

Buying centers and emerging developments: The SME perspective

Purpose: This paper aims to explore the challenges and opportunities faced by the buying centers in small and medium enterprises (SME) manufacturing companies in view of the recent technological changes and the virtualization of communication.

Design/methodology/approach: We use a qualitative approach with multiple case studies to portray complex realities within the buying centers in the manufacturing SME context. We selected five Italian companies to portray the diverse characteristics, practices, and policies of relevant stakeholders before we reached saturation of the issues explored.

Findings: We find that interactions among buying center members are more effective with greater collaboration and exchange (as opposed to competition and struggle for power). Virtual/hybrid relations require greater intra-group cooperation, while diverse background and collaborative interactions help the flexibility and performance of the buying center. Greater use of technology produces certainty and automation, but it may also cause overload and biases that can be solved with the ability to analyze and clear responsibility for decisions.

Research limitations/implications: We study only five Italian companies in this study. Future research in other countries with diverse cultural and socio-economic conditions and methods would help extend our research.

Practical implications: Our findings would improve understanding of the challenges in adopting new purchase process technologies that would help automate routine tasks, produce useful data, and support decision making.

Originality/value: Unlike prior studies, we use an exploratory design to study the evolution of buying centers in SMEs to seek deeper insights into the challenges and opportunities faced by SMEs due to the growing use of emerging technologies.

Keywords: buying center; digital communication; digital technologies; hybrid selling

Introduction

In organizational buying behavior activities in business-to-business (B2B) contexts, the purchase process has become increasingly complex in recent years (Madhavaram *et al.*, 2011; Paesbrugghe *et al.*, 2018), resulting in many changes in the roles of decision makers, the structures of buying centers, and the use of emerging technologies (Diba *et al.*, 2019; Steward *et al.*, 2019). Major factors that have contributed to these changes include rising stakeholder (e.g., customers, employees, and investors) expectations (Nason *et al.*, 2018; Samanthi *et al.*, 2019), and their greater knowledge and access to information coupled with technological advancements and competitive offerings (Arli *et al.*, 2018; Hartmann *et al.*, 2018). Other major factors include the increasing complexity and diversity of the approaches used by buying centers (Paesbrugghe *et al.*, 2018).

In fact, many managerial reports also confirm that buyers are becoming more sophisticated and aware, with higher expectations of services and knowledge from the suppliers (Salesforce, 2016). Moreover, buyers are also changing their buying approach. For example, a recent study by Gartner (2021) shows that the buying groups spend less time with providers (e.g., only 17% of the time in the entire buying process to meet the supplier). Similarly, buyers meet the seller in a more advanced stage of the buying process. Another study reports that buying groups are increasing their scope, with roles going to an average of 5.4 members, and decision-making processes that continuously evolve within the buying group (Toman *et al.*, 2017).

Several external forces are also pushing buyer transformation and evolution, including the growing use of sales technologies (organizational side and interaction side), the emergence of inside selling strategies that change the interactions between the buyers and sellers. Moreover, the Covid-19 pandemic with the consequent virtualization of communications and

the increasingly wide-scale adoption of forms of hybrid selling by B2B organizations (Kang *et al.*, 2020; Hartmann and Lussier, 2020). Despite the relevance of these forces, there is still very little literature on the evolution of buying centers, especially in view of the new forms of technology-mediated interaction increasingly implemented during the digital era and notably after the sudden and devastating spread of Covid-19 worldwide, as discussed later.

Moreover, in today's unstable market conditions, e-procurement or electronic procurement has become more important than ever as it helps companies to stay agile, digitize their processes, become streamlined, dynamic organizations, and make the best decisions based on available data. However, in sales, technology has been studied in its general and specific applications, while the literature on purchasing and technology is extremely scarce, fragmented, and focuses only on a few specific technologies. This aspect is even more urgent with the significant impact of the ongoing Covid-19 pandemic on the adoption and implementation of technologies other than the buying process and virtualization of communications. In addition, past literature on buying centers mostly focuses on large firms and very few studies cover small and medium enterprises (SMEs) despite their key contribution to global economies. We address this important research gap in this paper.

SMEs are often run by families and have fewer buying center members and limited resources, and less formalized roles that may lead to peculiar dynamics (Morrissey and Pittaway, 2006; Ferguson *et al.*, 2017). Hence, there is a need to understand the impact of emerging changes in the B2B buying process on SME buying centers and the critical factors for their success. This paper aims to extend the literature on buying centers by exploring the impact of the digitalization of communications and hybrid selling on these centers and on their operations, through a holistic, all-encompassing analysis. This perspective seems to be missing in the current literature, which has so far dealt with relevant, yet extremely specific aspects, such as the impact of certain technologies such as social media, IoT (Internet of

Things) and AI (Artificial Intelligence) on buying centers and purchasing activities. In addition, this paper aims to address the above phenomena from the perspective of SME buying groups, analyzing the impact of remote selling/hybrid selling, and related technology in the internal and external activities.

In this paper, we follow the multiple case study methodology (Eisenhardt, 1989) to maintain an exploratory and discovery-oriented approach, while portraying complex realities such as those of buying centers. The cases selected refer to medium and small companies in various industrial sectors, so as to portray the characteristics, practices, and policies of the different and relevant stakeholders to reach saturation of the phenomenon explored. We use content analysis to identify and categorize specific themes and describe these with specific examples from our transcripts of interviews with key informants from SMEs in our sample.

Literature review and conceptual background

Buying centers

The buying center concept was introduced in purchasing literature over 50 years ago (Robinson *et al.*, 1967; Johnston and Bonoma, 1981; Johnston and Lewin, 1996) and it is defined as a set of individuals who interact for the specific purpose of accomplishing the buying task (Chandler and Johnston, 2012), including roles such as users, influencers, buyers, decision makers, and gatekeepers (Forman, 2014). The evolution of buying center literature can be categorized into three distinct phases: (i) establishing the conceptual bases from 1972 to 1989, (ii) consolidating the buying center construct from 1990 to 2008, and (iii) exploring new horizons from 2009 to 2021 (Cabanelas *et al.*, 2023). Past research identifies key dimensions, structures, and interaction patterns of buying centers, including vertical and lateral involvement, manager centrality, connectedness (Purmonen *et al.*, 2023). Moreover, the B2B purchasing process is described as a complex (Madhavaram *et al.*, 2011; Prior *et al.*,

2021) and evolving (Paesbrugge *et al.*, 2018) reality, which presents itself with great variability in terms of both internal and external situations and factors.

