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Wissal Ben Arfi, Jean-Michel Sahut, Lubica Hikkerova and Eric Braune

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Knowledge management put to the test the new "objects" of 21st-century management
La gestión del conocimiento a prueba de los nuevos "objetos" de la gestión del siglo XXI

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Article abstract

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Wissal Ben Arfi
Paris School of Business, Paris
w.benarfi@psbedu.paris

Jean-Michel Sahut
Idrac Business School, Lyon
Jmsahut@gmail.com

Lubica Hikkerova
Ipag Business School, Paris
lubicahikkerova@gmail.com

Eric Braune
Omnes Education, Inseec Lyon
ebraune@inseec.com

ABSTRACT

In the context of open innovation, we study the conversion of groups' tacit knowledge, in order to achieve effective virtuality between members of cross-firm teams and optimize innovative projects through three cases of international platforms. The results show that virtual teams succeed in sharing knowledge through digital platforms thanks to communication, integration, an innovative corporate culture at the micro level, a participative approach, transformative leadership and transparency at the meso level, as well as participative governance, long-term commitment and a shared common strategy at the macro level.

Keywords: Digital platforms, virtual teams, open innovation, socialization, knowledge, networks

Résumé

Dans le contexte de l'innovation ouverte, nous étudions la conversion des connaissances tacites des groupes, afin de parvenir à une virtualité efficace entre les membres d'équipes inter-firmes et d'optimiser les projets innovants au travers trois cas de plateformes internationales. Les résultats montrent que les équipes virtuelles réussissent à partager leurs connaissances par le biais de plateformes numériques grâce à la communication, à l'intégration, à une culture d'entreprise innovante au niveau micro, à une approche participative, à un leadership transformateur et à la transparence au niveau méso, ainsi qu'à une gouvernance participative, à un engagement à long terme et à une stratégie commune partagée au niveau macro.

Mots-Clés : Plateformes numériques, équipes virtuelles, innovation ouverte, socialisation, connaissances, réseaux

Resumen

En el contexto de la innovación abierta, estudiamos la conversión del conocimiento tácito de los grupos para lograr una virtualidad efectiva entre los miembros de equipos interempresariales y optimizar los proyectos innovadores a través de tres casos de plataformas internacionales. Los resultados muestran que los equipos virtuales consiguen compartir conocimientos a través de plataformas digitales gracias a la comunicación, la integración, una cultura corporativa innovadora a nivel micro, un enfoque participativo, un liderazgo transformador y la transparencia a nivel meso, y una gobernanza participativa, un compromiso a largo plazo y una estrategia común compartida a nivel macro.

Palabras Clave: Plataformas digitales, equipos virtuales, innovación abierta, socialización, conocimiento, redes.

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Recently, knowledge sharing in the context of open innovation projects has received considerable attention from practitioners and academics. Much of this literature has focused on the phenomenon associated with openness in innovation processes through the adoption of intentional knowledge workflows beyond openness to improve innovation performance (Moellers *et al.*, 2020; Lu & Chesbrough, 2022). As technology and the environment become increasingly challenging and complex, companies are relying more and more on open innovation to sustain their competitive advantage. (Lu & Chesbrough, 2022). They are thus changing their open innovation practices to incorporate more diverse activities and collaborations, forging interactive relationships between multiple actors (Brunswicker and Chesbrough, 2018). In this light, several studies have described how organizations rely heavily on their employees to innovate and create value (Bigliardi *et al.*, 2020; Ahmadi *et al.*, 2022). Moreover, inter-organizational cooperation in knowledge sharing is widely acknowledged (Pagani and Pardo, 2017). In this regard, knowledge sharing between individuals across inter-organizational networks is widely recognized as a complex phenomenon involving many concepts, potentially leading to confusion (Appendix 1 illustrates these concepts). These studies have all found that knowledge sharing can improve creativity, teamwork, and work efficiency (Zhang and Cheng, 2015; Zhou *et al.*, 2017). It is also well established in open innovation research that external actors are important for knowledge sharing and that these cross-firm teams play a crucial role in innovative projects (Moellers *et al.*, 2020). In this light, knowledge sharing and the development of technological platforms that enable the digitization of processes are integral parts of the innovation project (Verhoef *et al.*, 2021; Sahut *et al.*, 2021). However, while open innovation is a source of potential opportunities for companies, it is not without risks (Marullo et al, 2020). Furthermore, with this emergence of digital platforms involving actors engaged in open innovation projects, it remains unclear how a similar process can successfully promote knowledge sharing by individuals to ensure a desired innovative outcome. The findings of previous works have shown a somewhat divergent view regarding the use of digital platforms by cross-functional virtual teams. On the one hand, the potential benefits of openness in knowledge sharing for innovation have been well-documented, with the rise of innovation platforms increasing virtuality, especially between actors with diverse professional profiles (Moellers *et al.*, 2020). On the other hand, some papers have set out the barriers of tacit knowledge sharing among team members, particularly when they are geographically dispersed. According to this body of research, while digital platforms can enrich knowledge about inter-organizational networks, organizational learning and knowledge conversion, the socialization process may be neglected, since individuals cannot create common mental representations and routines because they are geographically dispersed and interact remotely (Nonaka and Toayama, 2015; Natu and Aparicio, 2022). Most importantly, a company's ability to recognize and acquire external knowledge (Ben Arfi *et al.*, 2018) is contingent on the similarity of the knowledge base across organizations. Capturing new knowledge across corporate boundaries similarly remains a major challenge due to the lack of a common language necessary for effective interactions (Gurca *et al.*, 2021; Chaudhary *et al.*, 2022). Therefore, organizations need to invest in research and development (R&D) infrastructures to be able to both effectively acquire external knowledge (Greco *et al.*, 2019) and internalize new knowledge so as to gain a full understanding of the usefulness of the external knowledge (Dilrukshi *et al.*, 2022). Given the cross-firm nature of digital platforms, it is important to better understand the dynamics of knowledge sharing within virtual teams and how they can benefit open innovation projects. Considering the importance of virtual teams for innovation and knowledge transfer, the intersections between these concepts need to be contextualized and empirically studied (Morrison-Smith and Ruiz, 2020).

In light of the aforementioned potential benefits of openness in knowledge sharing for innovation, this paper aims to provide further insight into how companies can benefit from structures connecting them to external knowledge, with virtual cross-company teams using digital platforms to drive innovation projects. To this end, the present work addresses the following research question: how do virtual teams share their knowledge through digital platforms within an interorganizational network context?

The present research is based on three case studies of digital platforms, conducted within three French SMEs in the cosmetics industry, all of which formed alliances with external partners to acquire R&D skills. The analysis hereafter was performed on the actors' network, forged on the digital platforms. This approach is particularly relevant as companies are increasingly innovating within networks, rather than through internal R&D (Zhou *et al.*, 2017).

