



**Digital Business Strategizing: The role of Leadership and Organizational learning**

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## Digital Business Strategizing: The role of Leadership and Organizational learning

### Abstract

**Purpose:** This paper develops a theoretical framework to understand the role of leadership and organizational learning in [intra-organizational](#) digital business strategizing, to contribute to our understanding of [how digital business strategies emerge](#).

**Design:** Based on a theoretical analysis of relevant literature to connect leadership and organizational learning to [intra-organizational](#) digital business strategizing, a co-creation model was developed.

**Findings:** The model demonstrates that digital business strategy emerge through the mediating role of leadership and organizational learning processes, facilitated by the moderating effect of contextual factors, that includes; strategic alignment, IT competence, institutional trust, and organizational change readiness.

**Practical implications:** It offers a framework that will ensure that [intra-organizational](#) digital business strategizing maintains a fit between organizational strategy, structure, knowledge, culture, systems, and processes that must align together to achieve the desired strategy.

**Originality/value:** It is the first study to explore the extendibility of leadership and organizational learning to digital business strategizing and proposes [how digital business strategies emerge](#).

**Key words:** [Digital business strategizing](#) • Leadership • Organizational learning • Industry 4.0 • [Value co-creation](#) • Competitiveness

**Paper Type:** Conceptual Paper

### 1.0 Introduction

Grounded on integrated value chain theory, businesses in the digitalized market environment of industry 4.0 implement and use digital technologies to leverage the new ways of creating value (such as [globalizing](#), network effects, and demand-side economies of scale) through effective and efficient configuration and co-ordination of their value chain intra- and inter-organizationally (Njoku et al., 2019; Ruel and Njoku, 2020). Industry 4.0 is the integration and interconnection of information systems and technologies of various businesses and industries (that includes social media, mobile, analytics or embedded devices), to harness the

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3 opportunities of digitalization of all stages of value chain activities and increase their  
4 competitive power (Fitzgerald et al., 2014; Schneider, 2018; Ustundag and Cevikcan, 2018).  
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8 This compels businesses to operate as clusters of network organizations (digital  
9 ecosystems), by streamlining and integrating their operations using digital technologies (Porter,  
10 1998; Schneider, 2018; Ruel and Njoku, 2020). As they may have 1) similar needs, 2) an  
11 interest in interacting with each other, and/or 3) a potential for creating synergistic advantages  
12 for the overall network by increasing value at each stage of the chain through better  
13 communication, collaboration, and teamwork (Varadarajan et al., 2014). There are, however,  
14 challenges before benefits are realized. These include; senior management support, a clear  
15 linkage with corporate strategy and culture for the new organizational design, level of  
16 organizational digital maturity, organizational change readiness, and the capability to leverage  
17 the benefits of integrating several heterogeneous information systems spread throughout  
18 various organizations. Strategies are needed to realize the benefits of the new business model.  
19 Ivang (2014) indicates that it will require dynamic interaction-based processes in which several  
20 organizational components co-create digital business strategic framework, since strategy  
21 should emerge through group-learning processes of action and reflection.  
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41 However, like any business strategy, digital business strategizing, the process aspect of  
42 strategy, requires more of leadership to ensure effective strategy formulation and execution  
43 (Pfeffer, 1987). It is an organizational group learning and change process which like every  
44 organizational change process requires leadership to initiate the change and to have effective  
45 change implementation (Jarzabkowski, 2003; Bastardo and van Vugt, 2019; Carrington et al.,  
46 2019). Thus, digital business strategies, the outcome of digital business strategizing, should  
47 emerge as a fruit of organizational group learning and change processes, dependent on an  
48 enabling and effective leadership. This has implications for innovation and competitiveness in  
49 industry 4.0, as there is a great deal of learning in intra-organizational digital business  
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3 strategizing before businesses develop strategies to innovate and derive competitive  
4 differentiation and leadership using the new business model (Ruel et al., 2011; Ivang, 2014;  
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6 Schneider, 2018).  
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10 This paper develops a theoretical framework to understand the role of leadership and  
11 organizational learning in intra-organizational digital business strategizing, to contribute to our  
12 understanding of how digital business strategies emerge. It starts with a theoretical analysis of  
13 relevant literature on leadership and organizational learning to connect both concepts to intra-  
14 organizational digital business strategizing and provide a theoretical structure for the  
15 framework. This leads to theoretical framing and discussion on the role of leadership and  
16 organizational learning in intra-organizational digital business strategizing from which the  
17 framework is generated. It closes with a summary of the developed conceptualization,  
18 emphasizing its contribution and implication to research and practice.  
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## 35 **2.0 Methodology**