Past research also identifies several characteristics of buying centers, including the multiplicity of responsibilities and roles involved, along with their impact on firm performance (Pedeliento and Kavartzis, 2019) and innovation (Johnston and Chandler, 2012). Research shows that the role of purchasing function has been enhanced in the wake of buyer empowerment (Flint *et al.*, 2011) and is increasingly becoming a critical resource for buying firms (Sheth *et al.*, 2009; Paesbrugge *et al.*, 2018). Buying centers are also evolving to become more strategic and less transactional (Rust *et al.*, 2002; Tassabehji and Moorhouse, 2008; Töytäri *et al.*, 2015) with purchase structures being built around distinct customer groups rather than product categories (Crecelius *et al.*, 2019).

In particular, the characteristics of the buying center depend on antecedents of the organizational buying behavior of an environmental and organizational nature, on the type of purchase, on the buyer-seller relationship, and on communication, which in turn influence the "risky" elements of the purchase (importance, complexity, uncertainty, and time) (Johnston and Lewin, 1996). In particular, Johnston and Lewin (1996) identify the main key to defining a simple buying center from a complex one in the Risk Continuum, based on the strength of the relationships, formalization of the decisions, the search for information, complexity of the networks, and intensity of the negotiation. Moreover, there are four stages of purchasing maturity or professionalism at a firm (Reck and Long, 1988), including: a) Passive: focus on price and service-level agreement; b) Independent: focus on cost; c) Supportive: focus on solutions and innovations; and, d) Integrative: focus on strategy. Consequently, the purchasing function has encompassed the four steps of the purchasing maturity ladder, moving from a price focus to a strategic focus (Reck and Long, 1988; Schiele, 2007).

Thus, previous research confirms that the variety of buying situations (e.g., routine vs.

strategic) and changes in industrial buying in relation to buying situations, have an impact on organizational communication, buying center structure and processes (Osmonbekov and Johnston, 2018). As a result, buying departments are evolving to become more strategic rather than transactional (Töytäri *et al.*, 2015) and purchasing structures are increasingly structured around distinct customer groups rather than product categories (Crecelius *et al.*, 2019). Buying centers also apply different selection criteria based on the strategic value of the purchase object, and also on business and sales strategy. In the first case, optimization logics are applied; in the case of strategic products, the suggested and implemented methods of relationship with the supplier are more of a relational and partnership type (Paesbrugge *et al.*, 2018). Past research involves aspects and levels of buying centers that include their number, the multiplicity of responsibilities and roles involved (Kotler *et al.*, 2021), their impact on company performance (Pedeliento and Kavaratzis, 2019) and their role in innovation (Johnston and Chandler, 2012).

The literature on buying centers is divided in two main strands: one suggests that different product classifications will affect buying center behavior and structure (Forman, 2014), for example purchases of complex or relevant products implies the involvement of a number of people and managerial figures. The other focuses on the influence of organizational structure on buying centers, as organizational formalization and decentralization influence buying center decisions (Dawes *et al.*, 1998). Organizational structure in terms of size, formalization and centralization (Wood, 2005) influences buying center structures and roles (Deeter-Schmeltz and Ramsey, 1994). Therefore, an inverse relationship is already established between novelty, complexity and time and the formalization and involvement within the buying group. Others (e.g., Pedeliento and Kavaratzis, 2019) pay more attention to the power and influence aspects of the roles and tasks of the buying center. In this regard, the effects of power on information sharing within the buying center have been studied in the context of

buyer center information sharing and purchasing performance.

As buying centers in SMEs have limited time and resources, information sharing should be made more effective and efficient, based on the availability and interest of members (Prior *et al.*, 2021). Recent studies show that tacit governance structure of a relationship relies on cooperative norms based on a mutual long-term commitment (Vieira *et al.*, 2023). Finally, Cabanelas *et al.* (2023) have proposed an overall view of the state of the art of buying center literature highlighting its elements, influencing factors, evolution, and research opportunities.

Evolution of buying centers

The B2B buying process has evolved significantly over the years and with it the roles, decision makers, structures, and technologies that come into play (Diba *et al.*, 2019; Steward *et al.*, 2019). Among the various factors that have contributed to these changes, there are increasing stakeholder (e.g., customer, employee, investor, etc.) expectations, stakeholder knowledge and access to information, technological advancements, competitive offerings (Arli *et al.*, 2018; Hartmann *et al.*, 2018), and the complexity and approach of the buying center (Paesbrugghe *et al.*, 2018). Among the various factors of buying center evolution that are external to organizations, scholars also include the use of ICT and network economies (Kohtamaki and Rajala, 2016), the sales organizations increasing use of information and communications technology, machine learning, robotics and artificial intelligence (Syam and Sharma, 2018), and the resulting changes in communication and interfaces between buying and selling organizations (Marvasti *et al.*, 2021). The evolution of the buying center has been guided by the economic and cultural contexts of reference (Bachkirov *et al.*, 2019), which influence the forms and methods of the structures of the purchasing organizations.

Past research indicates a preference for traditional information sources, such as supplier's salespeople and buying center members, while online ones were preferable in less delicate

and subsequent phases of the purchase (Deeter-Schmelz and Kennedy, 2004). Moreover, with the spread of online technologies, buyers expect to receive more than just basic information from a live meeting, demanding value-adding ideas or solutions, which push sales staff to spend more time in the office, leveraging technologies and collaborating with other departments (Thaichon *et al.*, 2018). What is more, intra-organizational relationships and networks allow the creation of value-adding solutions, better sales and buying performances, especially in digitized environments and with complex buying centers (Bolander *et al.*, 2015). In particular, these elements of greater collaboration are in post-purchase customer journey touchpoints, which become important, as suppliers provide support and fulfill the promises in a servitization logic, to emphasize outcome over output (Purmonen *et al.*, 2023).

The effort towards integration is further enhanced by Homburg and Tischer (2023), who propose the concept of Customer Journey Management Capability (CJMC) in B2B as a multidimensional construct occurring in four complementary capabilities: (1) value anchoring of touchpoints, (2) consistency of touchpoints, (3) internal integration of touchpoints, and (4) individual control of touchpoints. They also link CJMC to customer performance and cost of ownership, essentially as a single concept as its integrated management not only positively affects performance, but also facilitates closer coordination of transformation efforts and creates superior value for the firm and its customers (Homburg and Tischer, 2023).

