Strategic Revival of HSM

So far and yet so near: The emerging characteristics, forms and configurations of organizational proximity in the context of digitalization

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Abstract.
BACKGROUND: The current pandemic crisis evidences the importance of questioning and reconsidering the evolution of organizational proximity and the crucial role of digitalization in the emergence of new characteristics, forms and configurations of organizational proximity.
OBJECTIVE: This article presents a conceptual study aimed at analyzing the evolution of organizational proximity in the context of digitalization.
METHODS: Adopting a systemic-cognitive approach inspired by existing studies on management cognition and the biology of cognition, this article first presents an analytical review of existing research in organizational studies and proposes a taxonomy of proximity based on the forms and characteristics identified in the organizational context. Second, it introduces the notion of a proximity unit, based on which a conceptual framework for analyzing organizational proximity is conceived.
RESULTS: Based on the proposed framework, this article analyzes the new characteristics and forms of organizational proximity and identifies possible configurations of organizational proximity by pointing out the emergence of substituted proximity propelled by digitalization and formulating six propositions.
CONCLUSIONS: The article ends by arguing that it is important for organizations to conceive a composite proximity strategy by taking into account the effect of substituted proximity, driven by digitalization, in the configuration of organizational proximity.

Keywords: Proximity, digitalization, measurable proximity, perceived proximity, substituted proximity, organizational proximity, systemic-cognitive approach

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1. Introduction

Organizational proximity, defined by earlier studies as 'two or more people being in the same location where there is both the opportunity and psychological obligation for face-to-face communication' [1], is evolving due to the large use of digital technologies in business and organizations. Emerging economics [2] has generated new business or organizational forms that mostly rely on digitalization and function with specific forms of organizational proximity in which

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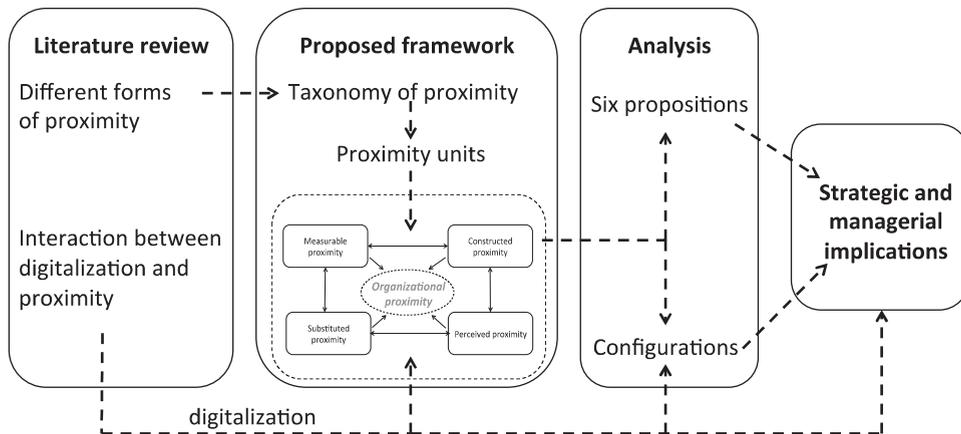ORCID ID: 0000-0001-9998-6284

Fig. 1. Our conceptualizing approach.

spatial proximity [3] becomes less determinant. The current pandemic crisis is demonstrating this transition and the crucial role of digitalization in the temporary or sustainable transition of organizational proximity. This situation highlights the necessity and importance of examining the possible emerging characteristics, forms and configurations of organizational proximity in the context of digitalization.

Existing studies [4–8] have pointed out the virtual nature of organizational proximity in the context of teamwork by studying, for example, how digital technologies facilitate virtual team management [4] and firm performance [9, 10] through the perceived proximity [7] provided by digital technologies [11, 12]. They have provided inspiring avenues for understanding why organizational proximity manages to function with an apparently paradoxical perception, that of 'so far and yet so near', in the context of teamwork.

However, the question of what organizational proximity is and how it is transitioning in the context of digitalization has not been fully examined, particularly based on a conceptualizing approach [13]. For this reason, the aim of this research is to identify the possible new characteristics, forms and configurations of organizational proximity that emerge in the context of digitalization and to analyze the strategic and managerial implications of this emergence.

This aim is based on a prior positioning of our research that considers organizational proximity to be a composite state of multiple materially tangible or intangible states that might interact and might be represented or perceived solely, simultaneously, or successively in an organizational context. The composition of organizational proximity might be

multiple and temporary rather than unique and static [14, 15]. With this positioning, organizational proximity is defined in this article as a composite state formed by a temporary or permanent configuration of proximity units of different natures in an organizational context.

Based on this definition, first, our research relies on an analytical review to examine the multiplicity of organizational proximity and its current evolution. Second, following our understanding of the composite nature of proximity and the need to clarify the different forms of proximity, we propose a taxonomy of proximity that contains four groups, including some drawn from existing studies: measurable proximity, perceived proximity, constructed proximity, and substituted proximity. Third, we propose a framework based on the classified groups of proximity to analyze organizational proximity as a composite state with different configurations based on different forms of proximity—defined as proximity units in our framework—and their interactions with each other and with digitalization. Six propositions are then formulated to provide possible theoretical and empirical avenues to analyze organizational proximity in the context of digitalization, particularly the emergence of substituted proximity and its increasing role in the configuration of organizational proximity. We end by exploring the strategic and managerial implications of the analysis results and by arguing that it is necessary for organizations to conceive a composite proximity strategy by taking into account the increasing role of substituted proximity generated by new digital technologies.

The section-based structure of this article is illustrated as follows (Fig. 1).

2. Organizational proximity: An analytical review

The analytical review undertaken in this research relies on the studies we identified, first, by searching the keywords 'proximity' 'organization', 'digitalization' and 'management' in several databases, such as EBSCO, Google Scholar, JSTOR and the Wiley Online Library and, second, by reading a series of studies on proximity. The selection of these studies, which are presented in the bibliographic references of this article, was completed on an ongoing basis. This selection process coheres with the approach of our analytical review, which was based on a qualitative process.