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38 Based on a systematic literature review (SLR) methodology, Tranfield et al.'s (2003) SLR  
39 framework was used to undertake the theoretical analysis. Following this framework, the  
40 analysis was divided into 3 stages, i.e., stage 1-planning the review; stage 2-conducting the  
41 review; and stage 3-reporting and dissemination. Stage 1 involved defining, clarifying, and  
42 refining the scope of the analysis. Stage 2 was a critical literature review of relevant literature  
43 selection drawn largely from online academic bibliographic databases and search engines like  
44 Science Direct, Emerald, EBSCO host, Google scholar, and Researchgate.net. Literature  
45 relevant to the review were identified through a literature search of relevant key words (such  
46 as innovation, digital business strategy, digital transformation, and industry 4.0.) and each with  
47 the term 'organizational learning'. The term 'knowledge management' was also used since  
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3 organizational learning and knowledge management are closely related business concepts. A  
4 literature search of relevant key words (such as organizational learning, innovation,  
5 organizational change, change implementation, digital transformation, and industry 4.0) and  
6 each with the term 'leadership' was also conducted.  
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13 The selection criteria of literature sources was based on the relevance to the review and  
14 the need to retain academic rigour and quality. This was supplemented with citations of articles,  
15 books, peer-reviewed book chapters, and PhD theses that met the inclusion criteria. The  
16 intention was to gather relevant literature linking leadership and organizational learning to  
17 intra-organizational digital business strategizing. Literature on leadership and digital  
18 transformation and industry 4.0 were not included since they are still emerging topics.  
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27 Much has been written about leadership and organizational learning separately, a few  
28 about them jointly, but there is no conceptual framework that connects both concepts to digital  
29 business strategizing. Thus, the review involved a theoretical thematic analysis (Braun and  
30 Clarke, 2006) to categorize the literature sources into themes. The focus was on reading and  
31 pulling the main aspects of the concepts relevant to the theory building from the publications  
32 and categorize them, to define them in more detail, and use them to establish how leadership  
33 and organizational learning connect to intra-organizational digital business strategizing. Using  
34 Sjodin (2019) thematic map technique, the analysis was organized around themes/constructs  
35 which emerged from the publications, rather than concepts/constructs predicted in advance  
36 (Fig. 1). Some publications addressed more than one theme; thus, they were placed into  
37 multiple categories.  
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3 Stage 3, from the thematic analysis, three organizational learning dimensions for *intra-*  
4 *organizational* digital business strategizing are; adaptive capability, renewal, and adaptability  
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6 (Table 1).  
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10 *[Place Table 1 Here]*  
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13 Leadership dimensions are; leadership traits/behaviours, leadership styles, and effective  
14 strategy formulation and implementation requirement (Table 2).  
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24 Although the list is not exhaustive, the thematic analysis enabled the generation of an  
25 empirically grounded framework from the publications (Fig. 1).  
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29 The next section presents the theoretical framing of the ideas gathered from the analysis,  
30 summarized into organizational learning and leadership, to clarify how they connect to *intra-*  
31 *organizational* digital business strategizing and provide a theoretical structure for the  
32 conceptualization of *intra-organizational* digital business strategic framework.  
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## 42 **3.0 Theoretical framing**

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### 45 *3.1 Organizational learning*

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48 Organizational learning is viewed as a process-based approach to keeping resources,  
49 capabilities, and an organization's environment aligned through its emphasis on resources and  
50 capabilities adoption, development, reconfiguration, and renewal. It aims to ensure the  
51 protection of resources and capabilities through renewal (Njoku, 2016), by enabling  
52 organizations to use internal processes and routines to renew and change the stock of their  
53 resources and capabilities (Dasgupta and Gupta, 2009). It is a source of sustainable competitive  
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3 advantage that draws from dynamic capabilities theory (Teece et al., 1997), which emphasises  
4 the importance of having dynamic capabilities to build adaptive capability to reorganize or  
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6 renew internal and external competencies and address rapidly changing environments and  
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8 competitive demands.  
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13 Organizational capabilities are the dynamic aspect of organizations that represents the  
14 specific abilities and knowledge that a firm possesses to develop and utilize its resources, using  
15 a series of organizational processes (Perez-Arostegui and Martinez-Lopez, 2014). They are  
16 essentially a combination of different resources that emerge as a fruit of organizational routines  
17 (Nelson and Winter, 1982; Grant, 1991). Nelson and Winter's (1982) evolutionary economic  
18 theory propose that capabilities evolve over time and they are shaped by organizational history  
19 and contextual factors, since organizations are not capable of freeing themselves of their own  
20 history; they learn, remember, and apply lessons from their prior experiences. Thus, Grant  
21 (1991) believes that routines represents the main determiner of competitive advantage, as  
22 organizations that lack routines will lack a basis to develop capabilities.  
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36 Organizational learning is about developing adaptive capabilities through renewal, as  
37 businesses engage in continuous learning and innovation (Njoku, 2016; Rozkwitalska and  
38 Slavik, 2017; Njoku et al., 2019; Lenart-Gansiniec, 2019). Where learning involves acquiring,  
39 refining, creating, and sharing new knowledge or ideas (Lenart-Gansiniec, 2019). While  
40 innovation concerns implementing or applying new ideas or better solution that meet new  
41 requirements that creates value (Dasgupta and Gupta, 2009; Tamayo-Torres et al., 2016).  
42 Learning and innovation enables businesses build absorptive capacity to recognize the value  
43 of new information, assimilate it, and apply it for commercial ends (Cohen and Levinthal,  
44 1990). Organizational learning assumes that knowledge is not static, its real value is in the  
45 continuous generation and application of new knowledge or idea to create value (Lenart-  
46 Gansiniec, 2019). Similar to knowledge management which involves knowledge acquisition,  
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3 refinement, creation, dissemination, and implementation or application of new knowledge or  
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5 idea to attain superior sustainable performance (Theriou and Chatzoglou, 2008; Li and Herd,  
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7 2017).  
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10 Learning organizations are thus organizations that adopts the philosophy of continuous  
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12 improvements using specific strategies, mechanisms, and practices that encourage its members  
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14 to continuously learn and innovate to adapt to changing business environments (Theriou and  
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16 Chatzoglou, 2008). Like organizational learning and knowledge management, it is closely  
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18 associated with human resource development, since it assumes that an organization's ability to  
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20 generate, use, and leverage organizational knowledge largely depends on its human resources'  
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22 ability to create, use, and share that knowledge (Dasgupta and Gupta, 2009; Rozkwitalska and  
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24 Slavik, 2017).  
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29 As a result, they involve the conversion of tacit knowledge into organizational knowledge  
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31 (i.e., collective knowledge) that can be widely shared throughout an organization and applied  
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33 appropriately for business success (Li and Herd, 2017; Sjodin, 2019). If organizations want to  
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35 fulfil organizational learning and knowledge management functions, they are required to  
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37 establish structures, processes, and strategies to enhance learning behaviours at the individual,  
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39 team, and organizational levels (Li and Herd, 2017), to foster a learning environment or culture,  
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41 where people are encouraged to engage in continuous learning and the outcomes of their  
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43 learning activities managed and used to attain sustainable competitive advantage (Theriou and  
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45 Chatzoglou, 2008). HRM practices, like compensation/reward, training, and performance  
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47 management are found to have a significant role to play in achieving this. As Soliman and  
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49 Spooner (2000) find these to have a significant effect on employee motive and behaviours in  
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51 participating in knowledge management activities that facilitate employee absorption, creation  
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53 of knowledge, transfer of knowledge, and knowledge sharing.  
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3 Resource-based view (RBV) supports this, as it believes that HRM practices are  
4 competitively important not because they fit employees to the requirements of business  
5 processes, but because they enable employees produce valuable organizational capabilities that  
6 have sustainable competitive attributes through knowledge, learning, and innovative  
7 capabilities (Njoku, 2016; Lenart-Gansiniec, 2019). RBV argues that competitive advantage is  
8 achieved by obtaining and developing a workforce that enable firms to learn faster and apply  
9 their learning more effectively than their rivals. It is complementary to organizational learning  
10 and knowledge management frameworks, in that, it similarly explains how organizations can  
11 remain competitive, through learning and innovation. By emphasizing that everyone working  
12 in an organization should have the relevant competencies (knowledge, skills, and attributes)  
13 that will enable them to contribute to attaining and sustaining a competitive advantage through  
14 learning and innovation (Li and Herd, 2017; Njoku et al., 2019; Neessen et al., 2019).