Buying process in SMEs

The buying process in SMEs is characterized by few buying center members and limited resources, in which the lesser degree of formalization and the roles involved lead to peculiar dynamics, which are however under-investigated (Morrissey and Pittaway 2006; Ozmen *et al.*, 2013; Ferguson *et al.*, 2017). In particular, SMEs are identified as subjects that operate in environments with their own characteristics, which are not simply small organizations but with their own cultural, organizational and customer characteristics, and simple but adequate,

systems and procedures. The buying process is often supervised by the owner, who often remains the center of the organization's knowledge and decisions. Ozmen *et al.* (2013) propose a synthesis vision between SMEs characteristics, environment stimuli, needs assessment, buying attitude. The structuring of buying centers inside SMEs has been analyzed in the past as an opportunity for companies to achieve the information advantages, to protect the network, to optimize negotiations and performance. However, this does not seem a convincing solution in all areas since formalization can cause loss of opportunity and flexibility, as described by Fernandez Quesada *et al.* (2007).

SMEs are in fact a category of B2B companies that have a specific buying process, where size is not the only variable in defining buying behavior. Relationship-related factors such as trust, loyalty, communication quality, and relationship duration become really significant for SME purchase decision-makers (Kavak *et al.*, 2015). SME purchasing approaches have been described in the Purchasing Development Model for SMEs (Coy *et al.*, 2020) that goes from 'passive' to 'leveraged' to 'strategic' purchasing, based on the importance and opportunity to forge long-term relationships and alliances. Lacoste *et al.* (2023) address the issue of the buyer-seller relationship with the size of the companies and the purchase type and complexity, to provide a comprehensive view of this phenomenon and of the sales and purchase organizations in terms of decision-making and performance. There are also studies that focus on critical aspects such as vertical and horizontal collaboration, which brings advantages in terms of price and delivery times (Ghaderi and Leman, 2013), and buyer-seller information sharing, which helps to manage uncertainty and enhance procurement quality performance (Anin *et al.*, 2020).

Finally, SMEs have been investigated with reference to their use of technology within the buying processes (Gunasekaran *et al.*, 2009; Windapo *et al.*, 2020; Sánchez-Rodríguez *et al.*, 2020; Rishad Faridi 2020; Nasiri *et al.*, 2020; Chaising and Haasis, 2021; Gavrilá and de

Lucas Ancillo, 2021; Okfalisa *et al.*, 2021). Moreover, the impact of virtual interaction in the co-creation of value in SMEs was recently investigated and Fready *et al.* (2022) found that organizational preparedness, empathy, digital content, and trust are key enablers of effective B2B virtual interaction that enhances co-created value, thereby augmenting firm value. These can increase customer engagement and return on service marketing investment (Fready *et al.*, 2022). Only a few recent cases have analyzed the issue of buying value by comparing large and small enterprises, and providing a limited practitioner's prospective (Strategic Direction, 2021). To conclude, despite the power shift observed toward the purchasing function (Cousins *et al.*, 2006; Prior *et al.*, 2021), there is still very little literature on the evolution of the buying center, especially in view of the new forms of e-procurement and technology-mediated interaction, which have increased during the Digital Era and notably after the sudden and devastating spread of Covid-19 worldwide.

Impact of emerging technologies

Research on buying centers has paid particular attention to the applications of several types of technology in this group of subjects, relationships and inter- and intra-company interactions and communications. Nowadays, research is investigating the role of digital tools (e.g., social media, software, and applications, communication, and collaboration platforms, etc.) and their impact on business-to-business relationships (Paesbrugghe *et al.*, 2018). Past studies also focus on the collaboration and interactions between selling and buying companies in recent years on the use and spread of IT across the supply chain (Forman, 2014) or following value co-creation approaches and the application of AI technologies (Li *et al.*, 2021).

Past research examines the ways in which technology may create better decisions, alter buyer-supplier relationships, when and how B2B customer managers use digital tools in the buying process, and which ones are the most valuable in the buying process (Steward *et al.*, 2019), such as Software as a Service (SaaS) (Raghavan *et al.*, 2020), Internet of Things

(Osmonbekov and Johnston, 2018), AI and social media (Diba *et al.*, 2019). Many technologies support the decision-making system of the buying center, including on-site installation of ERP, CRM and other enterprise application software, which include a combination of software licenses, hardware, infrastructure, and system integrators, Raghavan *et al.* (2020) have provided a classification of SaaS solutions based on application specificity and their strategic value to the organizations.

Diba *et al.* (2019) also illustrate how the seven functional building blocks of social media add value at each stage of the buying process. Findings shows that social media is useful to all the functional blocks the buying center and at every stage in the buying process. These results corroborate the vision of Moncrief (2017) according to which social media domain includes the salesperson and sales center, the buyer and buying center, the use of artificial intelligence, the tele-sales unit, the interaction between marketing and sales departments, and the selling methods. Business purchase research has also investigated the role of artificial intelligence (AI) technologies (Schulze-Horn *et al.*, 2020), as they capture and leverage data and information which can be essential for complex buying center activities (Bag *et al.*, 2021; Li *et al.*, 2021), yet often not optimally integrated and exploited (Pandey *et al.*, 2020). More specifically, Schulze-Horn *et al.* (2020) found that the application of AI can facilitate the execution of mechanism-design-based negotiations and help in overcoming bounded rationality problems. Li *et al.* (2020) explore how companies jointly create value to develop and use industrial AI technologies in a B2B marketing context, identifying a value type that is co-created among the supplier, buyer and AI provider in the B2B marketing context, together with a categorization of capabilities that contributes to value co-creation practices.

Bag *et al.* (2021) examine the effect of big-data-powered artificial intelligence on buyer, user, and external market knowledge creation, to better understand its impact on B2B marketing rationale decision making to influence a firm's performance. However,

notwithstanding AI's transformative potential and business value, there has been an increasing number of studies that investigate and highlight uncertainties, challenges and difficulties associated with AI technologies (Syam and Sharma, 2018; Dwivedi *et al.*, 2020), especially in terms of collaboration between B2B partners and joint creation of innovation and value (Wang and Siau, 2019). Of course, AI applications have the potential to improve both profits and buyer-seller relationships (bright side), but a dark side – less discussed and understood – also exists. Examples of drivers of the dark side of AI are lack of trust and power asymmetries (Grewal *et al.*, 2021).