This section begins by examining the multiplicity of proximity in the organizational context. It then presents different natures of proximity identified by existing studies dealing with the organizational context. Finally, it focuses on the specific characteristics of organizational proximity in the context of digitalization.

2.1. Multiplicity of proximity in the organizational context

Existing studies have identified multiple forms of proximity and have semantically and conceptually enriched the notion of proximity in the organizational context.

The term 'proximity' primarily relies on spatial characteristics [16], resulting in the term 'geographical proximity' [17]. The representation of geographical proximity has been progressively enhanced by the introduction of reflections arising from different social sciences, such as sociology and psychology, leading to various forms of proximity, such as temporal proximity [18], social proximity [19, 35], interpersonal proximity [20], cognitive proximity [19, 23], perceived proximity [7], psychological proximity [16, 22], relational proximity [11], affective proximity [37], institutional proximity [38], organizational proximity [1, 15], technological proximity [39], network proximity [27–34], and operational proximity [33].

The definitions of these different forms of proximity have been widely explored in these studies, although the definitions and the nature of proximity measurement remain difficult, as some forms might have multiple nuances or meanings [15].

In the context of socioeconomic issues, geographical proximity refers to the spatial or physical distance between economic or social individuals, in both the absolute and relative sense [14]. Meanwhile, other terms are also used to designate proximity between two locations: spatial proximity [3], territorial proximity [56], and physical proximity [56]. Among these various terms, different nuances exist. For example, territorial proximity might be more or less different from geographical proximity if we rely on the administrative dimension of the territory [54]. That is, two locations might be spatially close but administratively far apart if the two belong to two separate administrative regions.

Similarly, some terms have a double meaning, and which meaning applies may depend on the context in which these terms are employed. This is the case for network proximity [27–34], which can be referred to the technological dimension in the context of digital social networks or the social dimension in the context of physical or nondigital social networks. Network proximity [27–34] might also be used to simultaneously refer to the social and technological dimensions given that digital social networks are simultaneously a technological phenomenon and a social phenomenon.

The definition of nonspatial proximity has also been explored by existing studies. The multiplicity of proximity becomes more obvious and arises in some cases due to the overlap between the terms that are used. For example, social proximity is defined in existing studies [19, 35] as the perceived distance between self and other, which is different from the physical distance between self and other. The term 'social proximity' is relevant for differentiating the physical and nonphysical dimensions of proximity, but it simultaneously generates a possible overlap with the term 'perceived proximity', which deals with the subjective and perceptual characteristics of proximity.

There are also similar difficulties regarding the term 'organizational proximity'. On the one hand, organizational proximity is associated with the closeness of individuals in organizational terms; on the other hand, it refers to the extent to which individuals share the same space of relations and incorporates the extent to which individuals share the same reference and knowledge space, containing the cognitive dimensions of organizational forms [16]. Hence, it is difficult to separate organizational proximity and cognitive proximity [19, 21, 23] given that cognitive proximity [21, 23] remains an extension of organizational proximity. These possible overlaps of terms might generate ambiguities [15] in the definition of

organizational proximity, and in parallel with these ambiguities, they reveal a possible composite nature of organizational proximity.

2.2. Different dimensions of proximity in the organizational context

Existing studies have identified different dimensions of proximity in social or organizational contexts [16] by suggesting, for example, that in the context of innovation development, five dimensions of proximity coexist: the cognitive, organizational, social, institutional, and geographical dimensions [14, 19, 21, 35]. Reviewing 86 papers published between 1971 and 2005, Knoben and Oerlemans [15] demonstrated that the geographical dimension, also designated by terms such as spatial proximity, territorial proximity, and physical proximity, largely dominated the research of the period they considered. The cognitive and technological dimensions of institutional proximity [38] remain less identified or understudied. Based on the results of their review, these authors [15] highlighted the necessity of examining nonspatial proximity and thus distinguishing six dimensions of proximity: the institutional, cultural, social, technological, cognitive, and organizational dimensions. Furthermore, they suggested integrating relational proximity and personal proximity within social proximity, incorporating virtual proximity and industrial proximity into technological proximity [39], and classifying professional proximity under organizational proximity.

We synthetize the different forms of proximity identified by existing studies (Table 1) in an organizational context or a context directly linked to the organizational context.

2.3. Relationships of different forms of proximity in the organizational context

In organizational and managerial studies, proximity is frequently studied from two perspectives: the first perspective examines proximity based on an interactive view by focusing on the socioeconomic dimensions between agents or entities, such as innovation [14], collaboration [15] and regional development [16]; the second perspective privileges a psychological view and analyzes the perceptual and subjective dimensions of proximity between or within individuals and teams in organizations [4, 5, 7, 25].

Table 1
Different forms of proximity

Form of proximity identified in studies dealing with the organizational context	Examples of studies
Affective proximity	[37]
Cognitive proximity	[19, 23]
Geographical proximity	[17]
Institutional proximity	[38]
Interpersonal proximity	[20]
Network proximity	[27–34]
Operational proximity	[33]
Organizational proximity	[1, 15]
Perceived proximity	[7]
Psychological proximity	[16, 22]
Relational proximity	[11]
Social proximity	[19, 21, 35]
Spatial proximity	[3]
Technological proximity	[39]
Temporal proximity	[18]

2.3.1. An interactive view

The first perspective developed the relevant understanding of several relationships between economic or social activities and different forms of proximity. In parallel, it revealed a paradoxical aspect of these relationships that might be described as 'near but . . . not too near'. For example, cognitive proximity [21, 23] reduces uncertainty and favors communicational efficiency between agents. At the same time, however, cognitive proximity [21, 23] that is too close might generate cumulative learning processes and reinforce routines and habits [14]. There is also a similar concern with regard to the proximity in networks [27–34]. Network proximity is beneficial for learning and innovation. Nevertheless, too much proximity might result in lock-in, thereby inhibiting innovation [14] and even generating a 'proximity paradox' [21]. Social proximity [19, 35] prioritizes trust relationships and the communication of tacit knowledge; consequently, it reduces opportunistic behavior [14, 28, 47]. In parallel, it might generate network closeness and result in the paradox of embeddedness [36]. Institutional proximity [38] is associated with the institutional framework at the macrolevel [54]. It provides both stable conditions for interactive learning and constraining factors. In some cases, the mutual interdependence of various parts of an institutional system may create a collective dynamic or, in contrast, a local inertia or lock-in [14].