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17 This is vital to innovation and competitiveness in industry 4.0, as inter-organizational  
18 learning helps with; 1) creation of collective knowledge, 2) creation of network rules of  
19 interaction and inter-organizational practices, and 3) knowledge acquisition and transfer among  
20 network members to enhance collaboration and co-operation (Rozkwitalska and Slavik, 2017).  
21 While intra-organizational learning processes determine businesses' ability to innovate and  
22 derive competitive differentiation using the new business model. They are a series of dynamic  
23 interaction-based processes from which businesses generate knowledge to formulate and  
24 execute digital business strategies not simultaneously being implemented by competitors, that  
25 facilitates innovation and competitiveness through renewal (i.e., through continuous learning  
26 and innovation) (Ivang, 2014; Njoku, 2016; Njoku et al., 2019; Lenart-Gansiniec, 2019).

### 3.2 Leadership

Leadership thought has moved from trait theories through the behavioural approach to the contingency approach, which recognizes that effective leadership is not learned by studying or adhering to a particular leadership trait/behaviour. A paradigm shift in leadership thought associated with the movement from transactional to transformational leadership style (Hambley et al., 2007; Lovelace et al., 2019). The transactional form, a contractual leadership, focuses on achieving short-term visions and goals in which leaders tend to gain follower compliance by offering rewards (Hambley et al., 2007; Denti and Hemlin, 2012; Lovelace et al., 2019; Cheong et al., 2019). In contrast to the transformational form, a strategic leadership, which focuses on achieving organizational sustainability in non-static environments through the decentralization and delegating of managerial decision-making to the frontline (i.e., operational level/cluster or regional organizations/network groups) (Adair, 2010; Denti and Hemlin, 2012; Lovelace et al., 2019; Pitelis and Wagner, 2019). Transformational leadership enables businesses develop organizational dynamic capabilities to expedite change through the active participation of frontline employees in decision-making processes (Lovelace et al., 2019; Pitelis and Wagner, 2019), by inspiring, motivating, and empowering them (Hambley et al., 2007; Adair, 2010; Kesting et al., 2015; Mokhber et al., 2018).

A contingency, situational or contextual approach, is argued to be more appropriate for today's non-static market environment, where organizations distribute leadership of operational centres across global networks, that reduce the need for central coordination through central leadership and promote a more active role for engaged followers (or employees) (Bastardo and van Vugt, 2019). The appropriate leadership style is argued to include, participative (democratic or empowering) leadership, that involves interactive decision-making, involving the participation of frontline employees in decision-making processes (Sosik, 1997; Hambley et al., 2007; Dinh, et al., 2014; Cheong et al., 2019).