Another research area considers the potential of the Internet of Things (IoT) to affect buying centers' behavior, decision making and negotiation dynamics, as its application may cause a shift towards more machine-to-machine communication, thus buying centers may become smaller, less hierarchical, but more coordinated, with less conflict (Osmonbekov and Johnston, 2018). It has already been noted in sales literature how inside or hybrid sales paradigms (Sleep *et al.*, 2020; Micallef *et al.*, 2022; Terho *et al.*, 2023) which make extensive use of digital communication tools, have stimulated sellers to pay more attention to both the customer's buying center, in particular its digital activities, and the selling firm's internal sales processes. Moreover, the impact of the ongoing Covid-19 pandemic on the digitalization of communications and interfaces for B2B organizations has also attracted attention. In fact, hybrid interaction methods and computer-mediated communication have been applied extensively in recent years and this trend has only accelerated due to the COVID-19 pandemic. As a result, there has been an explosion in demand for these types of communication tools from companies (Hartmann and Lussier, 2020): social media, mobile technologies, and digital platforms such as Microsoft Teams, ZOOM etc., which can be used for dynamic buyer-seller interactions and for the circulation of general information.

In addition, there is a growing realization that just as employee needs and preferences are

changing in the short-term in response to the COVID-19 pandemic, so too can the needs and preferences of buyer centers. Kang *et al.* (2020) have collected suggestions and practical alternatives that could be applied in times of emergency and that may or may not be permanent in business practices, such as building or shifting to e-commerce platforms or digital showrooms to enable buyers and sellers to complete interaction and transaction online (Cortez and Johnston, 2020; Sharma *et al.*, 2020). Pedersen (2023) combines IT governance and buyer center literatures by creating a single framework in which they both complement each other by synthesizing the interdependencies and need for coordination of internal organization activities. In particular, IT governance deals with decision and alignment to achieve organizational goals, while buying centers deal with the roles, interactions, and relations regarding purchasing. Hence, he gives the definition that "coordination is an axiomatic cornerstone of both IT governance and buying centers" (Pedersen 2023, p. 52), i.e., the basis for the critical integration of buying center and IT governance.

Research gaps and questions

The most recent and influential studies on the buying center and the evolution of organizational buying behavior in B2B place the accent on its evolution, on the importance of internal and external collaboration (Vieira *et al.*, 2023) for the creation of value (Purmonen *et al.*, 2023) and the integration of technology (Pedersen, 2023), and on the need to understand the role of resources and capabilities in this context (Cabanelas *et al.*, 2023; Homburg and Tischer, 2023). However, despite some attempts to analyze the buying center in SMEs and the buying process evolution in terms of technology (Chaising and Haasis, 2021; Naeem, 2021; Gavrilă and de Lucas Ancillo, 2021; Windapo *et al.*, 2020; Sánchez-Rodríguez *et al.*, 2020; Okfalisa *et al.*, 2021; Fready *et al.*, 2022), the phenomenon still remains relatively under-investigated and lacks an overall perspective. Indeed, previous studies have raised questions about the tools and roles that can help the internal and external cooperation of

buying groups (Cabanelas *et al.*, 2023).

This paper responds to the requests of scholars, who encourage examination of the impact of technology, modes of customer and supplier interaction, decision-making approaches, and tensions between internal and external communities (Steward *et al.*, 2019). In particular, with respect to the assumption of the scarcity of resources and skills of SMEs, it seems that they can adopt practices and technologies that allow them to overcome these barriers, obtaining good results in terms of purchasing performance and relationships. In recent years, new technologies and methods of interaction, such as social media (Moncrief, 2017; Diba *et al.*, 2019), SaaS (Raghavan *et al.*, 2020), AI (Bag *et al.*, 2021; Schulze-Horn *et al.*, 2020; Li *et al.*, 2021), and IoT (Osmonbekov and Johnston, 2018) have profoundly influenced the buying processes of B2B organizations. A similar impact has been experienced with the social interaction technologies used in hybrid selling and remote selling on the buying center practices during the Covid-19 pandemic (Hartmann and Lussier, 2020; Kang *et al.*, 2020). We address these issues with the following specific research questions:

RQ1: How have the emerging digital technologies influenced the purchasing process for SMEs in general and buying centers in particular?

RQ2: How has the virtualization of communication influenced intra-firm and inter-firm communications and relationships especially for SMEs?

Methodology

This study uses a qualitative approach with a multiple case study method (Eisenhardt 1989; Yin 1994) to explore the challenges and opportunities faced by buying centers in view of technological changes and the virtualization of communications with the spread of hybrid selling practices. We used this method since the exploratory approach in the context of SMEs and the multiple evolutionary dynamics of the buying center lends itself well to formulating

questions, research, and to building new theories, due to the shifts that have occurred in environmental, technological, and organizational aspects, and the relationship between buying and selling firms (Eisenhardt, 2021).

Five SMEs were selected from different industries. These SMEs are relevant for this research because of their heterogeneity, high level of innovativeness and internationally recognized exposure. First we analyzed company corporate reports and brochures provided by these firms. Next, we accessed the corporate websites and social networks to collect information about the R&D activities of these firms. This was followed by in-depth and semi-structured interviews using open-ended questions with owners or decision-makers in these five SMEs. For this purpose, a protocol guide was used. All the data collected from the different sources were triangulated to provide a better response to the research questions.

Corroboration of evidence from different sources sheds light on the research topic and provides a robust interpretation of research findings (Denzin and Lincoln, 2011). The sample includes five SMEs from different sectors; these were selected using the “emphasis of variation criteria ”and adopting the driver of intensity” (Patton, 2002); in this vein, we interviewed firms that are recognized as particularly innovative in their own sectors. This study uses different interviewee profiles because of the nature of the buying center and the need to involve at least two viewpoints that can represent the complexity of the purchasing activities, so to allow a robust interpretation of the findings (cf. Creswell, 2007). Table 1 shows the in-depth interview guide.

---Insert table 1 around here---

We also conducted a pre-test to develop and finalize the guide by interviewing two senior scholars in the management field, who are experts in qualitative research and in-depth interview methodology. After their comments, we made some minor changes and wording

adaptations. All interviews were conducted in Italian, recorded on-site, transcribed and translated into English. All retrieved data and information were critically and individually examined by us and then a research report was written. The linguistic nuances were checked by three scholars fluent in Italian and English. Table 2 shows the sample and firm profiles. The interview guide translation and linguistic adaptation were conducted by experienced researchers (native Italian speakers) using Brislin's (1970) translation and back-translation method to ensure consistency.

