses

on explaining the process that implements the change concerning understanding the different states an organization will have to go through to move from an unsatisfactory state to an identified desired state. Such change is usually incremental, process-oriented, focused on long-term benefits, and expected by various organizational stakeholders. It usually has an internal focus on resources, strategies, and processes. The emergent change is an extraordinary planned change that raises more concerns about the readiness for change (or organizational capacity for change [7]) and facilitates the change by providing specific pre-planned steps for each change project and initiative [55].

The planned changes have many advantages over other change approaches because they could be persuasively supported by members of an organization [50] and could be used as a strategic tool to motivate employees to participate in change [85]. By contrast, it cannot be able to apply across all situations, especially when the organization is under a severe crisis requiring significant and rapid alterations but has limited time and resources. That does not allow the leader to do detailed planning with enough stakeholder consultations. Also, it is unrealistic to assume that all stakeholders should be enthusiastic and willing to participate in the change process. Thus, the *contingency approach* [29] has been introduced that allows change agents and relevant parties to "choice" [23] various scales of change (fine-tuning, incremental adjustment, modular transformation, and corporate transformation) and styles of management (collaborative, consultative, directive, and coercive) when managing change in an organization.

Moreover, most of the changes from the VUCA world that organizations have confronted are open-end, holistic, many unpredictable at the start, with the next steps based on the ongoing experience of previous incremental implementation [77]. Hence, the *improvisational approach* has been introduced allowing management to adopt change based on a series of 3 change types and the pace of opportunities [77]. With this approach, organizations will improvisationally choose change approaches of anticipated (a kind of planned change), emerged, and opportunity-based to respond to outcomes of change implementations as well as opportunities that occurred during this time (Fig. 3).

b) Change methods: There are two main types of change methods: systematic change and change (processual) management [2]. Systematic change methods involve specific processes and tools to help the management team make a sequence of start, stop and continue decisions [94]. Several systematic change methods have been proposed in the last 20 years, like TQM's PDCA cycle, Six Sigma's DMACI cycle, BPR,… They mainly have promoted incremental process adjustment and infrequent small transitions, which are planned and steered by top managers [2].

From a processual perspective, change management is a process driving an organization from its current state to the desired one [39]. In comparison to systematic change methods, processual change management methods involve higher scales of organizational change [6], which are more explicit and allow more participation from all stakeholders, and include a range of intervention strategies [92]. These change methods help align the change initiatives with the organization's mission and strategy by properly integrating change strategies into organizational strategies and sustaining change results into organizational culture [92].

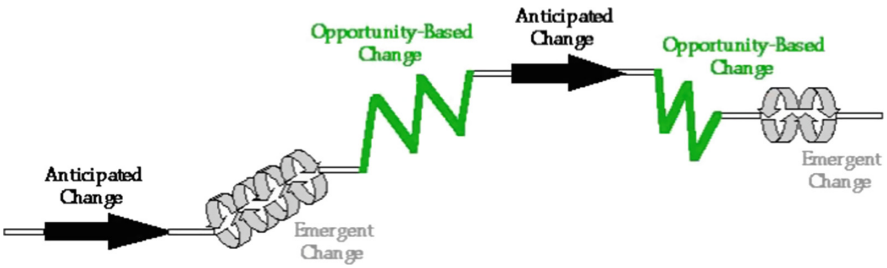

Fig. 3. The improvisational change approach. Source: Orlikowski & Hofman [2].

Change management processes composes a series of activities, which can be summarised into 11 activities [14]. Table 1 presents several well-known change models from the perspective of these activities.

These activities are separated into several phases, with 5 phases in common ([35, 54]) (Fig. 4). *The first phase* involves identifying the need for a change due to: (i) external something that has come up in the organization, or (ii) an imbalance in the organizational zones has happened, or (iii) the organization has learned exciting things from previous change and would like to expand them in other scenarios to capture more benefits. When this happens, the organization must analyze to identify where is the future state it would like to go to and how ready the organization is to afford the change.

In *the second phase*, the managers must analyze situational factors and understand clearly all aspects of the change circumstance, such as the forces, the root cause, importance, urgency, and the kind of change needed [57]. They also must diagnose the change in detail to clarify what areas will be changed, what issues will impact the people side, and what is the cost and risk of the change in terms of time and financial resources and effects on stakeholders. Among most of the models missing the effect of change on people, the ADKAR model [39] provides the greatest focus, but it is limited in implementation on a large-scale [35].