Different forms of proximity might interact with or around organizational proximity. A dynamic view

[1] remains fruitful in identifying the possible inter-relationships between different forms of proximity. Studies on spatial-industrial issues rely on organizational proximity and geographical proximity to analyze proximity dynamics [16]. For the authors of such studies, proximity may involve separating or articulating different economic or social activities. It is possible to distinguish two logics: the first is an adherence logic based on which individuals involved in the same activities belong to the same relational spaces (enterprises, networks, etc.); the second is a similarity logic that provides a certain institutional proximity [38] in which individuals have the same reference space and share the same knowledge [26]. Geographical proximity relates to the location of organizations and involves the social dimension of the economic mechanism [16]. These different logics of proximity might coexist. For example, a company situated in an industrial district might deal with other enterprises in this district simultaneously through organizational proximity, geographical proximity, and functional proximity.

2.3.2. A psychological view

The second perspective privileges the psychological dimension of proximity to examine the perceptual and subjective nature of proximity, notably cognitive proximity [21, 23] and perceived proximity [7].

Cognitive proximity [21, 23] is analyzed in the context of clusters [58], innovation [14] and interorganizational collaboration [15]. It has been found that cognitive proximity that is too near or too far away might negatively impact organizational activities, particularly those associated with innovation. The notion of optimal cognitive distance [25] was introduced for this reason. For Wuyts et al. [25], the notion of cognitive distance is based on a constructivist and interactionist view of knowledge. People perceive, interpret, understand, and evaluate the world based on their mental categories, which they have developed in interaction with their physical and social environments. According to this view, cognition is to be understood in a broad sense that includes rational evaluation as well as emotion [42], value judgments, heuristics of attribution, and inference in decision-making [51]. The novelty value of a relationship increases with cognitive distance; however, mutual understanding decreases with cognitive distance. To increase the novelty value of organizational actions [55], more cognitive distance between organizations and their environments is necessary, and in some cases, it limits unethical behavior in decision-making

[28, 47, 57]. In contrast, if organizations seek to increase the understandability of their actions, less cognitive distance would be appropriate. In other words, if organizations expect to maximize learning or innovative performance, it is necessary and beneficial to maintain an optimal cognitive distance from their environment.

Perceived proximity [7] results from a construction based on the individual's perception of the possible distance between two extremities that might be objects, individuals, groups, or organizations. For Wilson et al. [7], perceived proximity refers to a dyadic and symmetric construct that reflects one person's perception of how close or how far another person is. Factors such as communication and social identification processes, as well as certain individual and socio-organizational factors, affect the perception of proximity.

Existing studies on the perceptual dimension of proximity [7] have attempted to broaden the theoretical understanding of proximity by including the subjective experience of proximity. They argue that perceptions of proximity have both a cognitive and an affective component [7, 37] and that relationships at a distance are not inherently 'less social, less tacit, less sticky or less negotiated' [36]. Hence, the notion of perceived proximity makes the seeming paradox of 'far and yet near' meaningful and explainable. In the organizational context, the paradoxical phenomenon of feeling close to geographically distant colleagues illustrates perceived proximity.

Perceived proximity might interact with the functioning of groups, particularly when it concerns geographically dispersed groups. It might also be conditioned by the nature of the activities performed by group members; for example, the effect of perceived proximity on a virtual team might be more observable if the members of the team are engaged in interdependent work with the prospect of working together in the future.

The findings associated with the perceptual and subjective dimension of proximity provide useful insights for analyzing emerging forms of proximity, particularly those propelled by digitalization.

2.4. Organizational proximity in the context of digitalization

Analyzing the relationship between proximity and digitalization remains complex, and there are three reasons for this complexity.

First, proximity involves multiple natures and forms. Thus, the relationship between proximity and digitalization might vary based on the different natures or forms of proximity. Second, digitalization is a plural phenomenon that includes process digitalization, communication digitalization, organizational digitalization, managerial digitalization, etc. Furthermore, as it consists of an emerging and rapidly evolving phenomenon, organizations and individuals have few experiences regarding its consequences, particularly in the medium term and the long term. Third, the relationship between proximity and digitalization probably results from interactions that are more or less contingent. The multiplicity of proximity and the plurality of digitalization induce highly contingent interactive situations and, consequently, high complexity in the analysis of proximity. Some existing studies [5, 7] have chosen virtuality as a possible lens through which to capture this complexity in the organizational context.

2.4.1. Virtuality and perceived proximity in organizations

Existing studies have provided several findings related to virtuality in the context of the management of geographically dispersed teams [4, 5, 7, 12, 52].

Virtuality is multidimensional [5], as is the term 'virtual teams', which might designate teams that are geographically dispersed, mediated by digital and communication technologies [52, 53], structurally dynamic, or nationally diverse [5]. For these studies, virtuality means something different from digitalization, which focuses more specifically on the role of digital technologies and their relationships with their users.

In the organizational context, virtuality provides flexibility in terms of functioning, but it may also limit activities requiring creative and innovative capabilities. For example, sharing knowledge in a virtual team promotes the development of cognitive proximity between team members, but it might also constrain innovative and creative action [5] in the team, as the members are cognitively formatted with knowledge usually shared in a formalized form because of the distance between them.