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3 Also, the directive leadership style, which involves providing task-focused direction or  
4 recommendation to employees, as well as *laissez faire* style that gives employees a free hand  
5 in meeting organizational goals (Avery, 2004; Denti and Hemlin, 2012; Gilbert, 2015). Denti  
6 and Hemlin (2012) find participative leadership to be necessary for team innovation as it  
7 promotes team reflection in heterogeneous (creative/problem solving) teams. In homogeneous  
8 teams, they find a more directive style to be appropriate. Avery (2004) and Lovelace et al.  
9 (2019), however, argue that there is no single leadership style that is most effective, rather,  
10 leadership depends on the context, responds to the organizational needs and preferences, and  
11 involves interdependent factors that can be manipulated for improved organizational  
12 performance.  
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27 For intra-organizational digital business strategizing, an organizational group learning  
28 process, research suggests learning leadership, a leadership style grounded on complexity and  
29 evolutionary leadership theory. As it fosters an organizational learning culture which generates  
30 organizational knowledge that nurtures adaptive capacities and enables organizations to  
31 advantageously cope with their environment (Carmeli and Sheaffer, 2008; Denti and Hemlin,  
32 2012; Friedman et al., 2016; Xie, 2019).  
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41 Complexity leadership theory conceives “leadership as a complex interactive dynamic  
42 phenomenon from which adaptive outcomes (e.g., learning, innovation, and adaptability)  
43 emerge” (Uhl-Bien et al., 2007, p. 298). Evolutionary perspective considers leadership and  
44 followership as adaptive social-psychological mechanisms that provide adaptive solutions to  
45 various kinds of organizational challenges, which enable people to function effectively in  
46 groups, triggered by certain inputs or cues (e.g., a threat or opportunity in the environment) and  
47 respond by showing certain adaptive outputs (e.g., coordinating and cooperating to manage the  
48 threat or opportunity in the environment) (Bastardo and van Vugt, 2019). These theories show  
49 that leadership is a dynamic phenomenon that involves bidirectional influence (top-down and  
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3 bottom-up) and the contribution of multiple actors (Dinh et al., 2014). Leadership thus includes  
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5 recurring reciprocal interactions among leader and followers that shapes social dynamics or  
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7 group behaviour, and allows individuals to have greater behavioural adaptability in response  
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9 to varying situations (Denti and Hemlin, 2012; Dinh et al., 2014; Cheong et al., 2019; Zachary  
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11 et al., 2019; Carrington et al., 2019).  
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15 Following Mokhber et al. (2018), as an organizational change process also, organizational  
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17 leaders (managers) are the change agents who lead digital business strategizing, by gaining the  
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19 commitment, cooperation, and involvement of their team when formulating, introducing, and  
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21 implementing digital business strategies. This could be challenged by resistance to change that  
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23 delays the introduction of organizational change and hinders its implementation (Senior and  
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25 Swailes, 2010; Carrington et al., 2019). Resistance to change is noted as the biggest barrier to  
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27 any change programme, since organizational change is viewed by employees as disruptive and  
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29 intrusive, in cases where there is no clear relationship with corporate strategy, and where people  
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31 do not trust management's motives regarding the change and management's ability to  
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33 implement the change (Senior and Swailes, 2010; Gilbert, 2015). Which calls for change  
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35 leadership, change implementation strategies and change framework, organizational change  
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37 readiness, and institutional trust to drive and deliver effective change and change  
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39 implementation (Stanley et al., 2005; Oreg, 2006; Gilbert, 2015).  
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#### 49 **4.0 Discussion: Model Development**

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51 Prahalad and Ramaswamy (2004) define value co-creation as the joint creation of value  
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53 between stakeholders (e.g., customers, partners, suppliers, and employees) in the activities of  
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55 co-ideation, co-design, and co-development of new products or personalized experiences  
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57 through joint problem definition, continuous dialogue, and joint problem solving. A  
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3 stakeholder and market-driven perspective to value creation laid on collaborative and  
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5 interactional value creation across interactive-system environments among people and  
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7 technology (e.g., interactive digitalized platforms) that connect and facilitate co-creational  
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9 interactions from which experienced outcomes emerge (Marcos-Cuevas et al., 2016;  
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11 Ramaswamy and Ozcan, 2018). Co-creation view believes that the people who are affected by  
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13 design or a new technological innovation or a new product should have a possibility to offer  
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15 their expertise and knowledge as a resource in the design, development, or implementation  
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17 processes (de Koning et al., 2016; Tajvidi et al., 2017; Ramaswamy and Ozcan, 2018). Co-  
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19 creation models are thus used to structure and show connections and dependencies that aid our  
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21 understanding of the circumstances in which value co-creation takes place (de Koning et al.,  
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23 2016).

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29 Drawing from Jarzabkowski's (2003) activity theory, this paper uses a socio-technical  
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31 systemic approach to propose a co-creation model that shows how organizational components  
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33 contribute individually and combined to co-creating intra-organizational digital business  
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35 strategies. Jarzabkowski's activity theory is an integrative framework for understanding the  
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37 role of strategic practices in relation to the emergence of strategy as practice that leads to  
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39 continuity or change of activity. It argues that organizations are socio-technical systems in  
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41 which actors perform activities that lead to practice. Where the way practices are carried-out  
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43 through the social interaction between actors and their interaction with technical factors may  
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45 lead to the development of new practices (e.g., strategy as practice), that may affect the  
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47 structure of the activity system and the collective organizational structure over time (de Opacua  
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49 Alzola, 2006).

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55 The theory states that strategy emerges from four interactive components: the collective  
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57 structures of the organization, primary actors, strategic practices by which interaction is  
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59 conducted, and the practical activities in which they interact. Using this framework, the focus  
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3 is on the mediating role of strategic practices in constructing practical activity (i.e., strategy as  
4 practice). It suggests that strategy occurs as a result of the interplay between the action and  
5 interaction of different collective structures, mediated through strategic practices, from which  
6 strategy emerge (i.e., “collective structures→strategic practices→strategy”). It is an  
7 organizational learning theory which believes that strategy continually emerges through the  
8 continuous interaction between knowledge and the collective socio-technical structures from  
9 which new knowledge needed to formulate and execute strategy is developed. Consistent with  
10 value co-creation literature (Marcos-Cuevas et al., 2016) which similarly highlights that the  
11 co-creation stage or process mediates the value creation, and with leadership literature  
12 (Yammarino, 2012) which propose a general way to view leadership process as  
13 “antecedents→leadership→consequences”.