The remaining stages are the most important ones that are linked to successful and sustainable change goals [42]. Most change management models play a significant role in these stages, and only a few change management models cover the entire five stages. In *the third phase*, planning and preparing for change phase, managers choose a suitable approach to underpin the training for people as well as call for a new culture that supports the new state.

In *the fourth phase*, implementing the change phase, the organization performs activities in the action plan. In this stage, the manager must decide the pace at which the change should be implemented that is suitable to situational factors analyzed in the previous stage. And in *the last phase*, the monitoring and sustaining change phase, during the implementation, the KPI of change outcomes are monitored gradually to help managers gain insight into the change progress and its effects on the organization (new behavior, readiness to the change, …). At the end of the change, the change result is consolidated into the organization's culture, knowledge, and skills or even escalated to more areas. The escalations can lead to a new change initiative, called opportunity-based change. In that case, the firms gain innovative organizational change [77].

Table 1. Activities of change management. Source: The authors (2022).

No.	Change Model	Year	Change Management Activities [14]											Number of activities
			Define a strong leadership	Awareness of the need for change	Define a clear vision and strategy	Communicate the vision and strategy	Define a change management team	Have short-term goals and pilot projects	Identify and manage resistance to change	Train people	Analyze feedback and Monitor change	Celebrate the successes and implement corrective actions	Consolidate the change	
1	Five Frames of Performance and Health [54]	2011	x	x	x	x			x	x	x	x		**8**
2	Prosci 3-Phase Change Management Process [39]	2006	x	x	x	x	x		x	x	x	x		**9**
3	Luecke [60]	2003	x	x	x	x	x		x				x	**7**
4	Anderson & Anderson [4]	2001	x	x	x		x		x		x	x	x	**8**
5	Mento method [69]	2000	x	x	x	x	x	x			x	x	x	**9**
6	8 Step Leading Change Model [55]	1996	x	x	x	x	x	x	x				x	**8**
7	Cummings & Worley [26]	1993	x	x	x						x		x	**5**
8	GE's Change Acceleration Process (CAP) [75]	1990	x		x	x		x	x		x	x	x	**8**
9	McKinsey 7-S [91]	1980	x	x	x				x		x		x	**6**
10	Kurt Lewin's Change Management Model [59]	1952		x	x	x			x				x	**5**
Total			**9**	**9**	**10**	**7**	**5**	**3**	**8**	**2**	**7**	**5**	**8**	

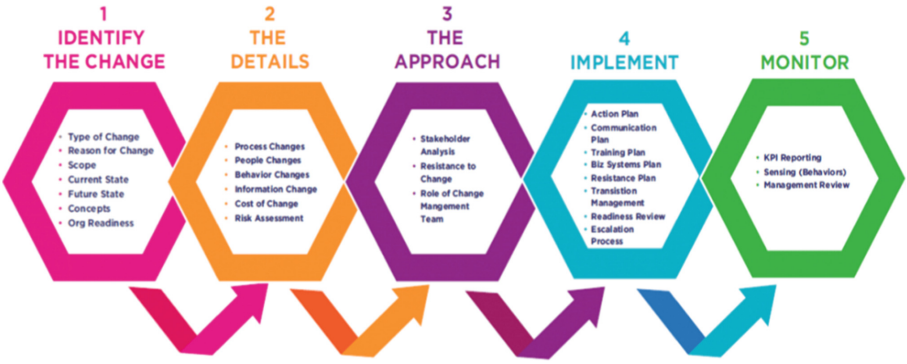

Fig. 4. The general change process. Source: [35].

c) Resistance management: Firstly, resistance was viewed to organizational change (RTC) as a force against the driving forces for change in order to retain the status-quo [59]. RTC could be found everywhere in an organization or in a system [57]. There are three views of RTC: mechanistic, social, and conversational [32]. In the mechanistic view, RTC is natural and reflects the level of interactions between forces for change and forces against change, and it is not good or bad. In the case of the Social view, RTC is the response to changes that may threaten what employees have given the status quo. In that aspect, RTC is harmful and resides deeply in most employees. From the conversational view, RTC occurs due to different individuals understanding resistance in different dimensions and resisting changes in different ways, and resistance exists when it is perceived and asserted by the recipients. However, RTC is commonly understood as negative (mainly reflected in the Social view and Conversational view) and is the greatest barrier to the attainment of change objectives [73].