This article makes three main contributions. Firstly, this study shows that socialization is a crucial step in the transfer of tacit knowledge among virtual team members. This outcome is particularly significant because the socialization process is often neglected in the field of digital platforms, as individuals cannot develop shared mental representations and routines due to their solely virtual interactions. Specifically, we show how digital platforms function as a dynamic knowledge conversion spiral (SECI) to facilitate virtual teams' exchanges. Secondly, as virtuality adds complexity to the sharing of group tacit knowledge through digital platforms. To better understand this phenomenon, we have identified key factors such as communication, integration and the combination of an innovative corporate culture on a micro level, a participatory approach, transformative leadership and transparency on a meso level and, with a participative governance, long-term commitment and a common shared strategy on a macro level. These factors are necessary to overcome several barriers among virtual teams, including lack of motivation, differences in cognitive patterns and the structure of digital platforms.

Thirdly, this study also revealed that cultural levels, whether individual or organizational, are critical as they play a key role in the success of inter-organizational networks. To date, most previous studies have focused on large firms (Chesbrough and Bogers,

2014; Moellers *et al.*, 2020), paying less attention to the often diverse and international networks that exist within company boundaries. In such cases, the barriers to knowledge exchange across units can potentially be as important as the boundaries between firms (Cano-Kollmann *et al.*, 2016).

The rest of this paper is structured as follows. Section 2 discusses the literature on the mechanisms of socialization and codification of tacit knowledge, and how digital platforms, as structures underpinning inter-organizational networks, can enhance innovation. The design and methodology of this study are presented in Section 3, the results are outlined in Section 4, and Section 5 provides a discussion of the findings. Section 6 presents the conclusion and identifies avenues for further research.

Theoretical background

With organizations increasingly developing digitized strategies, knowledge management within virtual teams is becoming a major consideration in the design of a digital platform-based strategy (Shepherd and Cooper, 2020). Considering these digital platforms as a mechanism involving inter-organizational actors, the present work builds on previous research on virtual teamwork, identifying critical factors in knowledge sharing, and in particular shedding light on how the sharing of group tacit knowledge is facilitated by the use of digital platforms (Cohendet and Meyer-Krahmer, 2001; Castro Gonçalves, 2012; Natu and Aparicio, 2022).

Knowledge sharing framework: SECI model and the "Ba" concept

Knowledge is a valuable resource that helps organizations to develop core competencies and specific expertise (Wang and Wang, 2020). As a result, an organization is "an entity that creates knowledge through action and interaction" (Nonaka *et al.*, 2006). Thus, an organization's ability to create, share, and exploit knowledge is critical to their success. Because knowledge is active and subjective, authors define it in terms of "commitment", "beliefs", "dynamic human processes", and distinguish between tacit and explicit knowledge (Buvik and Tvedt, 2017). In contrast to explicit knowledge, implicit knowledge is difficult to express and capture from experience (Li *et al.*, 2018). Tacit knowledge is hard to encode, articulate, or share. In the present study, we draw on the SECI model, based on the fundamental assumption that throughout the process of knowledge conversion (socialization, externalization, combination and internalization), tacit and explicit knowledge increases in terms of quality and quantity, and evolves from the individual to the collective level (Nonaka, 1994). Moreover, knowledge creation and sharing are embedded in temporal contexts such as *"situations, conditions, and social circumstances in the before, now and after"* (Reinmoeller, 2001). In this regard, Nonaka and Konno (1998) suggested the concept of "Ba" as a shared space for emerging relationships and practices within a group in relation to the "context". Nonaka and Konno stated that "Ba" can be physical, virtual, mental or any combination of these (Nonaka *et al.*, 2006; Choo *et al.*, 2010). Accordingly, four types of Ba were identified: "Originating Ba" which enables the socialization phase, "Interacting Ba" which is necessary for the externalization phase, "Cyber Ba" which refers to knowledge systemizing on a collective level, and "Exercising Ba" which refers to knowledge internalization (Nonaka and Takeuchi, 1998). In view of the significant role of group tacit knowledge, the socialization process of the SECI knowledge conversion model is arguably one of the most important steps. Thus, socialization has been defined as a process of sharing experiences and thus creating tacit knowledge, such as shared mental models and technical skills. Group tacit knowledge refers to individuals creating and sharing implicit knowledge within and beyond the organization and is recognized as a unique and socially complex process that enhances the competitiveness of a company (Erden *et al.*, 2008). In the academic literature, group tacit knowledge refers to a socially complex and inimitable process which can optimize company competitiveness. In recent years, scholars have sought to develop an optimal combination of these two knowledge conversion phases - socialization and codification - by introducing a hybrid approach (Imran *et al.*, 2016). Knowledge codification is the process of converting tacit knowledge into messages, patents, user manuals, product books, etc. (Nonaka, 1994). Companies are encouraging employees to share tacit knowledge within teams and inter-organizational networks to achieve optimal performance and innovation (Zhang and Cheng; 2015; Marchiori and Franco, 2020). However, perception, language, time, value and distance are all barriers to sharing tacit knowledge (Nonaka, 2004; Nonaka and Von Krogh, 2009; Castellani *et al.*, 2021; Natu and Aparicio, 2022). Organizations learn by encoding "inferences from history into routines that guide behavior" (Ranucci and Souder, 2015), so the ability to refresh and enhance collective knowledge is essential for addressing specific issues (Navimipour and Charband, 2016). In this regard, the essence of innovation is rooted in the firm's ability to learn and share knowledge (Zhang and Cheng, 2015). In particular, converting tacit knowledge into collective explicit knowledge across companies generates more opportunities for synergy and innovation.

In line with this body of literature, we consider that the "Ba" provides a platform enabling knowledge conversion and, more importantly, knowledge socialization and codification. This suggests that tacit knowledge can be shared among members of the "Ba" digital platform implemented by companies to promote innovative projects.

Digital platforms and tacit knowledge sharing among virtual teams

The growing power of digital platforms as cross-firm networks is an important characteristic of both digital technology and open innovation outcomes (Bereznoy *et al.*, 2021). Digital transformation, with its agile and open mechanisms, has stimulated the prominence of digital platforms at the heart of many organizational innovation activities (Chi *et al.*, 2018). The platform and its units build an ecosystem that includes heterogeneous inter-organizational actors. According to Morrison-Smith and Ruiz (2020), virtual teams are designed to accomplish a single project and must be cross-functional, -organizational, or -geographic in nature. Virtual teams can be dispersed across organizational, space, and/or time boundaries, and are often cross-functional in nature. Today, virtual teams have become a standard form of work. Nevertheless, virtuality also raises several challenges for team members. These include handling technology, managing the absence or limitation of face-to-face contact, asynchronous communication, establishing norms, and cross-cultural collaboration (Schulze and Krumm, 2017; Morrison-Smith and Ruiz, 2020). Therefore, it is essential that virtual team members possess the knowledge, skills, abilities required, as well as other traits. In keeping with this, Schulze and Krumm (2017) emphasized how motivation and experience are essential for sustaining the use of technology and for increasing team members' willingness to share knowledge and, as well as for managing cultural diversity. They are also essential for encoding and decoding messages, enabling intelligent collaborative cognition on an individual level.