Perceived proximity can determine the functioning of virtual teams. In the development of perceived proximity, the creation of a psychologically safe communication climate [7] with a sort of physically virtual proximity [1] remains one possible solution. In supporting the development of perceived proximity,

digitalization can provide new forms of technical and organizational infrastructures [26].

2.4.2. Dual impact of digitalization on organizational proximity

As a phenomenon that is concretized by technology and that 'is the product of human action, while it also assumes structural proprieties' [50], digitalization emphasizes this duality in its interaction with organizations. On the one hand, digitalization is a result of the integration of digital technologies in organizations. On the other hand, digitalization imposes new forms on organizations, or it structures existing organizational processes. The possible interaction between digitalization and proximity might also function with this duality. In practice, digitalization provides some forms of proximity and restructures or limits others, while the evolution of proximity leads to new needs and practices of digitalization. This systemic view suggests that digitalization is both a result of and a means for proximity. Similarly, it is both a facilitator and a restrictor of proximity.

Digitalization supports the development and regulation of different forms of proximity in several ways. Primarily, digitalization provides infrastructures for communication at a distance. As demonstrated by several studies, communicational infrastructures involve multiple forms of proximity, such as network proximity [27–34], organizational proximity [1, 15], perceived proximity [7], and social proximity [21]. Second, digitalization itself forms part of the technological proximity [39] in organizations. The self-formation [40, 41] of technological proximity [39] accentuates digitalization in organizations in a systemic way. Third, digitalization changes the role and importance of different forms of proximity by favoring some and restricting others. For example, digitalization may increase the importance of communicational proximity but limit the importance of geographical proximity.

Although there are some possible beneficial effects of digitalization on proximity development, the limiting effects of digitalization should not be underestimated. Some studies [1, 9] have reaffirmed the importance of physical proximity in the context of digitalization by specifying that the use of telephones and e-mail may moderate the relationship between proximity and interaction but that physical proximity ties are easier to maintain and are more likely to be strong links [1]. Similarly, proximity facilitates initial contact, whereas e-mail may help maintain

relationships once they have formed [29]. According to other studies, the assumption 'according to which the increasing importance taken by telecommunications and international exchanges could lead to the disappearance of local relations in favor of decentralized relations such as the generalization of telecommuting or the localization of families outside metropolises, is contradicted to a large extent by the empirical evidence' [16].

The existing work has revealed a relatively paradoxical impact of digitalization on organizational proximity, which raises interest in elaborating, in a conceptualizing way [13], a framework for clarifying the relationship and interrelationship between organizational proximity and digitalization, based on which it may be possible to identify the emerging characteristics and forms of organizational proximity.

3. A framework proposal

The framework proposed in this research is based on a systemic-cognitive view [40, 41, 43, 44], which has been elaborated from an understanding of the systemic, even autopoeitic characteristics [43, 44] of the cognitive functioning of both individuals and organizations [41].

From our systemic-cognitive view, proximity can be understood through different lenses. We propose to consider organizational proximity as a composite state that, through a systemic relationship, assembles different proximity units composed of different groups of proximity involving materially tangible or intangible structures around the core of organizational goals. In this sense, different individuals within an organization might observe, perceive and interpret organizational proximity differently based on their respective role and cognition. In fact, individuals' cognition operates systemically in relation to what they observe and interpret, how they act and with whom they interact. If what individuals observe impacts what they interpret and if what they interpret impacts how they act and with whom they interpret, then this relationship can also operate in an inverse manner. That is, how individuals act and with whom they interact impact, even predetermine, what they observe and what they understand (Fig. 2). In this sense, organizational proximity is both raw material for developing different proximity units and the result of the interactions between different proximity units.

The proposed framework first contains a taxonomy that structures different forms of proximity,
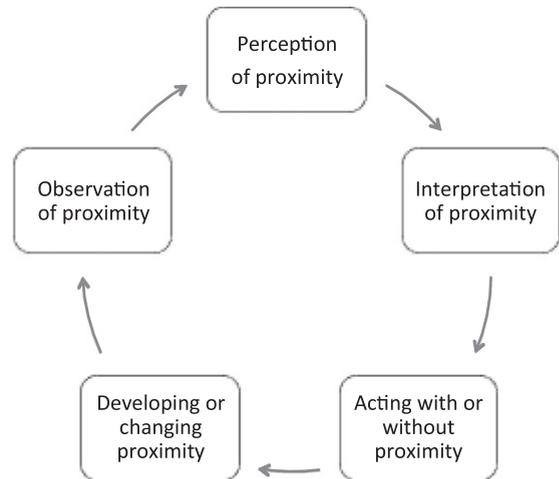

Fig. 2. Systemic-cognitive understanding of proximity functioning.

followed by the introduction of the proximity unit construct—a component construct that enables organizational proximity to be composed or recomposed in a systemic and autopoeitic way. The framework is then mobilized to examine the emerging characteristics, forms and configurations of organizational proximity, particularly with regard to substituted proximity—one of the new proximity units generated by digitalization.

3.1. Taxonomy of proximity in the organizational context

The review of existing studies constitutes the foundation based on which we propose a taxonomy in which we structure different forms of proximity into four groups: measurable proximity, perceived proximity, constructed proximity, and substituted proximity (Table 2).

Measurable proximity concerns different forms of proximity that can be quantitatively measured. It includes two subgroups defined based on two possible natures of proximity: spatial and temporal. This proximity group contains the relatively objective dimension of proximity, although the perception of individuals or organizations might impact this objective dimension and, in some cases, transform a measurable proximity into a perceived proximity.