For pointing out the reasons for RTC, three cultures of management within an organization are considered [83], which is: (i) the operator culture that affects the organization's operations; (ii) the engineering culture that influences the organization's experts; and (iii) the executive culture referring to the organization's management. The misalignments of these three cultures and the complexity of organizational culture in the change situation may generate strong forces of RTC. More precise, the four most common reasons are pointed out [57]: (i) individuals think they will lose something of value, resulting in "politics" or "political behavior"; (ii) individuals misunderstand the change, and lack trust in management; (iii) employees assess the situation differently from their managers; (iv) employees low tolerance for change: they fear they will not be able to develop new skills and behavior that will be required of them.

In addition, in many unsuccessful change projects, not only underestimate the ways people react to organizational change, but managers also underestimate the ways they can positively influence specific individuals and groups during a change [57]. It means the management should have a consistent strategy to manage the change and work around

the RTC. Foremost, the change strategy should be a part of a clearly considered corporate strategy [57].

d) Change Enablers: Besides change models that have prescribed stages involved in implementing successful change management, Change managers have to manage the enabling variables to realize the benefits of change [64].

i. *Change leadership*: successful change requires five areas of leadership competency, including: visioning (aligning stakeholders in recognizing the business need for change), strategy for change (getting business strategies based on change outcomes), share values (developing sustainable shared values culture supporting the vision and strategy for the change), empowerment (fulfilling people enough resources to the change), motivation (rewarding employees for those who achieve change short-term targets) [37].

ii. *Employee engagement*: employee engagement is critical in attaining change objectives [56]. It has four factors that could affect engagement levels [82]: job characteristics (job allows more opportunities and freedom for decision-making to be more engaged), perceived supervisor support (supportive environments help to feel safe and ready to try new things), rewards and recognition (high rewards are likely high engagement levels), and procedural justices (the fairness of resources allocation enables employees' energy towards work).

iii. *Communication*: effective communication is vital for both managerial and organizational success [56]. A conceptual model of communication has been proposed with three factors [31]: informing (informing about change and guidance); creating community (resulting in trust and commitment within the organization) and helping to build employee and organizational readiness for change.

iv. *Capacity for change:* Regardings *readiness for change*, organizations should prepare in advance, not just react, to proactively respond to change that can adversely appear [80]. The advancement preparation is called change-readiness or *organizational capacity* for change (OCC) [7], where dimensions of organizational capacity for change are antecedents to readiness for change which likely focus on individual scope [71]. Organizations with a higher capacity for change will have higher environmental and financial performance after change durations [48]. Indeed, organizations with relatively high change capacity can successfully shoot and have more proportion of survival after the rapids, risky, large-scale change events, and via verse [49].

v. *Employee commitment*: four factors lead to employee commitment to the change [7], including: empowerment, motivation, awareness of the rationale of changes, and, the ability of organizations and employees to obtain change objectives.

vi. *Resistance Overcoming*: six change approaches have been outlined [57] to address the issue of employee resistance to change and gain effective implementation of change, including: participation, education and communication, power/coercion, facilitation and support, manipulation and co-optation, and, negotiation.

e) Change Facilitators: change facilitators help the organizational changes run in a smooth way [36].

i. *Transition Management Team (TMT)*: a TMT composed of leaders who are influential in the organization's strategies, including change strategy, and have wisdom,

objectivity, and interpersonal practice skills [12]; or designated people who report directly to the CEO and can spend all their effort on the change management process [28]. TMTs are also responsible for managing emotional connections and effective communication throughout the organization.

ii. *Change Advisory Board (CAB)*: A CAB helps the TMT make decisions and run the change, and is responsible for approving changes, and controlling and improving the processes. The approving changes responsibility of CAB is the foundation for implementing Agile organizational change, which is based on constant adaptation, and constant prioritization to constantly focused on delivering change outcomes [67].

iii. *Change Agents*: Change agents help influence employees' readiness for adapting to change, such as beliefs, attitudes, and intentions. They may also promote high commitment in organizational members, encourage greater creativity and innovation through HR alignment, and develop a proactive and receptive culture to change [53].

iv. *External Agents*: close cooperation between universities and industry is a critical requirement for knowledge enhancement that can result in organizational change. The role of sponsors, developers, and adopters as external agents for the practical technology transfer in a change program [87].

v. *Information system*: An efficient information system helps to facilitate communication, understanding, and organizational intelligence that effectively creates a sense of corporate community and facilitates organizational change [38].

vi. *Organizational Learning*: "learning in the organizations" for change successfully. He has stated that intelligent companies should behave as a learning laboratory where members can stretch their thinking, extend their capabilities, experimentation with new technology [52].