Another strength of digital platforms is their effective role as a repository of information enabling knowledge sharing by reducing repetition of information and building organizational cohesion (Pathak, 2015). In their work, Olaisen and Revang (2017) concluded that digital platforms offer multiple opportunities to share knowledge and information of high actionable, contextual and intrinsic quality. They argue that collaborating via a technological platform could even be better than face-to-face work, and that online work yields better results than a combination of offline and online work.

Digital platforms as an inter-organizational network enabling innovation

Organizational studies have contributed to the development of a much more comprehensive classification, analyzing the specific characteristics and internal variation of network forms, such as franchising, joint ventures, subcontracting, etc., and the impact of these variations (Gawer, 2014; Chi *et al.*, 2018).

Forkmann *et al.* (2018) define innovation networks as "relatively loose science- and technology-based research networks involving universities, research institutions, and research organizations of major corporations ... guided by the ethos of scientific discovery". However, knowledge sharing remains a process on micro, meso, and inter-organizational levels (Zahra *et al.*, 2020). Authors have also shown a strong link between knowledge sharing and innovation (Chi *et al.*, 2018; Bereznoy *et al.*, 2021). Knowledge sharing is a social process that connects knowledge producers and users (Zhou *et al.*, 2017). Technology is increasingly facilitating the creation, acquisition, dissemination, and use of knowledge through facilitating digital tools (Sahut *et al.*, 2019). Thus, the importance of cross-domain knowledge sharing in early product and service design systems in proactive knowledge management is widely recognized (Flor *et al.*, 2018). Moreover, the digital platform, as an inter-organizational network, stimulates the dynamics of knowledge conversion as it is predisposed to enable certain properties, such as cooperation, trust, and social interaction, as virtual group members work together to create and share knowledge (Alsharo *et al.*, 2017). In this vein, Gressgård (2011) emphasized the fact that the need for diversity of skills requires the inclusion of team members from different organizations and with diverse backgrounds. It is therefore relevant to consider the social and cultural context of teamwork. Indeed, several studies have shown that working in a virtual team facilitates knowledge sharing. Many research findings have also suggested that a trust-based environment promotes collaboration and the learning experience among team members. Trust is recognized as being a factor which promotes the cognition and performance of a virtual team (Marlow *et al.*, 2017).

Digital platforms and organizational culture for open innovation dynamics

Previous studies of cross-border knowledge sharing have shown that cultural differences between a firm and its foreign subsidiaries can create difficulties in terms of knowledge flow across borders (Maaref, and Djeflat, 2021). Beugelsdijk *et al.* (2018) pointed out that lack of knowledge and understanding of how the host country works, as well as perceived "foreignness" or "psychic distance" can create barriers to collaboration and cooperation. However, little research has been done on how cultural values and the habits of foreign subsidiaries and domestic subsidiaries align, and how this impacts knowledge sharing within organizations. Many scholars have linked cultural distance to differences in organizational practices and methods of performing tasks between the home and host companies. Language barriers, different modes of communication, and a lack of trust between the two units are common challenges (Beugelsdijk *et al.*, 2018). Control, coordination, transfer practices and agency dynamics between host and home entities have all been hypothesized as being factors thereof in numerous international management studies. According to Zellmer-Bruhn and Gibson (2006), some contextual factors (global integration) constrain team learning, while others (local responsiveness and knowledge management) facilitate it. This positive effect may explain why companies from developed economies invest in developing countries where they can benefit economically and actively from the advantages inherent to the external organization (Beugelsdijk *et al.*, 2018).

Against this theoretical backdrop, it is evidently highly useful to investigate how international inter-organizational networks manage tacit knowledge sharing via digital platforms in their bid to innovate and achieve common goals. The current study contributes to previous research in the fields of international management and innovation management by combining different knowledge sharing contexts and cultures: French, Spanish, and Tunisian. The concept of a digital platform has already previously been applied in the organizational innovation process. To better understand how digital transformation affects knowledge sharing and organizational learning among virtual team members, more research into virtual group dynamics, socialization processes, and tacit knowledge encoding within digital platforms is necessary.

Methodology

To address the research questions, a qualitative research design was implemented. An inductive, qualitative design was employed to provide an understanding of the extent of virtual knowledge sharing through digital platforms in project networks and to identify group tacit knowledge sharing dynamics as a potential explanation for successful product innovation outcomes. The purpose of this study is to adopt an exploratory approach, which is appropriate for exploring a specific phenomenon that is only partially understood (Eisenhardt & Ott, 2017). A multiple case study methodology was employed for this empirical research. According to Yin (2013), this choice is rational if one of the following three conditions is satisfied: (1) the case is an unusual phenomenon, (2) the case has not been accessible to researchers before, or (3) the case can be observed longitudinally. This multiple case study fulfills all three conditions, and its method is moreover consistent with the guidelines developed by Yin (2013). To ensure comparability between cases and empirically investigate the research questions, we selected three digital platforms initiated by three French SMEs (Table 1). As suggested by Eisenhardt (2021), these platforms must have a certain number of characteristics in common. First, all the digital platforms were initiated by a French SME. Secondly, they operate in the same business sector (the cosmetics industry). Thirdly, they all have the same objective to design and industrialize an innovative product by involving R&D of foreign firms.

- Digital Platform 1 (P1): created in 2015 to address a lack of internal skills. The CEO of a French SME (SME1) decided to create P1 in collaboration with a Spanish laboratory in charge of developing the formula of the new concept developed by their R&D, and a Tunisian company in charge of designing the final product of melatonin cream and which could furthermore facilitate SME1's access to the marketplace.

- Digital platform 2 (P2): created in 2013, P2 represents an alliance of a French SME (SME2) with a Tunisian SME (TUN2) which also involves some consumers. On this digital platform, TUN2 provides its traditional method for producing an essential oil, and its deep knowledge of the market, while SME2 uses its knowledge to industrialize the process capacity for mass production.
- Digital Platform 3 (P3): created in 2014 to perform an R&D project, SME3 has developed an innovative organic shampoo formula to extend its organic beauty product range. This was the first time this SME has produced or commercialized this type of shampoo. To do this, it has formed an alliance with a Spanish SME (SP3), with proven experience in this field, in order to industrialize and jointly market this organic shampoo on an international level. P3 also involves two of its existing French suppliers.