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29 It therefore involves elements of organizational systems that must align together to achieve  
30 the desired strategy, and raises the need to adopt appropriate strategy formulation and  
31 implementation strategies and theoretical framework that integrates factors capable of driving  
32 and delivering the desired strategy (Senior and Swailes, 2010; Gilbert, 2015; Marcos-Cuevas  
33 et al., 2016; Ramaswamy and Ozcan, 2018). Applying Jarzabkowski’s (2003) framework  
34 (“collective structures→strategic practices→strategy”) to intra-organizational digital business  
35 strategic framework means that the co-creation model will be an integrative multi-dimensional  
36 framework, where the co-creation dimension comprises of two higher-order factors and six  
37 dimensions: leadership (leadership traits/behaviours, leadership style, and effective strategy  
38 formulation and implementation requirement) and organizational learning (adaptive capability,  
39 adaptability, and renewal) (Fig. 1). As co-creation means interaction-based value creation in  
40 which the main components co-creating the value share a joint value sphere for interactional  
41 value creation, and will thus be linked and interact at the same order level to co-create the value  
42 (Prahalad and Ramaswamy, 2004; Tajvidi et al., 2017; Marcos-Cuevas et al., 2016;  
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3 Ramaswamy and Ozcan, 2018). Facilitated by specific antecedents (contextual factors) that  
4 may precede or moderate the value co-creation process and its consequences (Jarzabkowski,  
5 2003; Yammarino, 2012; Marcos-Cuevas et al., 2016) (Fig. 2).  
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14 Fig. 2 proposes that leadership construct refers to, ‘a participative/empowering leadership style  
15 that encourages users’ participation and involvement in intra-organizational digital business  
16 strategizing’. Organizational learning construct involves, ‘people’s willingness to engage in  
17 organizational learning processes and practices that results to the emergence of new knowledge  
18 or ideas to formulate and implement digital business strategies’. While, the contextual factors  
19 construct refers to, ‘the environment or conditions that influence and guide how organizational  
20 components co-create digital business strategies’.  
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30 Fig. 2 proposes an activity system from which strategy as practice emerge or occur. To co-  
31 create strategy as practice means that the activity system permits the interaction of strategic  
32 practices and permits shared activity (i.e., the occurrence of strategy as practice), where the  
33 strategic practices mediate the occurrence of the shared activity that is preceded or moderated  
34 by specific antecedents (contextual factors), for the shared activity to emerge or occur. The bi-  
35 directional arrows between leadership and organizational learning, in the joint interactional  
36 value creation sphere, shows where the co-creation takes place, with leader (manager) and  
37 followers (subordinates) as key actors. It is at this stage that leadership and organizational  
38 learning promote each other to create a synergy effect through innovative interaction among  
39 people. Often as a combination of planned and evolving actions to ensure innovativeness and  
40 strategic thinking in developing emergent strategies (Ivang, 2014). Involving organizational  
41 leaders’ and participants’ close cooperation, discussion, and interaction to understand the  
42 implications of digital business strategy decisions through double-loop learning (Pitelis and  
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3 Wagner, 2019; Ivang, 2014). Meaning that boundaries are not clear and stable structures which  
4 serve as basis for predictions do not exist; thus it covers both strategy formulation and  
5 execution (Ivang, 2014). In terms of what it can bring to innovation and competitiveness in  
6 industry 4.0, de Koning et al. (2016), Cheong et al. (2019), and Pitelis and Wagner (2019)  
7 believe that co-creating digital business strategies through strategic shared leadership makes  
8 strategy implementation more effective, since it encourages users' participation and  
9 involvement in the formulation and implementation processes that ensures their engagement  
10 and the success of emergent strategies.  
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22 It thus facilitates problem solving in real-time through the continuous joint learning and  
23 innovation between leader (manager) and followers (subordinates) at the operational level that  
24 provides businesses with the flexibility and right timing to introduce new products or customer  
25 experiences tailored to the market and competitive realities. In support of Carrington et al.'s  
26 (2019) alternative hypothesis on vision formation theory which proposes that, "in response to  
27 a crisis, follower teams will be the initial locus of consensus or shared beliefs in how to achieve  
28 success within the organization" (p.338), since followers can play a central role in the process  
29 of forming consensus to resolve a crisis. As sense making and sense giving of change will be  
30 outside the control of top managers, especially in decentralized organizations, where followers'  
31 input may be encouraged when action to resolve a crisis is considered at the operational level,  
32 closer to their experience (Carrington et al., 2019). A new paradigm for clusters or networks in  
33 complex dynamic environments—clusters as complex adaptive systems (Albors-Garrigos and  
34 Hervás-Oliver, 2019), which ensures that organizational processes are driven by continuous  
35 improvements (incremental changes) that facilitates organizational renewal and allows clusters  
36 or networks to cope with uncertainty and change, and improve their competitiveness (Njoku,  
37 2016; Albors-Garrigos and Hervás-Oliver, 2019).  
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3 Drawing from leadership literature (e.g., Denti and Hemlin, 2012; Mokhber et al., 2018;  
4 Cheong et al., 2019), organizational learning literature (e.g., Bierly and Chakrabarti, 1996;  
5 Dasgupta and Gupta, 2009), change management literature (e.g., Kotter, 1996; Stanley et al.,  
6 2005; Gilbert, 2015), e-HRM literature (e.g., Ruta, 2005; Ruel et al., 2011; Ruel and Njoku,  
7 2020), IT value literature (e.g., Scott, 1991; Perez-Arostegui and Martinez-Lopez, 2014), value  
8 co-creation literature (e.g., Marcos-Cuevas et al., 2016; Ramaswamy and Ozcan, 2018), and  
9 industry 4.0 literature (e.g., Schneider, 2018; Ustundag and Cevikcan, 2018), the contextual  
10 factors (environment or conditions) that makes co-creating digital business strategies possible,  
11 includes; strategic alignment, IT competence, institutional trust, and organizational change  
12 readiness.  
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### 29 *Strategic alignment*