3 Proposal of a Framework for Managing Organizational Change in the Context of Digital Transformation

3.1 Digital Transformation Under Change Perspective

Due to the DT being a kind of organizational change [62], it can be analyzed by the framework of organizational change and change management from the previous section; as presented in Table 2.

3.2 A Proposal Framework for Managing Organizational Change in Digital Transformation Context

The idea for developing a systems-based framework of organizational change came in response to the fact that for organizational change, predominantly linear change models with fixed steps are used [63], which could not be suitable to present a continual process like DT, whose mission is to manage open-end changes today [20]. So, the application of change theory in reality often with limited results [63]. Therefore, it is vitally significant to have a systematic framework for effectively managing the change of organizations in the DT context.

Table 2. Analysed DT under change perspective. Source: The authors (2022).

Change components	**DT elements**
Change Drivers	Disruptions based on Digital Technologies: -Customer Behavior & Expectations, Competitive Landscape, Availability of Data [89]
Change Orders	Third-order change, transformation of the business model and value network [79].
Change Areas	-Technology: IT as business owner, Digital technology as most important component of value creation [79]. -System/Process: co-evolution of the value network, co-creation via digital platforms (Riasanow et al., 2018; [89]) -Structure: organizational structure support cross-functional teams to change of business model and value network through innovative technology [79]; agility and ambidexterity, bimodality [89]. -Culture: Customer-first orientation, Exploitation and Exploration [79]; take risk, learning through small, incremental and iterative changes [89]. -People: Empowerment of IT personnel (i.e., CDO as New Role), Digital mindset [79]; Digital Leadership; Employee roles and skills: new forms of automation and decision-making processes, take the lead on outside of functions, analytical skills; Digital workforce [89]. -Digital Maturity Model (DMM)'s capabilities [41]
Change Outcome	Capability-driven and Economic-driven goals: Operational Excellence, Customer Experience, Business Model Innovation [89]
Change Effect	Individual/Organization/Social levels [89]
Change Process – Phase 1: Identifying the change	-Strategic responses: revise Digital Business Strategy (DBS), innovate value creation paths [89] -Identify changes areas & "must-have" future capabilities for the innovation [41]

(*continued*)

Table 2. (*continued*)

Change components	DT elements
Change Process – Phase 2: Analyze the change	-Develop contextualized DMM [41] -Problem based assessment & Future capabilities gap assessment to know the Need for change [41] -Agree of current and next stages (digital maturity levels) of improvement [41]
Change Process – Phase 3,4,5: Implementation	Digital capabilities development & Innovation Business Model development [41]
Change Enablers	new factors: Digital Leadership [89]
Change Facilitors	new factors: Dynamics capabiliites (DC), Improvisational Capabiliites (IC) [20]

Table 3. Mapping system and change concepts. Source: The authors (2022).

System concepts	Change concepts
Trigger	Need for change, Advanced preparation
Input	Change Areas
Throughput	Change Areas, Change Process
Output	Change Outcomes, Change Effects
Context	Change Drivers, Change Enablers, Change FacTilitators

In this paper, we will propose that a systems-based framework of change management can better capture the uncertainty of change of the DT than linear models, as depicted in Fig. 5. The framework is based on the improvisational change approach [77], which is a series of planned changes, emerged changes, and opportunity-based changes. We perform a mapping between systems theories' concepts [63] and change management concepts, as presented in Table 3.

It can be seen that the framework support event from the external and internal environment as driving forces to begin a change initiative. The 5-phases change process is presented in the framework under the name: Strategic Response, Need for change, and, Change Implementation (with 3 sub-phases). If the firm does not realize a "need for change" it still performs advanced preparations to strengthen its change enablers to ensure its success rate for the change of the next event. The three-level side effects of the change mission are identified, which impact both the firm itself and the firm's external stakeholders that in-sequence form the external force push pressure on the firm.