To ensure the longitudinal criterion, data collection was conducted in two phases:

- During the creation and implementation of the platforms (between 2013 and 2015), we conducted non-participant observation. One of the authors was involved in creating these platforms and collecting the data. He attended all the meetings of the product development projects. This enabled the authors to identify the steps of the product innovation process and to better understand the inter-organizational network strategies adopted by the three French SMEs under study;
- Then 3 years later, to analyze the results of these platforms between 2016 and 2018, in-depth qualitative data were conducted through 34 interviews (see Table 2) with all key actors (recruited from the French SMEs and members of their network) who were involved in each digital platform. Following the same approach as Péréa (2012), the success or failure of the innovation project differentiates the outcomes between the 3 platforms. The interview script comprised four parts. First, the respondents were requested to describe their profiles (position, seniority, functions and fields of expertise) and then to talk about the company's network strategy (joint ventures, partnerships, external collaborations) and its context. This was done in order to understand the company's positioning regarding its business strategy and competitiveness. Second, the knowledge sharing process was explored to analyze how the companies were addressing the creation, sharing and application of knowledge. A third section investigated the perceived strengths of knowledge sharing processes and how to ensure optimal knowledge flows across digital platforms. Lastly, an analysis of the cultural influence on knowledge sharing via digital platforms, and consequently on the innovation process, was discussed in the last theme. Each interview lasted at least one hour, for a total of 41 hours of verbatim. These interviews were recorded and transcribed into 391 pages of data that were subsequently coded for thematic analysis.

TABLE 1
Overview of the three digital platforms

Name of the platforms	Aim and structure	Information exchanges
Platform 1 (P1)	- To develop a melatonin cream that rejuvenates and hydrates skin. - A French SME launched an alliance with a Spanish laboratory expert in melatonin products with medical benefits and a Tunisia firm (for the access to the market).	- Exchanges via the digital platform took place between only 4 members (Marketing Manager, Head of the Industrial department and Technical Director, Head of the R&D department) involved in the project from the design phase. These internal members had access to the formula of the new product. After a visit to the Spanish R&D laboratory, no access to manufacturing was allowed. Socialization was limited to local members because the inability to speak Spanish was a real barrier to knowledge sharing. Only sharing by email, intranet and conference calls was possible. Similarly, the digital platform did not allow members to interact in real time. Members had to write their questions in English and wait for answers from the Spanish experts.
Platform 2 (P2)	- Industrialization of essential oil. - An alliance of a French SME with a Tunisian SME which also involves some consumers - In terms of structure, it did not involve all the actors at the same time period. This digital platform is also known for comprising a very young team, the members of which all have experience of digital tools.	- Concerning the digital platform, exchanges failed in the first phase due to several problems: lack of skills, geographical distance, poor exchange capability, etc. - Once these problems had been solved, the platform was restructured. First of all, new people were hired and involved in the project, and exchanges became more efficient thanks to information technologies: outlook, intranet, Skype conferences, a drive space to store data, etc. Moreover, focus groups with consumers were then conducted to discuss market issues. When the product was manufactured, a product book was written with all the details about the formula, the industrialization process phases, etc.
Platform 3 (P3)	- An alliance of a French SME, noted SME 3 (which developed an innovative organic shampoo formula) with a Spanish SME (with proven experience in this type of product) in order to industrialize and jointly market an organic shampoo on an international level. P3 involves two French suppliers of the SME 3. It was also characterized by a young team and members who were involved in the same time period.	- Exchanges between the digital platform members were more regular and facilitated by several factors. First of all, live and group discussions made exchanges between the supplier and other members easier. The proximity between the members involved and their ability to all speak a language that everyone could understand also made their exchanges more relevant and fruitful. Furthermore, the platform enabled instant exchange and face-to-face interactions between members via Facetime calls, web conference calls, intranet, a conversation recording facility to ensure that unconnected members could listen to the conversations and update their knowledge. Concerning externalization, a product book was written to explain the new product development process.

This coding was in part confirmed by a double-coding process conducted by another researcher. These processes helped us to reduce bias and maintain a necessary degree of rigor as recommended by Campbell *et al.* (2013). Specifically, our coding process comprised three phases: open, axial, and selective coding. The "open coding" consisted of labeling (coding) each text fragment to identify the main theme. In this step the authors identified 28 nodes: innovation key success factors, barriers/constraints of innovation, innovation process, knowledge life cycle, knowledge nature, SECI approach, organizational learning, knowledge transfer, Trust, Team cohesion, Conflicts, corporate strategy, market positioning, country specificities, etc. Then we performed "axial coding" by combining the corresponding codes to identify a number of general categories. The "selective coding" enabled us to establish connections between the main categories identified. Specifically, six nodes were proposed (innovation management, knowledge management, knowledge sharing, corporate culture, corporate strategy, conflicts). Importantly, the results of this analysis enabled us to test the validity of the information gathered from different sources.

TABLE 2
Data on interviewees

Members of the platforms	P1	P2	P3
French SME	4	7	6
Spanish SME	2		5
Tunisian SME	3	4	
Outside the platforms	CEO of SME1	CEO of SME2	CEO of SME3
Total	**10**	**12**	**12**

Empirical results

This case study is a research strategy that focuses on understanding the dynamics present in unique contexts. This process enables theory to be induced from well-chosen cases (Eisenhardt, 1989). However, case study analysis can generate premature and false conclusions due to information processing biases. In addition, a full narrative of each case is difficult to provide in a single article. As Eisenhardt and Graebner (2007) state, *"If the researcher relates the narrative of each case, then the theory is lost and the text balloons"*. Cross-case study allows us to overcome these issues by comparing single cases on a specific number of dimensions. At the cost of empirical richness, the cross-case study challenges the researcher's initial impressions and enables the dimensions underlying the observed process to become apparent.

Referring to the SECI model of knowledge conversion spiral, of the three platforms analyzed, only P2 and P3 achieved their goal of generating innovation. While the success of P3 was progressive, P2 went through a phase of failure before making adjustments that ultimately led to an innovation. P1 failed entirely, and the factors behind their failure are set out. Consequently, the cross-case study conducted in this paper led us to differentiate three major dimensions of the process being studied. The first is the socialization process and the conditions for successful socialization, i.e., the shift of knowledge from being tacit to being explicit. The second is codification of tacit knowledge. Codification enables the conversion of unarticulated tacit knowledge into explicit knowledge, thus facilitating its dissemination within the organization. The third dimension describes the organizational learning induced by the group tacit knowledge sharing.