Constructed proximity refers to different forms of proximity relying on the structures that are socially, administratively, or institutionally constructed. In this group, we find different forms of

Table 2
Taxonomy of proximity in the organizational context: A classification proposal

Group	Characteristic	Subgroup	Form of Proximity
Measurable proximity	Scientifically measurable	Spatial nature	Geographical proximity
			Physical proximity
		Temporal nature	Temporal proximity
Constructed proximity	Structurally or relationally constructed	Social nature	Social proximity
			Relational proximity
			Values proximity
			Cultural proximity
			Interpersonal proximity
			Network proximity
		Cognitive nature	Cognitive proximity
			Knowledge proximity
			Intellectual proximity
		Organizational nature	Managerial proximity
			Hierarchical proximity
			Professional proximity
			Functional proximity
			Processes proximity
		Institutional nature	Institutional proximity
			Political proximity
			Territorial proximity
Perceived proximity	Psychologically perceived	Psychological nature	Psychological proximity
			Perceived proximity
		Communicational nature	Communicational proximity
Substituted proximity	Technically substituted	Technical and/or technological nature	Technological proximity
			Virtual proximity
			Network proximity

proximity constructed through social, organizational, and institutional structures that conceive and condition proximity. It is necessary to clarify that cognitive proximity might be a composite proximity in which constructed proximity and the perceived proximity might both be present. In our approach to classification, we rely on the constructive dimension of cognition formation and the semantic association frequently established between cognitive proximity and knowledge proximity in the organizational context, without neglecting its possible perceptual nature. Consequently, we choose to place cognitive proximity in the constructed proximity group.

Perceived proximity covers different forms that are not inherently quantitatively or structurally measurable or explicable but that are understandable based on psychological interpretations. Among the four groups, this group mostly relies on the subjective dimension of proximity.

Substituted proximity involves some new forms of proximity; particularly those generated by digital information and communication technologies. These new forms substitute for, in a virtualized way, some existing forms of proximity. A typical example is the substitution of geographical proximity by virtual proximity supported by information and communication technology. Substituted proximity is also a group that plays a dynamic role in the evolution of proximity in the context of digitalization in organizations.

In the organizational context, the four groups of proximity, namely measurable proximity, constructed proximity, perceived proximity, and substituted proximity, interact with each other while interacting respectively and synchronically with organizations.

The following figure (Fig. 3) illustrates a systemic understanding of the interactions between these four groups of proximity in the organizational
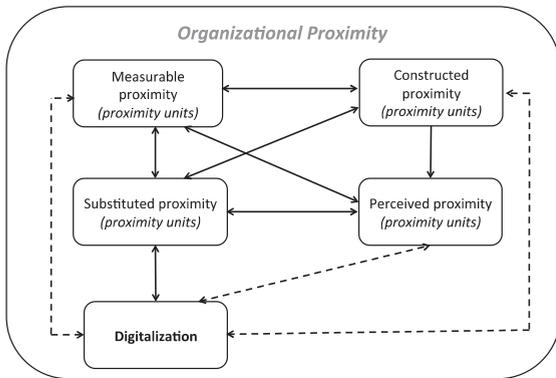
Fig. 3. Proposed framework.

context. As two fundamental units in the construction of proximity in and around organizations, measurable proximity and constructed proximity interact in the organizational context. For example, the geographical location might influence the manner in which organizations are structured. Consequently, the organizational structure partly determines constructed proximity. In an interactive way, constructed proximity might modify and influence geographical proximity. For example, if the organizational structure changes, the location of some structures might be modified. Consequently, measurable proximity might be changed.

Perceived proximity might be based on measurable proximity and constructed proximity, although the perception involves individual or organizational situations. The expectation in terms of substituted proximity might be defined by constructed proximity and propelled by perceived proximity. In turn, the effect of substituted proximity might influence perceived proximity, constructed proximity, and measurable proximity.

3.2. Proximity units and their interactions

Different groups of proximity might interact to compose organizational proximity, and different forms of proximity classified within every group might also interact at the intragroup level or at the intergroup level. To analyze the characteristics and the possible interactions between different forms of proximity, we propose in a way that differs from existing work [14, 15] to introduce the notion of proximity units. In this article, a proximity unit is defined as a component that might independently constitute a form of proximity or be

integrated into the composition of a composite proximity. Notably, the question of independence between different forms of proximity has already been identified [59]. Our research extends this reflection to a dynamic state by considering that in the organizational context, different proximity units might be decomposed and recomposed in a systemic way through the interactions between them. Organizational proximity might contain multiple proximity units; each proximity unit might be mobilized, either temporally or permanently, in the composition of organizational proximity in a specific context.

Furthermore, different proximity units interact in a contingent way. A unit may exist independently; it might also interact with other units. In some circumstances, one proximity unit may be the dominant unit in the construction of a form of proximity, or it may even be the only unit composing a form of proximity. In other circumstances, it might be one of the components in the construction of a composite proximity.

If every proximity unit remains more or less independent, the relationships between different units remain interdependent. Furthermore, the state of these interrelationships is not static, as it permanently interacts with multiple factors linked to individual, intraorganizational, and interorganizational interactions.

The role of proximity units in the composition of organizational proximity might also evolve. One proximity unit might temporarily or periodically be the dominant unit in a specific circumstance conditioned by specific operational activities or goals. When the circumstances evolve, the role of the dominant unit might equally evolve and generate interactions with and between other proximity units and consequently make the composition of organizational proximity evolve.

3.3. Possible configurations of organization proximity

By recognizing the composite nature of proximity, this article defines organizational proximity as a composite state based on the integration of the units that reside in different groups of proximity, such as measurable proximity, perceived proximity, constructed proximity, and substituted proximity. Different configurations (Fig. 4) might exist in the integration of different proximity units for composing organizational proximity.