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32 Following contingency theory, the degree of integration of intra-organizational digital business  
33 strategies with corporate (global) strategy will determine the level of organizational  
34 engagement and commitment to their development and implementation, and the extent to  
35 which they contribute to organizational competitiveness and performance (Scott, 1991).  
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42 Bierly and Chakrabarti (1996) argue that regardless of the extent to which organizational  
43 learning practices are carried out, their impact on organizational performance depends on the  
44 suitability to support corporate strategy. As clarity of the relationship between organizational  
45 learning practices and outcomes and organizational goals is a main factor for effective  
46 organizational learning practices and an organization's ability to capture the value. In the same  
47 way that organizational change requires strategies or goals needed to achieve organizational  
48 change to be explicitly defined and aligned with corporate strategy for effective change and  
49 change implementation (Kotter, 1996).  
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### *IT Competence*

Perez-Arostegui and Martinez-Lopez (2014) explain that IT competence is composed of managerial IT knowledge and skills (managerial IT competence or capabilities), IT infrastructure, and IT operations that represent co-specialized resources that show an organization's ability to understand and use IT tools and processes necessary to manage its data (including information from customers and the market), to determine and support its business strategies and value chain activities. Following Ruel and Njoku (2020), developing managerial IT competence (Ruel and van der Kaap, 2012), to lead and engage in intra-organizational digital business strategizing requires managers' appropriate and consistent use of intelligence enhanced interactive digitalized platforms for strategy formulation and execution to support business strategies and value chain activities.

IT infrastructure is the level of digital maturity that enables network organizations operate a model of collaboration, cooperation, and competition that makes global collaboration and competition possible. The more digitalized, integrated, and coordinated organizational activities and processes are intra- and inter-organizationally, helps organizational activities, digital technologies, and intelligence embedded and integrated into an organization's IT infrastructure to be integrated and aligned with corporate strategy through IT strategic alignment (Scott, 1991; Ramaswamy and Ozcan, 2018; Ruel, et al., 2011; Ruel and Njoku, 2020). This helps to ensure that digital business strategies support business strategies and value chain activities of network organizations and enable them exploit and leverage the productivity gains of the new business model in line with their corporate (global) strategy.

IT operations refers to the processes and services administered by an organization's IT department that builds, manages, and deploys IT products and services. Usually considered to

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3 be separate from IT applications and needs to be aligned with corporate strategy and digital  
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5 business strategies to ensure their success.  
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### 10 11 *Organizational Change readiness* 12

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14 Co-creation is a management innovation (Peris-Ortiz and Hervás-Oliver, 2014) susceptible to  
15 risks and complexities inherent in the multi-tasking and multi-decisions of co-creation  
16 processes (Prahalad and Ramaswamy, 2004). To co-create digital business strategies, Marcos-  
17 Cuevas et al. (2016) propose an organizational change readiness termed *co-creation readiness*.  
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19 Co-creation readiness is an organization's co-creation capability Marcos-Cuevas et al. define  
20 as an organization's ability to first sense and seize the opportunities for value co-creation and  
21 deploy the necessary capabilities to build strong relationships that foster fruitful adoption,  
22 development, and sustained purposeful engagement in co-creation practices. Co-creation  
23 readiness is believed to rely on organizations having empowered interaction capability (i.e.,  
24 high degrees of interaction across levels), high levels of trust, and a partnership approach across  
25 actors (or network groups) that facilitates transparent sharing of information and collaborative  
26 working.  
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### 45 *Institutional Trust* 46

47 Stanley et al. (2005) and Oreg (2006) ascertains that institutional trust, that is, individuals'  
48 perceived confidence levels in management's capability to lead effective change and do what  
49 is best for its team and the organization, is significantly associated with resistance to  
50 organizational change. This for intra-organizational digital business strategizing efforts calls  
51 for high levels of institutional trust to enable businesses successfully co-create digital business  
52 strategies.  
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3 In sum, Fig. 2 structures and shows connections and dependencies that aid our understanding  
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5 of how organizational components co-create digital business strategies.  
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## 10 11 **Conclusion and Implications for Research and Practice** 12

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14 The theoretical analysis of the extendibility of leadership and organizational learning to **intra-**  
15 **organizational** digital business strategizing makes an important contribution to digital business  
16 strategy literature. The developed conceptualization (Fig. 2) shows the emergent nature of  
17 digital business strategy and highlights that **intra-organizational digital business strategizing is**  
18 **a continuous learning and innovation process**, since digital business strategies emerge as an  
19 ever-evolving organizational dynamic capability through the continuous joint learning and  
20 innovation of leader (manager) and followers (subordinates) at the operational level.  
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31 As a socio-technical activity system grounded on contingency, leadership, organizational  
32 learning, and integrated value chain theory, the model offers a framework that will ensure that  
33 **intra-organizational** digital business strategizing maintains a fit between organizational  
34 strategy, structure, knowledge, culture, systems, and processes that must align together to  
35 achieve the desired strategy. This has important implications for innovation and  
36 competitiveness in industry 4.0, as it provides businesses with a better strategy formulation and  
37 implementation framework that will facilitate innovation and competitiveness through renewal.  
38 It contributes to our understanding of the role of leadership and organizational learning to  
39 firms' innovation and competitiveness in industry 4.0, through their role relationship in **intra-**  
40 **organizational** digital business strategizing, facilitated by contextual factors.  
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55 While much is known about leadership in general, the model contributes to our  
56 knowledge of the creative problem-solving approach of transformational/strategic leadership  
57 through empowering leadership style, that enables it to inform policy around strategy  
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3 formulation and execution in decentralized or network organizations. As it highlights that in  
4 decentralized organizations, strategy formulation and implementation require both leader's  
5 (manager's) and followers' (subordinates') co-development and implementation of strategy to  
6 have a complete understanding of organizational adaptation and sustainable advantage that is  
7 still poorly understood (Carrington et al., 2019). By focusing on the bottom-up emergent  
8 outcomes, since leadership dynamics involves multiple levels and can produce both top-down  
9 and bottom-up emergent outcomes at higher and lower levels (Dinh et al., 2014).