The socialization process as a key phase of tacit knowledge sharing among virtual teams

Digital platform 1: Failure of group tacit knowledge sharing

The results showed that P1's approach consisted of two steps: identifying a new market opportunity and developing a solution. The inter-organizational network included local (4), Spanish (2), and Tunisian (3) individuals. The Spanish laboratory only approved the new concept's molecular formula and helped develop the product. Unfortunately, the two members were not devoted to sharing tacit information. P1 showed how group tacit knowledge sharing can reveal a faulty SECI Model "socialization" phase.

In conclusion, insufficient commitment and differences in perspectives, methods, and habits prevented the Spanish laboratory members from sharing their experience with the project team. The two host companies stated that the tacit knowledge was technical and project-specific. Their work procedures didn't need to change. The lack of a single language hindered platform members' capacity to learn new things. Gurca *et al.* (2021) found that the first phase of knowledge conversion failed because participants were unable to connect and socialize. Thus, the digital platform failed to share the group's tacit knowledge, preventing inter-organizational innovation and dooming the project. (Interview 3, P1).

Digital platform 2: From dysfunctions in socialization to more effective group tacit knowledge sharing

P2 transcripts showed two phases in this innovative project. The first was a failed product, while the second changed working methods to improve participant interactions and group tacit knowledge dissemination. P2 initially failed the socialization phase, like P1. The CEO of SM2 decided to restructure P2 to save the project after hearing several issues (lack of skills, geographical distance, low exchange capacity, etc.). He hired two knowledge sharing experts and a project manager to change P2's governance.

To improve communication, interaction, and trust, the team changed their work methods. Thus, the digital platform's R&D, industrial, and marketing managers focused more. Meetings were intensified to assign tasks and responsibilities. Close cooperation encouraged tacit knowledge exchanges and SME2 industrial members to agree on how to manufacture the new product.

Digital Platform 3: effective socialization and a successful knowledge conversion spiral

P3's "Socialization" phase involved project participants' tacit knowledge flows. Interviewees said corporate governance started knowledge sharing by implementing the digital platform. Virtual team members share knowledge by communicating and sharing their expertise. Since everyone shared organizational characteristics, P3 was the most successful model. Supplier integration also has two benefits. First, it improved the product. Second, since SME3 and SP3 use the same product suppliers, it has strengthened their relationship.

TABLE 3

Empirical results - The socialization process as a key phase of group tacit knowledge sharing

	P1	P2	P3
Main result	Barriers to socialization and failure of group tacit knowledge sharing; tacit knowledge was only exchanged by the three French SME innovation project members. All from the same firm, were able to share common representations and cognitive schemas that facilitated their tacit knowledge sharing. However, this new knowledge was not collective and did not reach the organizational level.	From dysfunctions in socialization to more effective group tacit knowledge sharing: P2 initially failed the socialization phase, like P1. The CEO of SM2 decided to restructure P2 to save the project. These changes helped share tacit knowledge and develop products	Effective socialization and a successful knowledge conversion spiral: the corporate governance initiated the process of knowledge sharing by implementing the digital platform. Among the virtual team members, knowledge exchange is achieved as the members are expected to communicate and share their expertise with the rest of the actors, including the two suppliers involved in the project.
Causes	Practices developed within this inter-organizational network: most of the exchanges were in writing, although virtual meetings and conference calls were also scheduled. In addition to this, the distance hampered the flow of knowledge transfer and the differences in language and values represented a real barrier to socialization between the members. We have also identified a lack of trust between the members of the French SME and those of the other two SMEs.	Customers' involvement in P2 during the second phase of the project strengthened the SME2 and TUN2 teams' relationship. It strengthened the relationship between the SME2 and TUN2 project teams, who had to work together to meet customer expectations. Both companies noted their tacit knowledge acquisition from virtual interactions with customers in many countries and their internalization of essential oils market knowledge. Customer meetings were recorded and transcribed into a document on the "market trends and opportunities" platform, making tacit knowledge socialization and encoding easier.	The project team leader (R&D manager of SME3), the industrial managers (SME3), and the 2 suppliers shared tacit knowledge within the digital platform on three levels: the project leader and the industrial managers; the team leader and the other team members; and the two suppliers. The team leader also encouraged and challenged everyone at once to boost commitment and improve coordination. This helps members of the inter-organizational network learn new things and become more involved.
Cultural aspects	Digital platform users from French, Spanish, and Tunisian origins are very diverse. The Spanish and Tunisian enterprises did not share long-term orientation or cooperation, highlighting this heterogeneity. The Spanish company sold the formula and offered product design skills. It would not work with the French SME again. The Tunisian company also developed and sold the product, but its involvement was restricted.	In this second phase communication was improved and cultural barriers were reduced. In particular, the SME2 marketing manager benefited from the project's early failure. The inter-organizational network and shared knowledge helped her learn flexibility, creativity, teamwork, and patience. TUN1's R&D manager, a 20-year essential oils veteran, said the innovation project gave him new skills.	By involving all P3 virtual team members, cultural distance, communication, and tacit knowledge sharing are overcome. SP3 ensures the success of innovative projects by achieving high-quality knowledge sharing and organizational learning in organic shampoo manufacturing and marketing, which SME3 lacked.

Group tacit knowledge sharing and effective virtuality

A platform, as a virtual organization, must address two issues. First of all, it must ensure that the members are willing to cooperate to achieve their common goals. However, agency theory (Eisenhardt, 1989) suggests that this cooperation is far from being natural for individuals, each representing interests that are far from being shared or aligned. Secondly, the platform must be designed in such a way as to manage functional interdependence among the actors interacting on the platform. In sum, the objective of the platform is to benefit from the variety of knowledge, know-how, processes and culture among its virtual team members. It must furthermore foster commitment and cooperation between them. In this context, the cross-case study that we have conducted enables us to highlight the conditions which favor or hinder the development of group tacit knowledge.

As highlighted in the literature review, group tacit knowledge sharing can only occur between individuals with common cognitive schemas (Gurca *et al.*, 2021). The interviews have shown how differences in mental representations regarding the problem to be solved lead to conflicts, and also how SME1 members were not able to share tacit knowledge with individuals outside of their company. Here, the failure arises from several factors: 1) the virtual team members who were not motivated to share their tacit knowledge due to having different cultures and cognitive schemas and 2) the digital platform structure was not appropriate because the exchanges were not well organized and took place according to short-term objectives. However, the results revealed that these constraints can be resolved by involving mediators (P2). These experts in knowledge sharing successfully restructured the platform and facilitated the flow of tacit knowledge among its members. Moreover, the collaborative leadership of the platform and the empowerment of a dedicated manager (P3) seems to promote the adoption of regulations enabling conflict resolution and the shared representation of a long-term goal.

Similarly, knowledge sharing is driven by the commitment of individuals towards the work they are performing. This commitment has multiple drivers. It has motivational aspects that stem from the actors' intrinsic motivations (Deci and Ryan, 2000) to commit to the innovation process. This motivation requires actors to be fully empowered, and P1 shows that the Spanish laboratory was lacking in this regard, leading to poor commitment.