---Insert table 2 around here---

We ensured compliance with the criteria of validity, trustworthiness, and reliability in the analysis by using well-established methodologies from the qualitative literature (e.g., Strauss and Corbin, 1998; Eisenhardt and Graebner, 2007; Lindgreen *et al.*, 2021). For example, internal validity was achieved through pattern matching, explanation building, and logical consistency across each interviewee and the related firm. Similarly, external validity was ensured, using a replication logic in case studies, looking for literal and theoretical replications among cases to support results. We satisfied the trustworthiness criterion by using specific sampling and collection feedback from the interviewees after data collection and transcription. Finally, reliability was ensured by the use of an interview guide and the creation of a study database.

Data analysis and results

We used content analysis to identify the major themes in the data, deploying systematic and objective procedures to describe the content of interview transcripts (Harris, 2001). We used NVivo software to search for the most common words and followed the direct content analysis (DCA) method for the purposes of analysis (Hsieh and Shannon, 2005). We identified the codes based on the most repeated words and manually grouped them under

different categories. Based on content similarity, the categories were then grouped under different themes, guided by our literature review. Next, we described the four main themes that emerged from our content analysis with specific examples from the transcripts that support the conceptual elements under each theme.

Pre-purchase buying center tasks, power, collaboration and competition

In the buying process phases of identifying the need, searching for the supplier and interacting with it, technological change has certainly had an impact in the greater formalization, digitization, and publication of information, which previously were mainly tasks of the supplier's sales figures.

ALPHA 2: Everyone communicates with the stakeholder who is respectively at the same level of each organizational structure (this applies above all to large companies, somewhat Chinese style). This aspect is functional to the result.

EPSILON 1: There is greater, all-round awareness of the supplier, as it is better evaluated by both purchasing and technical sides.

Now firms already come to interact with the supplier company with much more information. Despite the evolution of communication technologies, roles and tasks remain more defined and separate than ever, which seems to allow good purchasing performance and avoid conflicts and overlaps. If opportunities for discussion on priorities and needs should occur, there are criteria or internal collaborative practices defined by the management or the control system that allow them to be resolved peacefully.

GAMMA 2: In recent years ... it was decided to distribute this weight more evenly between the technical management and the purchasing parts, also to give a signal to external suppliers.

EPSILON 2: Management control is the arbiter in the match between the technical

office and the purchasing office. The purchasing department has KPIs to maintain.

In the establish specification stage of the buying process, the solution for some companies was to make the application formulation process more formal and bureaucratized. This meant that the technical value, but also the specifications of prices, conditions, and other variables previously subject to negotiation, were shared internally and further standardized.

GAMMA 2: We have aimed to increase the contractual level, more and more bureaucratically - with positive implications - where the conditions of the contract are better set out. Our skills in drafting technical specifications have grown.

Additionally, there is a need for an increasingly better prepared professional figures in the buying group, but also for cooperation and constant coordination between the various stakeholders, which involves different profiles and backgrounds.

EPSILON 1: Different backgrounds create eclectic figures, meaning visions are not so rigid (which is a bit the characteristic of the engineer) with regard to the purchasing process.

Based on this, we put forth the following propositions:

- P1:** Interactions among buying center members would be more effective if they have a higher degree of collaboration and exchange (vs. competition and struggle for power).
- P2:** Virtual/hybrid relations require intra group cooperation.
- P3:** As technology and other factors change buying center operations, management must clarify priorities, and criteria help to keep the buying center internal relations effective, efficient, and collaborative.
- P4:** Diverse background and collaborative interactions aid the flexibility and

performance of the buying group.

Changes in communication, interaction, and information sharing with the supplier

As a consequence of greater interaction with the outside of the buying group, the impact of technology adoption and full use of communications has produced positive resource optimization effects (fewer costs, more frequent interactions, possibility for more individuals to interact), and full implementation of digital means of communication, re-adapting internal and external interaction habits and practices. In particular, many virtual interaction tools were already present, above all in more structured situations, but recently with the massive and necessary advent of virtual and hybrid forms of interaction, they have found full use.

EPSILON 2: With Covid ... the supplier ... communicated through calls or through Teams, which I prefer because I am a fanatic of time and efficiency. Time must be dedicated to the things that are needed and in the required quantities.

Besides the positive aspects, the interviewees noted various difficulties, including the fact that it became more difficult to communicate complex information and knowledge, which instead was a very important component of interactions with the supplier and which often helped to find better inherent solutions for the purchase, but they were often also a source of inspiration and further internal innovation. Some - both technical and buyer profiles - express the perplexities and limitations given by these tools respectively in the immersive impossibility of information and knowledge transfer and in the loss of empathy and the human factor in the negotiation and decision-making component.

ALPHA 2: What has gone missing? The personal relationship (the physical one) and this is a very important thing, even if it depends on what field you are in. We at Alpha usually organize regular dinners with our suppliers. It maintains relationships; it is also a nice thing.

GAMMA 2: We paid a visit to a different supplier every 1-2 months. My men organized for each of the wards. These occasions served as a source of know-how for us and a source of know-how for suppliers, and they are also an analysis of market benchmarking.

BETA 1: All our customers bring us the stimuli we need to develop products that have innovative, improved performance, etc.

The fact that some figures worked remotely then brought out a whole series of information and problems previously managed by the technical and buyer management, but which have now emerged and impact the management of the relationship with suppliers.

GAMMA 2: Certainly many intermediate levels have failed, so it has often happened that the purchasing director, the technical director (like me) has had to go and speak directly with the field technician.

Besides, the greater immediacy of digital communication and the possibility of direct contact with one's own counterparts in the supplier companies has brought great advantages, limiting problems and times, and starting co-design processes between the client company's R&D and supplier.

EPSILON 1: This certainly can happen so easily thanks to this constant relationship, due to other tools we are using. It would not have happened in the past, because we would not have had such frequent contact.

Based on the above discussion, we propose the following:

P5: Technology-mediated communication allows immediacy and certainty of information, empathy, knowledge transfer and the redefinition of direct and indirect information channels.

P6: Virtualization of communication makes communication flow direct or indirect,

creating negotiation issues and innovative opportunities.

P7: Virtual/hybrid relations facilitate inter-group cooperation and co-design initiatives.