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20 Two major limitations of this paper that warrant further research are; 1) the paper's focus  
21 on intra-organizational digital business strategizing which excludes collaborative inter-  
22 organizational digital business strategizing among network organizations in industry 4.0, and  
23 2) the need for empirical examination of the model (Fig. 2) to evaluate and validate it.  
24 Exploring collaborative inter-organizational digital business strategizing is important and will  
25 become increasingly so for the success of industry 4.0., while the model (Fig. 2) provides a  
26 response to one of the fundamental facets lacking in empowering leadership domain regarding  
27 our understanding of causal links among empowering leadership and work-related outcomes  
28 raised by Cheong et al. (2019). It offers specific antecedents (contextual factors) and  
29 consequence in the leadership process for future research in empowering leadership domain.  
30 Showing causal links among empowering leadership and organizational learning, and work-  
31 related outcomes. Future research may explore the moderating effect of other contextual  
32 variables to advance and enrich our understanding of the model's application to firms'  
33 innovation and competitiveness in industry 4.0.  
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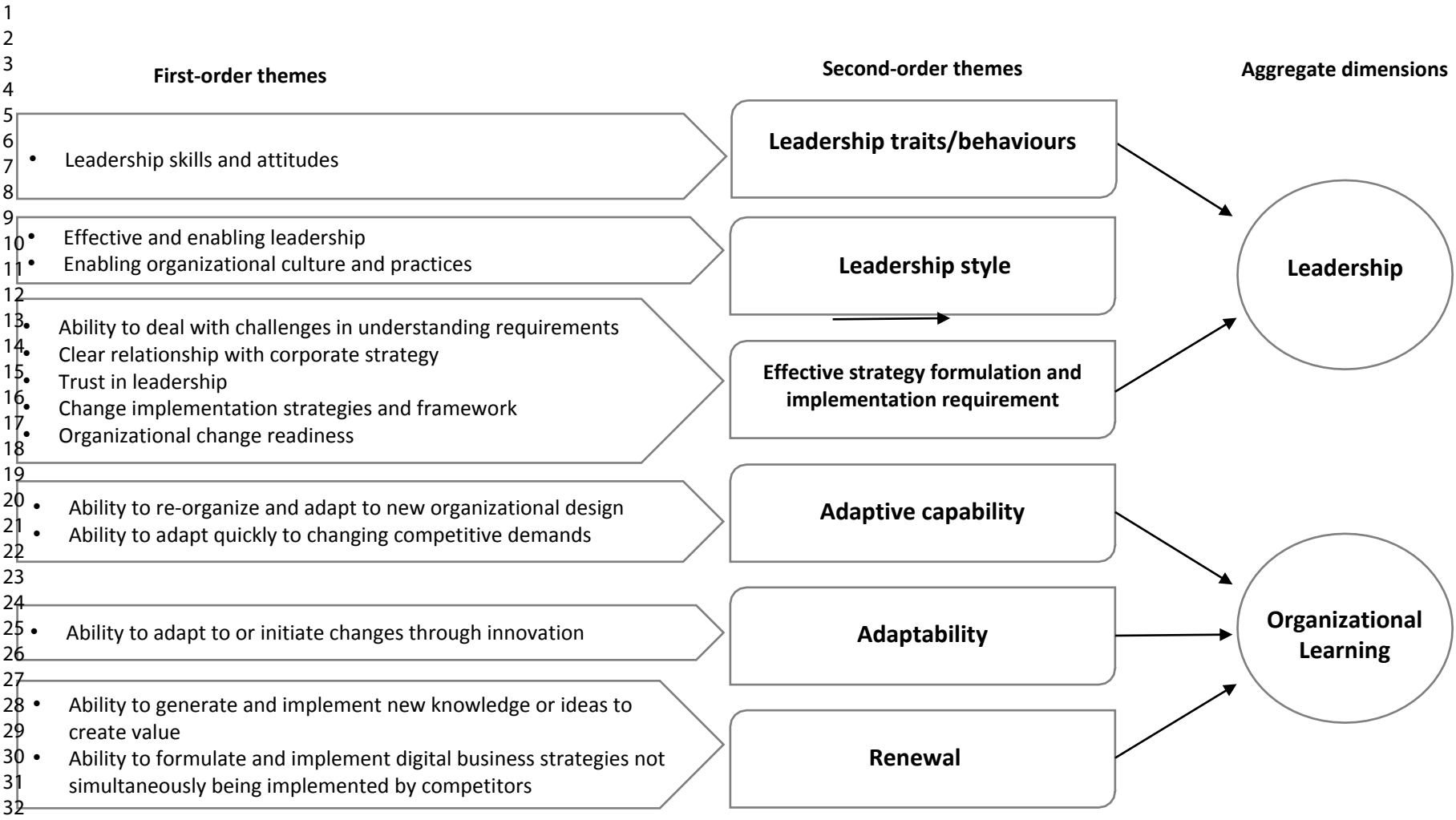
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**Table 1: Organizational learning dimensions for intra-organizational digital business strategizing**