The present cross-case study analysis highlighted how recognition of actors' capabilities is also important to maintain their motivation to share tacit knowledge: when a supplier suggested adding amino acids to the formula (P3), the tacit benefits associated with this addition were provided. Therefore, a positive attitude towards actors' initiatives and recognition of their capabilities fosters the motivation among virtual team members to share their tacit knowledge (Interview 9–SP1 and interview 14–SME 2).

Moreover, informal communication between the digital platform members promotes tacit knowledge sharing, and the case studies of both P1 and P2 demonstrated how willingness to perform exchanges in a formal setting resulted in low commitment and motivation among team members.

Finally, knowledge sharing cannot occur without mutual trust between digital platform members. In line with Bromiley and Cummings' (1989) proposal cited earlier, trust is rooted in the pursuit of long-term relationships between internal and external virtual members who are digitally involved. From this perspective, P1 failed because the Spanish and Tunisian partners were only committed to short-term goals and cooperation. The study of P1 shows how actors must invest in long-term cooperation projects to build trust. Similarly, financial alliances or committed investments are vehicles for proving long-term perspectives with potential partners (Interview 10, SME 2).

Key Factors Influencing Knowledge Codification among virtual teams

In the present study, knowledge codification refers to the phase of converting the shared group tacit knowledge into explicit knowledge. The partners involved in P1 have a significant cognitive distance from each other, and this makes codification essential for sharing knowledge (Interview 7–SME 1)

Concerning P2, during the first phase, the partners were displeased with the collaborative framework and made no attempt to share their tacit knowledge. The codification of such knowledge was therefore made necessary, and the second phase was characterized by a digital platform more adapted to making the knowledge explicit and available to everyone in the virtual team. Therefore, coding expectations may reflect a low level of involvement among actors and even predict the failure of the project. Codification is also required given the cognitive distance between the actors having various skills. However, codification enables a knowledge repository, gained during the innovation project, to be developed (P2 and P3). As the product was manufactured, a product book was published, comprising all the details about the formula, the industrialization process phases, etc. Furthermore, consumer suggestions recorded during the virtual meetings were also encoded, which led to their dissemination via the digital platform. Therefore, codification not only serves to diffuse knowledge within organizations, it also provides an opportunity to learn and acquire best practices, know-how and to enable the improvement of consumer-centric management capabilities *(Interview 11–SME 2).*

The level of codification then depends on the degree of commitment of the different actors. The codification in P2 was strong for the product book and the transcripts of the consumer meetings, since the companies involved were committed to a medium-term collaborative relationship, while the codification in P3 was lower for the product book (and the supplier meetings were not always recorded), since the actors involved in P3 were more committed to a long-term collaborative relationship. In summary, codification is an essential organizational learning step that includes both a temporal and a spatial dimension. This finding is clearly supported by the interviews (Interview 23, SP 3).

Digital platform and organizational learning for successful innovation

The results highlighted how, in the initial P2 and P1 stages, actors failed to share and acquire knowledge due to the prioritization of company routines over the collaborative innovation project. The members of SME1 (P1) remained unchanged in their working methods and practices, while these routines were not accepted by the other platform partners. P2 solved this problem by introducing a third party to act as a central contact for everyone involved on the digital platform. Among the objectives, this third party is intended to define a common goal which represents an essential base for the digital platform management. Hiring a manager to ensure the success of the project (P2) is a second step towards the creation of a new unit with a distinctive identity beyond that of the partner companies. P3 went even further and a participative governance for the platform was defined before the actors began to share their knowledge. This so-called shared governance has the distinctive feature of sharing the platform's administrative power, promoting cooperative relationships among the members and developing their autonomy (Interview 21–SME 3)

Our study shows how individuals in platform environments attempt to refer to the procedures, norms and culture of their company. Once they get trapped in this framework and under the control of their company hierarchy, their knowledge cannot be fully adapted to other contexts. This result is in keeping with the findings of Brunswicker and Chesbrough (2018), who stated that open innovation requires the construction of spin-offs that are independent of past hierarchies and uncontrolled by firms. Furthermore, routines and work practices may be divergent across firms, thus constraining the learning process. Therefore, organizational learning requires the emergence of an accepted common core structure: the platform, having its own governance, rules, routines, values, culture, references and management. This shared platform provides a unique and accepted context in which knowledge, as a true and justified context, is created and shared. However, such affirmations do not explain how the knowledge gained by members within the digital platform is transferred to partner firms. P2 members codified all the knowledge gained and published it in a product book. Thus, the knowledge was transferred to the partner firms in an explicit form and the product book was the vehicle for disseminating new knowledge within each company. P3 used less codification, given the long-term commitment of its member firms. As such, the tacit knowledge gained during the innovation project is kept on the platform and becomes common property, bonding the project partners. The group tacit knowledge developed within the digital platform is the key element, ensuring the long-term commitment of each partner company.

Discussion

First, this paper provides a better understanding of how firms share knowledge through digital platforms in an inter-organizational network context, by demonstrating that the socialization process is a key phase in the sharing of tacit knowledge among a group. This is particularly significant as the socialization process tends to be neglected in the study of digital platforms, since the individuals cannot build shared mental representations and routines due to their purely virtual interactions (Natu and Aparicio, 2022). We show how digital platforms perform as a dynamic spiral for knowledge conversion (SECI) and act as a "Ba." Specifically, the results show that the "interacting Ba" as well as the "originating Ba" seem to be crucial for effective tacit group socialization and codification through communication, integration, and an innovative corporate culture (Buunk *et al.*, 2018; Dilrukshi *et al.*, 2022). Thus, digital technologies may improve knowledge sharing through digital platforms if these two phases of the "Ba" are present. Socialization was particularly salient in this study, as the sense of cohesion among virtual teams is a key element that

fosters knowledge conversion between individuals, enabling the inter-organizational network to pursue common goals and foster innovation (Koch and Windsperger, 2017).