Procurement technology: IT for communicating and sharing, process insight

In recent years, the use of IT has allowed a substantial improvement in the internal management of information, orders, and technical specifications, avoiding cases of scattered or random information, and permitting the automation and speeding up of routine tasks. This required some effort at the beginning, but it has paid off. Epsilon, who had already started the process 15 years ago and who found himself at an advantage in this context of strong digital push. These integrated information systems, such as in the case of Delta, where they even go beyond the company boundaries to support the information systems of even small suppliers, have produced great advantages of certainty and data sharing, which have also helped to carry out operations smoothly, in addition to having made a great deal of data available to be checked and reprocessed.

BETA 1: We have built a mega MRP that allows us to keep inventory of stocks under control, the inputs of materials, definition of safety stocks in order not to run out of material, information on our suppliers, etc.

DELTA 1: We have eliminated emails as a purchase item altogether. Operators can no longer send an email to place an order. Everything is done through our information management system.

The digitization of information and processes creates a precious amount of available data, which can lead to distortions or represent information overload. In the more mature situations that have applied management systems, awareness of these data limits can however be overcome with a mature approach to the commensurability of information and taking responsibility for decisions.

EPSILON 2: Surely the analysis is fundamental, but when we reach 95-96%, I always say to my guys "Let's throw the ball!" For our area, the data that exist is more than enough. At any time, at the purchasing office level, all the information is just a click away.

Based on the above, we offer the following proposition:

P8: Technology produces certainty and automation but also overloads and bias that can be solved with the ability to analyze and clear responsibility for decisions.

Supplier selection and relationship

The need to carry out advanced stages of the selection of suppliers, their processes and materials, led to a redefinition of habits, creating desk audits or sending samples of materials to be tested. It was therefore necessary to adapt, but even in these interactions, technology has allowed considerable savings in resources. These solutions and new tasks are often seen as a possible alternative, not necessarily as the future standard.

BETA 1: When a supplier had innovative products with different characteristics to try, instead of physically bringing them to us, he sent them by DHL. The materials are tested in the laboratory. Our round of consultations is expanding, but it has not changed that much.

GAMMA 1: In the last two years, these on-site audits have become desk audits, where, through registrations ... I can see what the supplier's production process is. ... That stuff has become virtual for the moment, although we are trying to return to a traditional mode.

Interactions with suppliers also take place in the post-purchase phase, to maintain the relationship and contacts or require assistance, a phase in which interfaces have become rigid, causing major problems, especially in after-sales services. In particular, if digitization means

rigidity, excess of automation, impossibility of communication, or the lack of a reference interlocutor, the relationship with the supplier deteriorates.

BETA 2: We no longer have a reference as before, but now we have more people who answer (when someone answers). In my opinion, this is a negative part of purchasing process virtualization, which has not brought great results.

GAMMA 2: Before this situation, they came right away, good or bad, sharing the problem, and very often it resulted in practical suggestions they had taken from other experiences or maybe small precautions that during the tests had not been reported in their document containing the various parameters.

Based on this discussion, we put forth our final proposition, as follows:

P9: Virtual interactions need to offer flexibility, problem solving, and conflict avoidance to maintain and enrich the intra-organizational relationship.

All nine propositions are listed with the relevant key references from the literature in Table 3 and summarized in Figure 1 for additional intra- and inter-group level visualization.

---Insert table 3 and figure 1 around here---

Discussion and contributions

This exploratory research on the dialogue between technology and the evolution of the buying center in organizations helps enrich the overall vision within this sphere. First, the multiple case-study approach with 5 medium-sized Italian manufacturing companies made it possible to investigate the unique features of each of these contexts. The companies surveyed are all well on the way to adopting purchasing process technologies, to help them automate routine tasks, produce useful data, and support decision making. To address our RQ1 we studied the consequence of IT adoption within the buying process and operation management

(e.g., Raghavan *et al.* 2020; Bag *et al.*, 2021; Li *et al.*, 2021, Diba *et al.*, 2019; Freedy *et al.*, 2022; Pedersen, 2023). The results lead us to formulate reflections on who holds this information and re-elaborate it to make relevant decisions in terms of suppliers, conditions, times, and methods (Prior *et al.*, 2021).

First, use of new technologies has led to improvement in effectiveness, efficiency, cost, and time savings, and advantage of data generation, as encapsulated by our P8 (Anin *et al.*, 2020). However, this raises the question of information overload and need for decision-making. However, the possibility to re-elaborate and share information internally within the buying center is fundamental to facilitate operations and any decisions (Thaichoin *et al.*, 2018), maximizing internal value creation (Kavak *et al.*, 2015; Purmonen *et al.*, 2023).

Secondly, it is observed that the separation of the decision-making phases within these contexts of structured, but lean buying center, given the structure of the reference SMEs (Ferguson *et al.*, 2017), essentially leads the buyer to assume the role of data processing, innovation processes etc. Knowing how much this impacts purchasing performance and corporate performance in general (Pedeliento and Kavaratzis, 2019), increasing numbers of buyers will acquire a relative influence within the buying group. This consideration also follows the logic whereby, as emerged from the cases, the purchasing process is configured as an inverted sales process and as such is subject to measurement and budget logic.

In other words, if management encourages the formalization of data-related budgeting and decision-making mechanisms, as in the case of Epsilon, the buyer will become increasingly influential in the buying center. Therefore, to avoid ambiguity in decisions, imbalance, role overload, conflicts between roles, management must be clear in defining roles and tasks. Furthermore, the management of interactions and relationships maximizes performance in terms of co-creation of value, even in SMEs, and investments if the company manages to be adequately prepared and if the relationship is conducted with trust and

empathy (Fready *et al.*, 2022). We capture these ideas in our propositions P3 and P9.

Next, we also discovered many emerging themes in relation to our second research question (RQ2) concerning how the internal and external communication of the buying center has changed following the advent of virtualization of communications and the massive diffusion of hybrid selling (Hartmann and Lussier, 2020; Kang *et al.*, 2020; Sleep *et al.*, 2020). For example, we found that virtual interactions have not changed the structure of the buying center or the assignment and sequencing of the buying center tasks, which remain by and large, distinct, and separate. However, virtualization has made the interactions among the members of the buying group and supplier companies easier, cheaper, faster and more frequent, which has allowed greater collaboration and additional cross-functional collaboration within (Thaichon *et al.* 2018) and between (Bolander *et al.* 2015) organizations (Anin *et al.*, 2020; Coy *et al.*, 2020). In particular, virtualization of purchase process and communications has allowed for greater formalization of information (Wood, 2005), such as greater detail of the technical specification, supplier's desk audits, remote training, etc. This constitutes a new element conveyed by technology, which in a sense encourages the strengthening, or even the establishment of buying centers within SMEs.