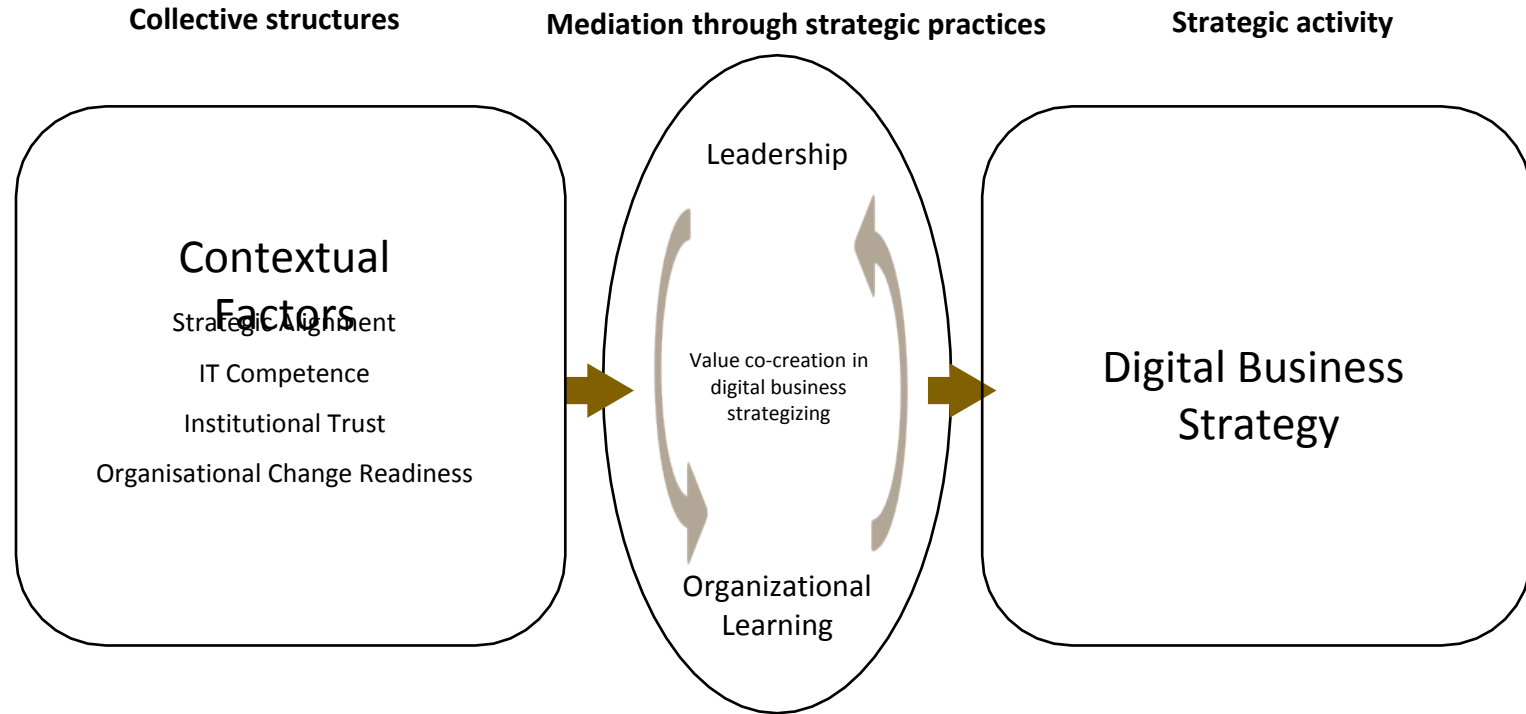
Dimension	Description	References
Adaptive capability	The capability to re-organize and adapt to external challenges and competitive demands through continuous learning and innovation	Nelson and Winter (1982); Grant (1991); Teece et al. (1997); Therious and Chatzoglou (2008); Dasgupta and Gupta (2009); Perez-Arostegui and Martinez-Lopez (2014); Li and Herd (2017); Njoku (2016); Rozkwitalska and Slavik (2017); Njoku et al. (2019); Lenart-Gansinieć (2019)
Renewal	The continuous creation and implementation of new knowledge or ideas that drives industrial competitiveness and sustainability	Cohen and Levinthal (1990); Grant (1991); Teece et al. (1997); Soliman and Spooner (2000); Therious and Chatzoglou (2008); Dasgupta and Gupta (2009); Ivang (2014); Njoku (2016); Rozkwitalska and Slavik (2017); Njoku et al. (2019); Neessen et al. (2019); Sjodin (2019); Lenart-Gansinieć (2019)
Adaptability	The ability to adapt to or initiate changes through renewal (i.e., continuous learning and innovation)	Dasgupta and Gupta (2009); Njoku (2016); Tamayo-Torres et al. (2016); Rozkwitalska and Slavik (2017); Njoku et al. (2019); Neessen et al. (2019); Sjodin (2019); Lenart-Gansinieć (2019)

**Table 2: Leadership dimensions for intra-organizational digital business strategizing**

Dimension	Description	References
Leadership traits/behaviours	Attitudes and behaviours directly related to leadership effectiveness	Avery (2004); Hambley et al. (2007); Denti and Hemlin (2012); Mokhber et al. (2018)
Leadership styles	The manner by which leaders express specific leadership behaviours to have effective leadership	Sosik (1997); Avery (2004); Hambley et al. (2007); Adair (2010); Denti and Hemlin (2012); Dinh et al. (2014); Kesting et al. (2015); Gilbert (2015); Mokhber et al. (2018); Lovelace et al. (2019); Cheong et al. (2019); Carrington et al. (2019); Pitelis and Wagner (2019)
Effective strategy formulation and implementation requirement	Leadership style, change implementation strategies and framework, organizational structure, culture, and readiness required to have effective digital business strategy formulation and implementation	Kotter (1996); Stanley et al. (2005); Oreg (2006); Uhl-Bien et al. (2007); Carmeli and Sheaffer (2008); Senior and Swailes (2010); Denti and Hemlin (2012); Dinh et al. (2014); Gilbert (2015); Friedman et al. (2016); Xie (2019); Zachary et al. (2019); Bastardo and Van Vugt (2019); Carrington et al. (2019)



**Fig. 1: Thematic map connecting leadership and organizational learning to intra-organizational digital business strategizing**  
 Adapted from Sjodin (2019, p.145)



**Fig. 2: Co-creation model showing an Activity system from which digital business strategies emerge**  
 Adapted from Jarzabkowski (2003, p. 25)

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