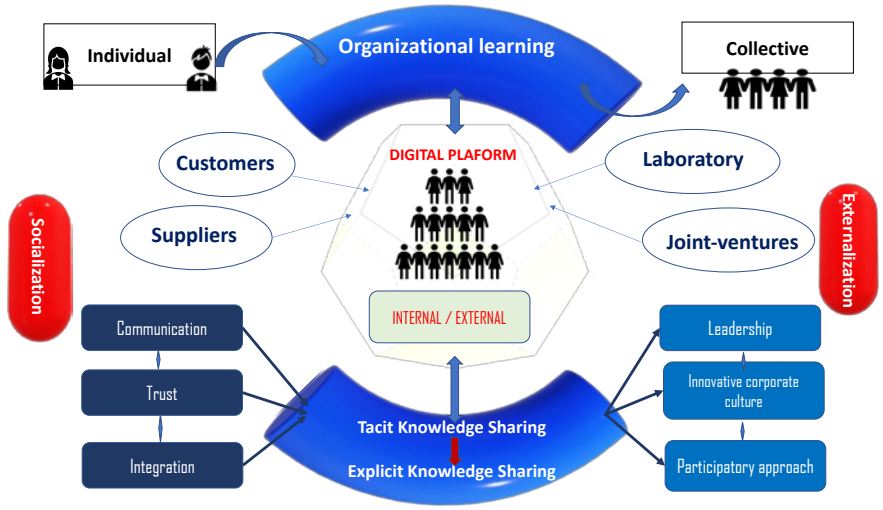
Second, the present survey additionally identified a number of key factors and some barriers that may impede the sharing of group tacit knowledge, as highlighted by Castellani *et al.* (2021), Natu & Aparicio (2022), and Morrison-Smith& Ruiz (2020).

We noted that effective sharing and transfer of group tacit knowledge requires mutual trust, responsiveness, and shared values. This enables virtual teams to develop behaviors that promote knowledge sharing and use, further supported by learning from past mistakes (De Long & Fahey, 2000). These findings are consistent with previous studies that have demonstrated how the lack of established norms and the aforementioned barriers can be addressed through motivation and experience, and the forging of trusting relationships to ensure the commitment of all partners of the digital platform. In this regard, we have found that implementing digital platforms can be useful in resolving conflicts, improving collective interactions, and building trust among members (Alsharo *et al.*, 2017; Buvik *et al.*, 2017; Beugelsdijk *et al.*, 2018). In the context of an inter-organizational network, this requires participative governance within digital platforms to ensure long-term commitment and a common collective strategy and vision shared by all actors involved. (Van Ditzhuyzen, 2019). Thus, digital platform managers must foster a culture of trust among employees, while cross-functional communication is expected and valued (Marlow *et al.*, 2017).

Among the success factors, the results highlighted that cultural levels, both individual and organizational, are essential because they foster trust among all network participants, regardless of position or responsibility, thereby improving communication and strengthening the community's identity (Schulze & Krumm, 2017; Olaisen & Revang, 2017). In this regard, we empirically validate Boisot's (1995) knowledge management model, identifying six factors that enable the transition from individual to organizational learning, and supporting Argyris and Schôn's (1987) earlier findings. We contribute to this body of work by highlighting the importance of digital platforms in double-loop learning. Thus, this type of learning promotes product development due to the increasing democratization of knowledge, spontaneous flows of cooperation, and new forms of learning, which can enhance creativity and innovation (Lecoutre and Lièvre, 2019). Furthermore, the companies under study appear to have restructured their value chains and business models to foster innovation and maintain a competitive advantage (Pagani and Pardo, 2017; Berezony *et al.*, 2021). To achieve sustainable innovation and create effective networks, companies are redesigning their value chains and actively disrupting existing business models. In this way, the inter-organizational network generates the highest value by considering digital platforms as independent entities that must have their own specific governance, and by providing their members with a strategy and a common collective vision to ensure their long-term commitment. In summary, this paper provides a deep understanding of how the sharing and codification of group tacit knowledge among virtual teams takes place via digital platforms (Figure 1). While the findings of previous studies (Frey *et al.*, 2011; Chi *et al.*, 2018) are valuable, they omit social interactions in their analysis. This article fills this gap by examining the role of digital platforms in enhancing organizational learning and empowering innovative projects. It also examines how digital platforms enable internal and external group tacit knowledge sharing, promoting open innovation and increasing the absorptive capacity of companies globally (Lin and Wu, 2014; Flor *et al.*, 2018).

FIGURE 1

Tacit knowledge sharing within inter-organizational networks on digital platforms



Conclusion

This article adds to previous research on how digital platforms facilitate tacit knowledge conversion between virtual team members and ensure the success of digital innovations. To achieve this goal, several inter-organizational innovation project success factors, as well as the main barriers there to, have been identified herein.

The present study focused on creating digital entities for innovation management projects. Unlike previous approaches, these co-creation units were open to all employees. Developing a human resource approach enabling goal setting, assessment and analysis of performance gaps, and linking part of the actors' remuneration to goal achievement seems to be consistent with observed structural changes. In all three cases, a new corporate strategy was adopted. On the one hand, transformative managers had a vision of key directions and goals. Change was driven by participative governance and disruptive business models. This strategic vision emphasizes innovation and redesigns digital platforms and their working methods. Each stage introduces a series of changes. These changes are not synchronized and are not driven by high-risk decisions. They are rather the result of top executives realizing the importance of open innovation, tacit knowledge sharing, and organizational learning among virtual teams. Therefore, the three companies have created a new network and a market-oriented strategy to anticipate customer needs. Our study highlights major outcomes, notably how time associated with corporate transformation projects promotes organizational culture and the connections between business networks, innovation, and creativity. As a result, any change within an inter-organizational network - in this case, digital platforms - requires time to gain acceptance and integration. Building a dynamic innovation process takes a lot of time and effort, especially in terms of communication. Incorporating group tacit knowledge sharing

among employees is a complex and challenging process, involving long-term commitment, as it requires organizational changes and a shared strategic vision. A transformational leader for coordinating innovative projects is required to ensure the successful application of group tacit knowledge sharing as a link between organizational learning and innovation. Digital platform members should be involved in the early stages of any project, from the detection of a new market opportunity to the approval of an innovative concept and project execution. To ensure success, the digital platform must share a common corporate culture that ties all parties together. This is critical for managing open innovation and group tacit knowledge sharing among companies. This study provides an understanding of how inter-organizational network structures influence the innovation process and what culture, strategies, capabilities, and knowledge are critical to fostering open innovation within these inter-organizational networks.

This study is not without weaknesses, including limitations on the validity and generalization of its results, given the nature of qualitative methodology. The findings could not be interpreted in a causal sense as a consequence of our longitudinal design in the framework of a multiple digital platforms study. The main advantage of such digital platforms research is that it enables theory building rather than theory testing. Avenues for further quantitative studies are suggested by the authors to assess the potential for generalizing the present research findings.

In addition to the above, the specific contextual focus of the study - a cosmetics market leader with multinational joint ventures - limits its generalizability. While organizational culture influences knowledge sharing and organizational learning via digital platforms in this research, it is interesting to consider these factors in different cultural environments. To better understand how interorganizational open innovation is performed in other industries or markets, further research should be conducted on the operationalization of digital platforms. Finally, by considering culture as a multifaceted phenomenon, this study importantly provides theoretical insights into future research on how open inter-organizational innovation is achieved.