Interestingly, virtualization of communications has also created some problems, such as the lack of communication related to complex information and knowledge, especially in the face of exclusively digital or rigid interfaces implemented by large and structured companies (Ferguson *et al.*, 2017). It is in fact in the interactions between the supplier and the buyer, in the resolution of a problem or in an inspection, that specialized knowledge was often shared and disseminated. Therefore, the problem arises of the incommunicability of knowledge or the close sharing of information required in virtual communications (Prior *et al.*, 2021), which does not allow space for emerging issues and possible spillovers. Thus, virtualization of interactions and communications can lead to the specification of the most collaborative

and synergistic needs and characteristics within the buying group, with the collaboration of buyers and technical figures, who may exploit their expertise in a proactive, not rigid way (Fernandez Quesada *et al.*, 2007; Coy *et al.*, 2020), so as to be able to easily adapt to the changes required by the market, technological evolution and unexpected contingencies such as the advent of the pandemic and remote working. Indeed, as many decisions have an interdependent nature, there is a need for interaction and coordination within the buying center and the use of IT (Pedersen, 2023), to avoid strategic conflicts and align the organization with the intended goals. We reflect these ideas in our propositions P1 and P4.

In this context, the transformation of interactions into virtual encounters has made them not only very sparing, essential, and in some ways less spontaneous and profound, it has also made them shorter, more focused, and more frequent. However, virtual meetings, being economical in terms of time and costs, make it possible to involve many figures in the same interaction, and therefore, even managerial or specialist technical figures. These ideas are captured in our propositions P2 about virtual/hybrid relations requiring intra-group cooperation (Bolander *et al.*, 2015; Thaichon *et al.*, 2018; Pedersen, 2023) and P5 about technology-mediated communication to allow immediacy and certainty of information, sacrificing empathy and knowledge transfer, and redefining direct and indirect information channels (Paesbrugge *et al.*, 2018; Diba *et al.*, 2019).

In addition, technicians normally did not have the possibility or frequent opportunity for interaction before the advent of hybrid selling and virtual communications (Sleep *et al.*, 2020). Thus, within already established and consolidated relationships with suppliers, it is not the commercial interface that acts as a filter, but rather, it is the functional inter-organizational collaborations that allows opportunities for co-planning and co-design (Bolander *et al.*, 2015), as reflected in our P7. Furthermore, as emerged from recent studies, buyers, who feel that their suppliers are providing commitment, respond with further

commitment on their part, triggering a mechanism of reciprocity and mutualism due to the effect of the relationship's cooperative norms (Vieira *et al.*, 2023). Finally, an additional transformation provided by the virtualization of buying center communications is to make direct channels into indirect ones or vice versa. If, for example, intermediate technical figures worked remotely and problems could not be solved on field with the technicians, the problems could come directly to the technical management, which then reviews the supplier ratings and reconsiders some procurement choices. We offer P6 to address these issues.

Limitations and future research

This paper uses an extensive review of buying center literature to identify specific research gaps and it addresses these through a qualitative study using a case-study methodology.

While our findings make important contributions to this literature, this study has a few limitations that future research may address. First, we study five Italian SMEs in this paper, which means that our findings may not be generalizable in other cultural and socio-economic contexts. Hence future research in other countries with diverse cultural and socio-economic conditions would help test the validity of our ideas. Secondly, we offer nine propositions based on our synthesis of current literature and the results from our qualitative study; however, we do not empirically test our propositions. Future research may test our propositions by conducting surveys with key stakeholders.

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Figure 1. Synthesis of the propositions: Intra- and inter-firm level