Organizational proximity
Balanced configuration

Organizational proximity
Single-dominated configuration (Example)

Organizational proximity
Bicomposed configuration (Example)

Organizational proximity
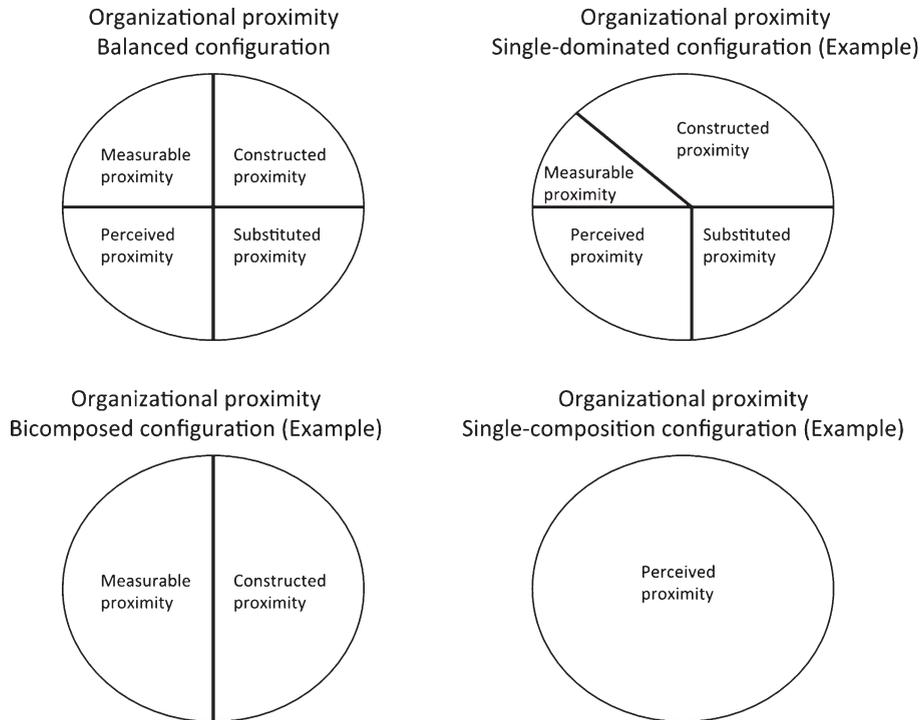Single-composition configuration (Example)

Fig. 4. Configurations of organizational proximity in the context of digitalization.

The configuration of organizational proximity might rely on a unique proximity unit (for example, geographical proximity), a bicomposed proximity that associates two different proximity units, or a multicomposition of several proximity units. The distribution between different proximity units might vary depending on the characteristics and strategic specificities of organizations. It does not remain static, and it interacts with organizational changes. Some organizations might have an organizational proximity dominated by measurable proximity, while other organizations might privilege perceived proximity in the construction of their organizational proximity. Under the same lens, an organization might focus on measurable proximity in the first development phase and proceed to a perceived proximity focus when its activities have been extended.

Furthermore, the different proximity units included in each of the four proximity groups can interact with each other. In other words, the interactions between different proximity units can be situated between different proximity groups or subgroups and by intercrossing different proximity groups or subgroups. For example, if cultural proximity, which is included in the constructed proximity group, interacts with virtual proximity, which is included in the substituted proximity group, organizational proximity can be enhanced and reinforced in terms of knowledge sharing and managerial practices. In this regard, organizational proximity can also contribute to the development of common cognitive patterns within the organization, and the context of global enterprises [6, 45] seems to be an appropriate context for analyzing this effect.

New digital technologies might be considered part of the elements interacting with the evolution of the composition of organizational proximity, particularly through the emergence of substituted proximity. The following section relies on our framework to examine the evolution of organizational proximity in the context of digitalization.

4. Transition of organizational proximity: Complexification and substitution

The literature review demonstrates how existing research in organizational and managerial studies has explored different focuses regarding the impact of digitalization on management dealing with the transition of organizational proximity [4, 7, 15, 48, 49]. Fully recognizing the importance of existing

contributions, which provided great inspiration for our research, we adopt a relatively different understanding of digitalization and its impact on organizational proximity.

First, we distinguish digitalization from virtuality. In the empirical context, the two terms are frequently used in an interchangeable way. In our opinion, digitalization represents a state or a process generated by and/or because of digital technologies. Virtuality represents a state or a process whose nature is constructed by materially intangible supports. Compared to the meaning of virtuality, which might in some cases be interpreted as the substitution of materiality, digitalization remains technically demonstrable and even materially tangible. A virtual state might be generated by digital elements or not. Based on the same reasoning, an organization might be digitalized but not virtualized, or vice versa. In the context of our research on the multiplicity of proximity, the term 'digitalization' corresponds more precisely to our understanding of these phenomena.

In the context of digitalization, the form and nature of proximity units are quantitatively and qualitatively multiple; consequently, the raw materials of organizational proximity become more important and generate more possible configurations with different proximity units for composing organizational proximity. The composed organizational proximity constitutes a cognitive environment in which organizational individuals observe, interpret, act and interact with the supports and perception provided by tangible organizational components and digital technologies. In this sense, the relationship between organizational proximity and organizations might be similarly understood based on the concept of duality that Orlikowski [50] developed regarding the duality between technology and organizations.

Third, importantly, this article recognizes, but does not seek to promote, the impact of digitalization on organizations and on organizational proximity. By mobilizing the proposed framework, we attempt to determine the new forms of proximity voluntarily and involuntarily propelled by new digital technologies and their role in and interaction with the composition of organizational proximity.

4.1. Complexification of the configuration of organizational proximity

New digital technologies generate new forms and new natures of proximity units in both everyday life and organizations. The emergence of new proximity units depends on both technology and the cognitive construction of human beings. While raw materials remain quantitatively more important and qualitatively more varied, human cognition is susceptible to operating with higher complexity to perceive and interpret what different proximity units provide. For organizations and their policy-makers, complexity also resides in the identification, selection and articulation of proximity units for composing an overall organizational proximity. The identification of new forms of proximity units requires new cognitive patterns [42] and knowledge. The selection of proximity units requires, on the one hand, a vision related to what organizations expect in terms of strategic development and, on the other hand, what type of proximity units potentially meet this expectation. The configuration of organizational proximity demands conceptual work that combines the technique and technological knowledge, strategic vision, functional analysis and human dimension. Thus, new digital technologies accentuate the complexity in each phase of the composition of organizational proximity by providing more potential raw materials and more possible combinations, which might lead to more uncertainty and even biases in terms of choice [51] and human cognition.