It is clear that the framework also supports three types of change in the improvisational change approach. For the planned changes, the framework supports the change type because it places within an Approach stage. For the emerged change, the model

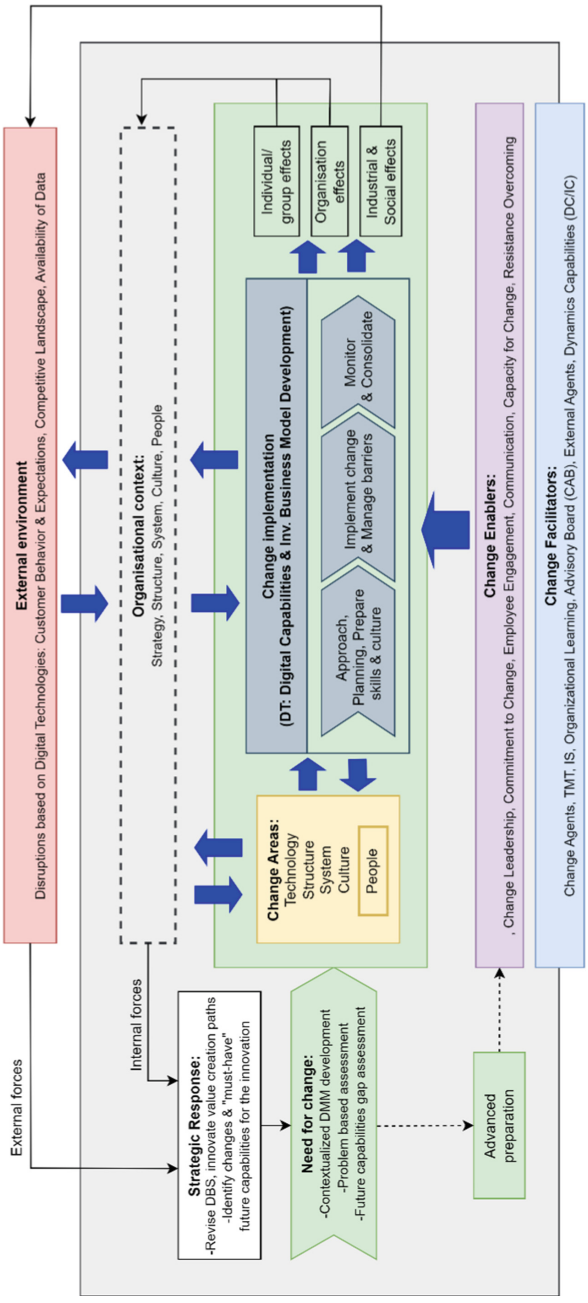

Fig. 5. The framework for managing organizational change in the context of DT. Source: he authors (2022)

provides a step of "Advanced preparation" in case the impact of change drivers is not significant enough for organizations to make decisions to change. Still, it must strengthen the change enablers for the following change that may happen. Last, the side effects or innovative escalations of changes' outcomes to the external environment and/or the organization are identified [63], supporting the beginning of opportunity-based changes. In summary, the framework has supported the change of organizations in DT with its nature of the open-end, continuous circumstance.

4 Conclusion

Effectively managing change is an essential mission of organizational success to adapt to or quickly capture opportunities in a dynamic and ever-changing business environment. Changes are complex and link to many strategic areas of organizations, both hard and soft elements. For successful change at a large scale, organizational people at all levels must give adequate attention to the need for change, and properly implement the change management process. Advanced increasing organizational change capabilities are vital for leading people, and preventing resistance, and unattended side effects. Due to changes being more uncertain and happening continually in sequence in the VUCA world today, especially challenges raised by the DT, the research makes a scientific contribution by integrating all organizational change and change management concepts into a framework for improvisationally managing change of organizations in the DT context.

The framework is hoped to help both academy and practitioner clearly understand the change management field, and structurally apply it to other diverse scenarios to obtain high financial effectiveness, new competitive capabilities, and customer satisfaction outcomes. For the next step, the authors decided that the proposed framework should be validated by the Grounded Delphi Method (GDM) to gain higher comprehensiveness, practice, and reliability.

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