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APPENDIX 1

Concepts and issues in the literature about knowledge sharing

Concepts/Issues	Contributions / Assumptions	Authors
Knowledge based view	Knowledge as a resource for competitive advantage/ knowledge is the skill, experience and vision	Nonaka (1994); Earl (2001); Nonaka and Toyama (2015); Reinmoeller and Chong (2002)
Knowledge sharing	Individuals, teams and the organization share the knowledge with other members in the form of activities	Nonaka *et al.* (2006); Navimipour and Charband (2016)
Knowledge sharing & performance	Knowledge sharing is strategically important to organizations, as it enables people to accept [...] to improve their work performance and to benefit the organizations	Nonaka et al., (2006); Lin and Wu (2014); Wang and Wang. (2020); Dilrukshi *et al.* (2022); Lu et Chesbrough (2022); Marchiori and Franco (2020); Marullo et al.(2020)
Knowledge sharing & innovation	Knowledge sharing helps companies to integrate experts' critical knowledge and abilities to accomplish complex and innovative work	Frey et al. (2011); Flor *et al.* (2018); Hutton *et al.*(2021); Bigliardi *et al.* (2020); Brunswicker and Chesbrough (2018)
Knowledge sharing & teamwork	Team: participants of different departments/ Knowledge sharing provides a link between team members and reduces costs	Zhang and Cheng (2015); Buvik and Tvedt (2017); Ahmadi et al.(2022); Erden *et al.* (2008)
Knowledge sharing and virtual team/ virtual groups	Collaborative capabilities and social networking; online communities, open source software and knowledge sharing => Where participants can interact and share useful knowledge with an interface	Soto-Acosta *et al.* (2014); Gilson *et al.* (2015); Navimipour and Charband (2016); Gressgård (2011); Marlow *et al.*(2017); Natu and Aparicio (2022); Olaisen and Revang (2017); Palma and Giacinto (2015); Pathak (2015); Shepherd and Cooper (2020)
Knowledge sharing mechanisms in team projects / networks	Members with complementary skills and generate synergy through a coordinated effort	Navimipour and Charband (2016); Zhang and Cheng (2015); Li *et al.*(2018); Schilling and Hill (1998)
Knowledge sharing / trust / commitment	Knowledge sharing / influences of trust / commitment; trust and conflict within virtual inter-organizational alliances	Alsharo *et al.* (2017); Buvik and Tvedt (2017); Brockman *et al.*(2018); Bromiley and Cummings (1989); Pangil and Chan (2014).
Tacit knowledge sharing / explicit knowledge sharing	Facilitating tacit knowledge exchange / the role of tacit and explicit knowledge / difficulties in diffusion of tacit knowledge	Nonaka (1994); Cohendet and Meyer-Krahmer (2001); Nonaka and Von Krogh (2009)
Knowledge sharing and leadership style	The role of transformational and transactional leadership / ethical leadership and employee knowledge sharing	Zhang and Cheng, 2015 ; Kossler and Prestridge (1996); Jiang & Chen (2018); Castellani *et al.*(2021)
Knowledge sharing and IT support	Knowledge management systems / organizational support and knowledge sharing	Gawer (2014); Soto-Acosta *et al.* (2014); Pagani and Pardo (2017); Cano-Kollmann *et al.* (2016); Verhoef *et al.* (2021)
Knowledge sharing and sociocultural factors	Cultural antecedents of knowledge sharing / transferring boundary objects / interchanging team members	De Long and Fahey (2000); Choo and de Alvarenga (2010); Nonaka and Konno (1998); Morrison-Smith and Ruiz (2020)
Knowledge sharing and learning	The impact of knowledge sharing on organizational learning / learning and knowledge sharing in virtual communities of practice	Argyris and Schôn, (1987); Levitt and March (1988); Gilson *et al.* (2015); Wenger *et al.* (2002); Imran *et al.* (2016) ; Alsharo *et al.*, 2017; Cohen and Levinthal (1990)
Digital platforms and tacit knowledge sharing	The sharing of tacit knowledge through digital platforms / efficiency of digital platforms	Gawer (2014) ; Liu and Zhang (2014)

APPENDIX 2

Extraction of verbatims

Interview 3, SME 1:
"Therefore, it was not easy, a phase of realization that is difficult because we had to deal with the government authorities. The main problem was the European regulation change at that time. The European regulation mentioned before that each company could put the mentions that it could validate by the clinical tests. Even the Spanish company approved the formulation (via its biotech laboratory), it was very complicated to capture this formula by all the team members involved in the platform and to translate it into a product that meets the local standards of each country".
Interview 9 - SP1:
"In fact, thanks to this project, we have acquired new skills. I cannot describe it to you."
Interview 14 – SME 2:
" We all have the same spirit, we don't hide anything from each other and the information is easily shared "so easy", so this is an advantage, for example when we are a team each one of us can say his/her idea and if they don't like the product or its appearance, they say it openly without fear, they express themselves freely."
Interview 10, SME 2:
"Because there is the network, you send me something, sometimes you see useless messages transmitted, it looks like there is no trust, I have to record everything so that it is validated. I still find that our work is human and it is best developed through direct communication. Although I am an industrial engineer, I work with programs, but to evolve on a project like this we have to meet, we have to discuss, we have to make sure that we are responsible, It's very disturbing for example when you did something wrong, and everything is recorded. The ultimate goal is to succeed in this project, so you have to do your best to accomplish it and not blame someone else for his working methods"
Interview 7 – SME 1:
"With the resources available to us, we tested, we did three or four tests to prepare the installation that we are going to deploy. then to prepare the installation that we will set up. We tried to see which key points should be respected from a formulation sense."
Interview 11 – SME 2:
"Because it was an old method so I changed, I changed everything with a new concept so with a new design and we have carried out in situ with the consumers and with the experts, and I have done some layouts, etc."
Interview 23, SP 3:
"Certainly, with detailed presentations and explanations. For example, we bought this month with the budget so much, are we performing well on the budget, are we bad, so there is this type of exchange. There is also the participation of the supplier every month, we have monthly meetings to check the cumulative results and what levers we can implement to progress... because they are partners and they have profits at the end of the year, so they will participate in the results of the quarter, and at the same time, if there are concerns or problems, they will act, whether it is for the technical or the financial support."
Interview 21 – SME 3:
"Earlier, when I mentioned the strategy, the change in strategy, all that, it's strategy, all that, it's simply a matter of costs. And today, we have products..Yesterday we developed acid products that are French, but that didn't work very, very well. Now, even though these products are being developed..., the volumes are gradually evolving. And at the same time, we are in the process of offering to Tunisians products, such as the product "SkinCare X", here we go back to the product "SkinCare X" which is a new soft product that corresponds to the use and then the consumer's need."