Proposition 1. Digitalization provides more possible configurations of organizational proximity.

Proposition 2. Digitalization generates more complexity and uncertainty in the configuration of organizational proximity.

4.2. Increasing role of substituted proximity

New digital technologies engender a series of units of substituted proximity that have specific characteristics. First, they are based on materially intangible interactions implemented through materially tangible supports, such as telecommunication infrastructures, servers and computer hardware, the omnipresence of wireless technologies notwithstanding. Second, they can perform the same or similar functionalities of some existing proximity units with simplified and reactive modalities. Significant impacts of digital technologies might be identified through the transition of geographical proximity, which has been partially substituted for by new forms of proximity supported by digital supports and robots. Third, substituted proximity interacts with existing forms of proximity and in some cases might enhance them. In this regard, the effect of substituted proximity on
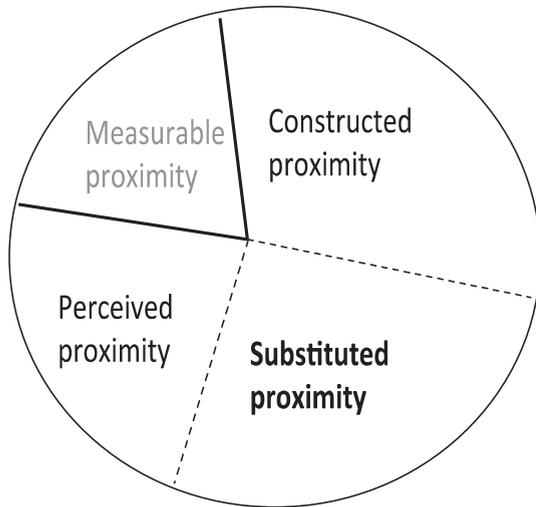
Fig. 5. A possible configuration of organizational proximity in the context of digitalization.

knowledge development in organizations might be considered an appropriate example.

Digital technologies accentuate the role of substituted proximity in the composition of organizational proximity. If we consider an organizational proximity to be an integrated entity, substituted proximity increases its part in the composition of organizational proximity in different ways: by absorbing part of some existing proximity units (Fig. 5), interacting with some existing proximity units to generate new or updated proximity units, producing new forms of proximity within other existing forms of proximity, etc. Based on the framework proposed in this article, it is possible to consider that through substituted proximity, digitalization impacts different proximity units and consequently changes the importance of some of them in the composition of organizational proximity, such as in the case of spatial proximity (by facilitating remote work), temporal proximity (by increasing some organizational processes and making work tools temporarily and spatially more available), and physical network proximity (by generating digital interactions).

In this sense, the impact of digital technologies on the transition of organizational proximity might be explicit or implicit, direct or indirect, immediate or long term. If digitalization affects substituted proximity in a direct and immediate way, its possible impacts on measurable proximity, constructed proximity, and perceived proximity might be realized in a rather indirect and different way.

In parallel, in some cases, digitalization might not only help sustain measurable proximity, constructed proximity and perceived proximity but also favor the interactions between different proximity units within a given configuration of organizational proximity and consequently facilitate a constant renewal of the configuration. For example, it has been observed that some successful enterprises begin with a business model principally based on substituted proximity and then decide to develop physical plants to respond to consumers' expectations regarding physical proximity. In these cases, substituted proximity consolidates its role while revitalizing other proximity units. In this sense, the effect of the increasing role of substituted proximity can be examined by taking into account the strategic and organizational context and even the macroscopic context, including the geographical and socioeconomic context in which organizations operate.

Proposition 3. Digitalization drives the emergence of substituted proximity.

Proposition 4. The greater the extent to which digitalization plays an important role in organizations, the greater the extent to which the role of substituted proximity is accentuated in the configuration of organizational proximity.

4.3. Possible limits of the impact of digitalization on organizational proximity

As argued by existing works [1, 25], there is no absolute measurability of proximity because proximity contains both measurable and nonmeasurable characteristics that are not assessable without contextualization and without taking into account the subjective dimension of human cognition and human interaction. For example, geographical proximity may limit the extension of organizational activities in some cases, but it might have strategic value in others. Based on the same reasoning, individuals in organizations may expect organizational proximity in some cases because they expect high interactivity and reactivity in organizational functioning, but they might expect a certain cognitive and operational distance in other cases if they are involved in innovative activities because, as demonstrated by existing studies, too much proximity might constrain both organizational activities [49] and managerial activities [25, 31, 36]. In other words, the closest organizational proximity is not systematically the most appropriate for organizations. Organizations have to deal with proximity

and distance in the development of organizational proximity.

Consequently, to analyze the impact of digitalization on organizational proximity, a contingent understanding should be adopted. This impact cannot be isolated from organizational specificities and contextual elements. Despite its importance, digitalization is not an indispensable element for developing organizational proximity. Furthermore, integrating digital technologies in organizations should not be understood as a search for closer organizational proximity, which, moreover, becomes difficult to measure due to its composite characteristics. The degree of digitalization in organizations is not actually a relevant indicator for measuring the relevance of organizational proximity.

Based on this lens, it seems necessary to point out the relevance of developing organizational proximity management, which aims to conceive, analyze, optimize, and regulate the combination of different groups/proximity units in organizations, particularly by observing and, where appropriate, integrating new proximity units generated by new technologies while measuring the interactions between different units and/or groups of proximity in the organizational context.

Proposition 5. The effect of digitalization remains contingent, as it depends on the specific characteristics of organizational proximity.

Proposition 6. The effect of digitalization is in permanent interaction with the transition of organizational proximity.