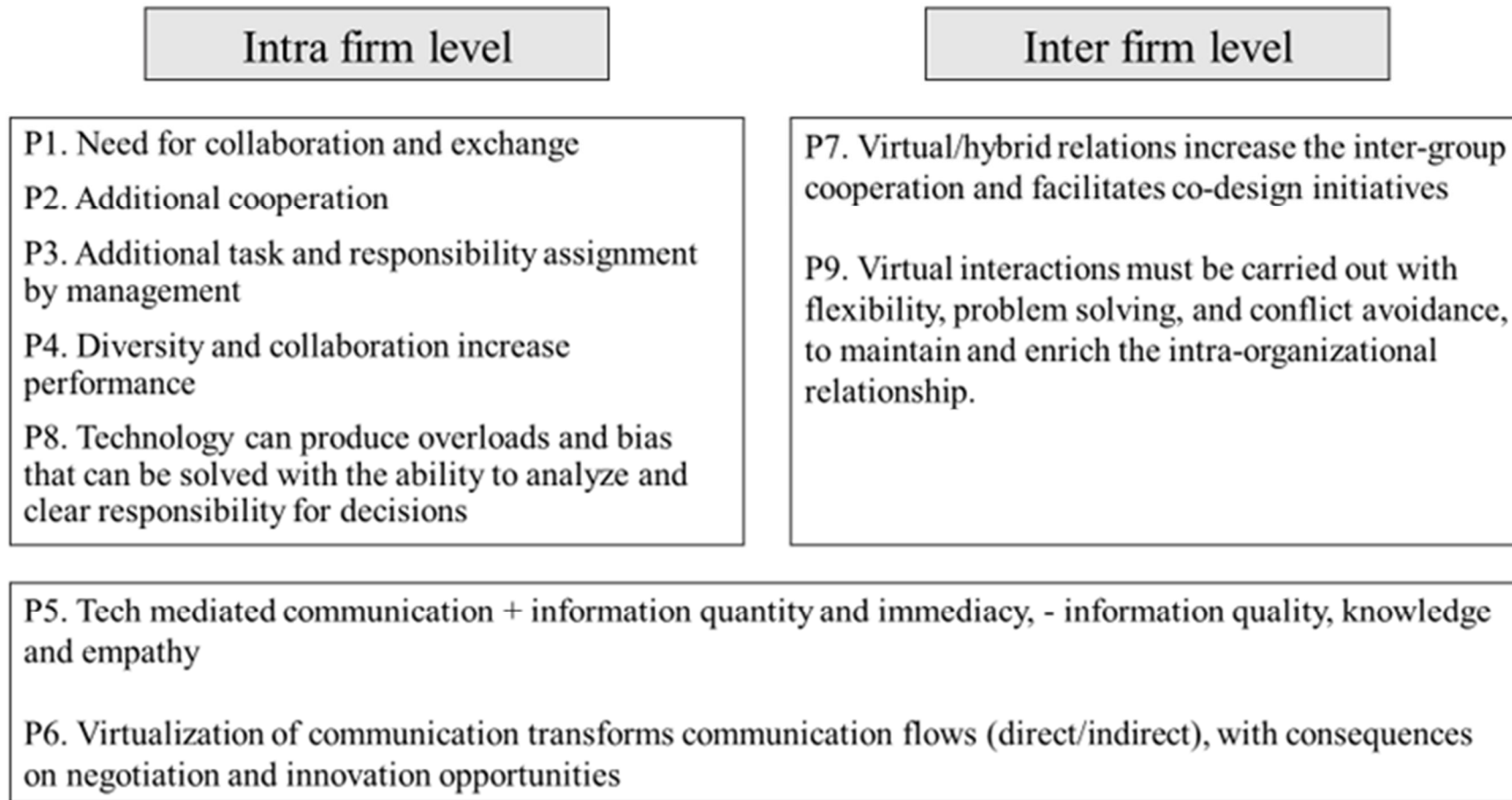


Table 1. Interview guide

1. What, in your opinion, were the most important changes in the process over the last 5 years in the buying process from your point of view (impact of suppliers / of the company) - driver and outcome of change
 2. Describe the profile of the seller (buyer or technician).
 3. Describe how the purchasing process takes place in your company taking into account the technologies, the different ways of interacting with the supplier and the different forms of contact (communication touchpoints, interfaces, offline and online interactions, personal and mediated from technology, between buyer and seller organization. (Email, social media, video conference, SaaS platforms, digital form technologies, etc.) – technology
 4. How the digitization / virtualization of the interaction with the supplier company has changed the purchasing activity
 - technology and change interaction n interactions, n touchpoints, n roles involved,
 - inter-organizational and intra-organizational relationships
 - For all or some phases of the purchasing process?
 5. How the buyers / components of the buying group reacted to hybrid or virtual sales systems? What was the impact of Covid?
 6. What do you think are the ideal characteristics for interacting adequately with sellers (Supplier Company) by adopting digital communication tools?
 7. What kind of indications would you give for the future? (to selling companies, to their own company, to IT provider
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Table 2. Sample characteristics

Company name	Interviewed profile	Sector	Buying center size	Company Description
Company Alpha	Global purchasing director Chemical technical specialist	Plastics raw materials	8 (Italy)	Company Alpha is an international company which produces plastic raw materials. It has a turnover of around €300-400 Million and 700 people employed. It has production facilities in different parts of the world (e.g. Poland, Brazil, USA, etc., as well as in Italy). The company manages around 300-350 suppliers, often very large (petrochemicals), and 500 purchase codes on direct and 1 thousand suppliers on indirect. It is a lean company. The margins are relatively low. In some years, direct purchases account for up to 75% of the value of production.
Company Beta	CEO Purchasing manager	Chemical adhesives	5	Company Beta has 145 employees, 22 of whom are in R&D, certified in environment, quality, safety, ATF, sustainability. It is a company that produces adhesives and fabrics for the footwear, leather goods, automotive, flexible packaging and a variety of industrial applications. In 2018, the company became a public company listed on the Milan Stock Exchange in the AIM segment. It recently acquired a business unit of a competitor, a manufacturer of adhesive fabrics for footwear and leather goods.
Company Gamma	Purchasing director Technical director	Pharma Glass packaging	10	Company Gamma has around 1200 employees and a turnover of €250 Million. It produces 7 billion pharmaceutical packages each year in more than 100 countries worldwide. For over 100 years, every single element has been the product of attention to detail, in order to guarantee the same perfection in all applications (oral, parenteral, dual chamber, ophthalmic, and nasal) and the same safety for all patients.
Company Delta	Director of Operations IT Director	Furniture	13	Company Delta produce quality kitchen furniture. The company employs more than 650 people and has a turnover of €201 Million. The company manages more than 100 suppliers (multinationals and small producers).
Company Epsilon	R&D manager assistant COO and purchase director	Design Homeware	4	Company Epsilon has a €26.9 Million turnover and 126 employees. It is an unlisted private company, winner of several prestigious design awards.

Table 3. Propositions and key references

Proposition	Relevant references
P1: The interactions among buying center members would be more effective if they have a higher degree of collaboration and exchange (vs. competition and struggle for power).	Ferguson <i>et al.</i> , 2017; Coy <i>et al.</i> , 2020; Prior <i>et al.</i> , 2021
P2: Virtual/hybrid relations require greater intra-group cooperation	Bolander <i>et al.</i> , 2015; Thaichon <i>et al.</i> , 2018
P3: As technology and other factors change buying center operations, management must clarify priorities and criteria to keep the buying center internal relations effective, efficient and collaborative.	Diba <i>et al.</i> , 2019; Steward <i>et al.</i> , 2019
P4: Diverse background and collaborative interactions help the flexibility and performance of the buying group.	Fernandez Quesada <i>et al.</i> , 2007; Forman, 2014; Pedeliento and Kavartzis, 2019
P5: Technology mediated communication allows immediacy and certainty of information, sacrificing empathy, knowledge transfer and redefining direct and indirect information channels.	Paesbrugghe <i>et al.</i> , 2018; Diba <i>et al.</i> , 2019
P6: Virtualization of communication makes communication flow direct or indirect, creating negotiation issues and innovative opportunities.	Arli <i>et al.</i> , 2018; Hartmann <i>et al.</i> , 2018; Hartmann and Lussier, 2020; Wang and Siau, 2019; Kang <i>et al.</i> , 2020
P7: Virtual/hybrid relations increase the inter-group cooperation and facilitates co-design initiatives	Johnston and Chandler, 2012; Bolander <i>et al.</i> , 2015; Wang and Siau, 2019; Vieira <i>et al.</i> 2023
P8: Technology produces certainty and automation but also overloads and bias that can be solved with the ability to analyze and clear responsibility for decisions.	Thaichon <i>et al.</i> , 2018; Lacoste <i>et al.</i> , 2023
P9: Virtual interactions must be carried out with flexibility, problem solving, and conflict avoidance, to maintain and enrich the intra-organizational relationship.	Fernandez Quesada <i>et al.</i> , 2007; Steward <i>et al.</i> , 2019; Fready, Vel and Nyadzayo, 2022