5. Discussion and conclusion

In the organizational context, proximity might be both a constructor and a consequence of organizational functioning [16]. For this reason, our research adopted a systemic understanding in our conceptualizing approach [13] aimed at constructing a framework for analyzing organizational proximity. Digitalization also remains a dual element that interacts, simultaneously as both input and output, with organizations [36] in an interactive and systemic way. In this sense, the systemic view adopted by our proposed framework might also be fruitful for analyzing the transition of organizational proximity in the context of digitalization.

The results of our study may be summarized in four points.

The first consists of a structured identification of the multiplicity of proximity that categorizes four groups of proximity in the organizational context.

The second involves a systemic understanding of the interactions between proximity units in the composition of organizational proximity, an understanding based on which every proximity unit is independent and, in parallel, proximity units are linked interdependently with each other and contingently interact to compose different configurations of organizational proximity. Based on this proposed systemic framework, the third result of our research refers to the examination of the transition of the characteristics and the configuration of organizational proximity in the context of digitalization. This examination points out that substituted proximity, as well as perceived proximity, is becoming progressively dominant in the composition of organizational proximity.

The fourth point concerns the six propositions formulated with regard to the interactions between digitalization and organizational proximity. These propositions aim to provide possible avenues for theoretical or empirical research.

Based on these results, we highlight the importance of a systemic view, on the one hand, for analyzing the interactions between different groups and different proximity units and, on the other hand, for examining the interactions between the transition of proximity and digitalization in organizations.

Our results also need to be contextualized by providing some clarifications.

First, few studies have examined proximity by integrating its composite characteristics into organizational functioning. In our study, proximity is analyzed in an integrated organizational context, in which different proximity units may reside uniquely, or simultaneously at the interindividual level, the group level or the intergroup level as well as at the intraorganizational or interorganizational level. In other words, in the same organization, the composition of organizational proximity might vary depending on the specificities of different organizational levels. For example, in the same organization, it is possible to construct a composition of organizational proximity in which measurable proximity is dominant in some departments and a composition of organizational proximity in which substituted proximity is dominant in other departments. This positioning differs from that of several existing studies, which chose to focus their analysis on one organizational level. For example, Wilson et al. [7] studied perceived proximity at the interpersonal level, while Knoben and

Oerlemans [15] examined proximity at the interorganizational level. Our positioning can be justified by the fact that because organizations function in a systemic and integrated way, organizational proximity might be composed or recomposed in a continuous way at different organizational levels. In this sense, it is difficult, even impossible in some cases, to isolate bilateral, trilateral, or multilateral proximity in or around organizations.

Second, in their structured analysis of different dimensions of proximity, Knoben and Oerlemans [15] highlighted the multiplicity of proximity. Our research converges with their study by affirming the multiplicity of proximity, but it diverges from their study in terms of the analytical view. Knoben and Oerlemans [15] consider proximity as a whole object that includes different dimensions. Our study suggests that the meaning of proximity is composite and that it might contain different proximity units and different forms of proximity. Each proximity unit and each form of proximity may exist independently or interdependently. For example, geographical proximity can occur in an organizational context as the only proximity, although in certain cases it might generate other forms of proximity. By distinguishing each form of proximity, we seek to suggest a series of questions regarding some possible relationships that seem obvious, such as the possible link between cognitive proximity and organizational proximity.

Furthermore, this study has several limitations that call for further research. First, the taxonomy of proximity should be completed by additional emerging forms of proximity units. Second, the interactions between different proximity units might reveal interesting clues for understanding the configuration of proximity in the organizational context, particularly by integrating the new forms of proximity provided by up-to-date digital technologies. Further development of this area seems necessary. Finally, the interactions between digitalization and different proximity units might be examined in a differentiated way. These limitations constitute potential research questions for our future work.

The implications of this research can be summarized from two perspectives: a theoretical perspective and an empirical perspective.

Theoretically, this research highlights the importance of conducting more studies on organizational proximity in the context of digitalization.

As mentioned by Torre and Gilly [16], proximity has been a fashionable issue for almost two decades. It arouses both enthusiasm and apprehension for organizations and for individuals. The paradoxical dimension related to the interpretation of proximity demonstrated by multiple existing studies [7, 21, 36], reveals certain confusing perceptions of individuals and organizations in their understanding of the transition of proximity, particularly in the context of organizations dealing with digitalization at different levels. In effect, the digitalization of individual, organizational, and societal functioning results in increasing complexity for modern organizations regarding proximity issues [46], as digitalization permanently impacts and changes possible organizational configurations by composing or recomposing different proximity units. Conversely, proximity changed by digitalization propels or constrains digitalization in organizations. This systemic functioning requires organizations to adapt to the shifting nature of proximity and to organize their activities in a manner that does not rely on a static view of organizational proximity but that, instead, attempts to identify and even to develop new configurations of organizational proximity.

The six propositions formulated in this research attempt to provide possible research questions based on which management scholars can provide a better understanding of the transition of organizational proximity, particularly in contexts where digitalization figures prominently in business and organizational activities.

Empirically, this research considers that digitalization is not a substitute for proximity; rather, it generates new proximity units or new perceptions of proximity. Consequently, it changes the role or the representations of certain forms of proximity, and on an ongoing basis, it modifies the combinations of different forms of proximity by displacing some and creating others. Based on the results of this research, we highlight that in the context of digitalization, it is important for organizations to conceive new configurations of proximity through a real proximity strategy that aims to develop, configure, and adjust not the closest but an optimal organizational proximity defined based on organizational specificities and strategic finalities. The relevance of the organizational proximity strategy depends on the alignment between the projected characteristics of organizational proximity and those of organizational characteristics. For example, it seems possible to consider that virtual proximity units can be more preponderant in the context of multinational enterprises or global enterprises and less preponderant in the context of small and medium-sized enterprises.

Potential empirical experiments are expected to explore new practices through which organizations can define their proximity strategies.

Acknowledgments

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