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Shared analytical capabilities in business networks

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**A B S T R A C T**

This study addresses the development and use of analytical capabilities related to structured data (SD) and unstructured data (UD) in business networks that extend beyond the boundaries of individual firms. It focuses on business-to-business relationships in consumer goods retailing to identify two key groups of external resources firms can leverage to take advantage of shared analytical capabilities within their retail networks: (1) access to data and analytics through partners, and (2) structures supporting data and analytics sharing. The study's findings further extend the existing dyadic typology of data- and analytics-related inter-firm routines from (1) unilateral routines, (2) quasi-unilateral routines, and (3) bilateral routines to two complementary types of routines that involve a variety of partners: (4) multilateral routines and (5) joint multilateral routines. Finally, this study reveals potential barriers that may hinder the development and implementation of shared analytical capabilities.

1. Introduction

The increasing availability of market data and recent advancements in analytical tools have changed the ways managers make decisions in a wide range of industries (Grewal, Gauri, Roggeveen, & Sethuraman, 2021; Sena & Ozdemir, 2020). To benefit from the available data and analytics, firms need analytical capabilities; that is, the skills and resources required to continuously define and extract insights from relevant data and link these insights to practical decision-making (Krafft et al., 2021). Analytical capabilities foster the use of market data (Saldhana, Mithas, & Krishnan, 2017; Verhoef & Lemon, 2013) to improve the quality of managerial decision-making (Janssen, van der Voort, & Wahyudi, 2017). For instance, several studies have demonstrated how analytics support improvements in decisions related to the targeting of marketing communications (Grover, Chiang, Liang and Zhang, 2018; Markham, Kowolenko, & Michaelis, 2015), pricing, sales optimization (Belleflamme, Lam, & Vergote, 2020; Hanssens & Pauwels, 2016), and customer relationship management (CRM) (Du, Netzer, Schweidel, & Mitra, 2020; Zhang, Wang, Cui, & Han, 2020).

Analytical capabilities build on firms' access to two types of market data: structured data (SD), or sets of predefined numerical data, and unstructured data (UD), which typically take the form of text and other non-numerical data (Erevelles, Fukawa, & Swayne; L., 2016). Generally, SD provide numeric information about current and past performance (Peltier, Zahay, & Krishen, 2013; Rust & Huang, 2014) that support predictions about future operations (Germann, Lilien, & Rangaswamy, 2013; Lilien, 2011), whereas UD provide deeper qualitative insights on consumer preferences, behaviors, and responses to marketing activities (Balducci & Marinova, 2018). Thus, UD can, among their other uses, shed further light on the likely reasons for underlying SD trends (Alharthi, Krotov, & Bowman, 2017; Berger et al., 2020), and help reveal hitherto unexpressed or/or unrealized changes in consumer needs and behaviors (Hewett, Rand, Rust, & van Heerde, 2016; Müller, Deborcoli, Junglas, & vom Brocke, 2016).

For consumer goods retailing, the use of both SD and UD analytics has become essential for understanding the constant changes in consumers' behavior and for coordinating decisions that help firms accommodate those changes (Bradlow, Gangwar, Kopalle, & Veleit, 2017; Mikalef, Krostie, Pappas, & Pavlou, 2020). However, both retailers and their suppliers experience challenges in leveraging SD and UD for their decision-making purposes (Gupta & George, 2016; Quinn, Dibb, Simkin, Canhoto, & Analogbe, 2016). Both parties often struggle to gain access to valuable data because of legal restrictions (Martin et al., 2020), such as the General Data Protection Regulation in the European Union and the California Consumer Privacy Act in the United States (Krafft et al., 2021). Furthermore, firms constantly face opportunities to take advantage of new analytical tools (Markham et al., 2015; Wedel & Kamman, 2016). Finally, relatively few firms employ professionals specialized in performing data analytics and connecting the data to decision-making (Davenport, Guszcza, Smith, & Still, 2019; Royle &
In this continuously evolving analytical landscape, limited resources pose particular challenges for firms developing their analytical capabilities (Kakatkar & Spann, 2019). The present study proposes that in addressing the current challenges related to the successful use of data and analytics (Grover et al., 2018; Kakatkar & Spann, 2019), firms would benefit from sharing their analytical capabilities (Alinaghian et al., 2020; Gulati, Lavie, & Madhavan, 2011), instead of relying solely on internally developed ones. This is because collective efforts in data collection and analysis provide each participant firm broader access to data and insights than would otherwise be possible.

In addition to collaborating within their immediate buyer-supplier dyads (Gligor, Gölgeci, Newman, & Bozkurt, 2021; Varman & Costa, 2009), firms could share data and analytical insights with a broader set of business partners, such as research institutes, media agencies, and consultancies, which, reciprocally, could provide useful data and analytics to the sharing partners (Dhaundiyal & Coughlan, 2022; Zheng, Li, & Wu, 2013). Such collaborations would enable firms to create and capture competitive market advantages for their entire business networks (Alinaghian & Razmoost, 2018; Dekker, Mooi, & Visser, 2020). For example, Clear Box Retail, a third-party service provider, offers retailers solutions for sharing SD from store-level scanners (e.g., inventory, promotions, and shelf space allocation) complemented by UD insights with wholesalers and manufacturers, which makes it possible for all the involved partners to collectively address distribution gaps quickly and efficiently (Davenport, 2021). Without such real-time solutions it would be difficult for firms to react timely to fluctuations in demand; furthermore, without these solutions, they may be left with a very limited understanding of the reasons underlying changes in their demand (e.g., see Berger et al., 2020; Huang, Guan, & Chen, 2018).

Most existing studies that address the development of analytical capabilities focus on firms’ internal resources (Agarwal, Dugas, Gao, & Kannan, 2020; Oliveira & Handfield, 2019). In the present study, we investigate ways to develop, use, and share analytical capabilities across firm boundaries in broader business networks (Kraft et al., 2021; Zhang & Watson, 2019, 2020). In doing so, we examine the drivers of the successful development of shared analytical capabilities as well as how analytical capabilities may be shared and used to benefit entire business networks (Ogundipe, Peters, & Töth, 2022). In this examination we ask the following research questions: (1) How can the development of analytical capability extend beyond the boundaries of individual firms? (2) What (a) resources and (b) routines support the development of shared analytical capabilities within broader business networks?

Our study makes five main contributions to the literature on shared market-based capabilities (Alinaghian et al., 2020; Forkmann, Henneberg, & Mitrega, 2018) and market analytics (Agarwal et al., 2020; Gao, Duan, & Banna, 2019). First, we introduce the concept of shared analytical capabilities that extend beyond the boundaries of individual firms—or even individual buyer-supplier dyads—to acknowledge the relevance of firms’ business networks in developing analytical capabilities (cf. Kumar & Venkatesan, 2021). Second, we define two key groups of resources that contribute to the development of shared analytical capabilities within business networks: access to external data and analytics through partners and structures supporting the sharing of data and analytics. Third, we define five types of analytical routines (Alinaghian & Razmoost, 2018; Winter, 2003) that underlie the development of shared analytical capabilities. In addition to the three types of buyer-supplier routines suggested by recent literature (Alinaghian et al., 2020)—unilateral routines, quasi-unilateral routines, and bilateral routines—we propose two novel types of routines that extend beyond the buyer-supplier dyad: multilateral routines and joint multilateral routines. Fourth, we systematically map potential barriers associated with the development of shared analytical capabilities, particularly in relation to the sharing of SD and UD insights within business networks. Finally, to exemplify the implementation of shared analytical capabilities, we provide a detailed account of the diverse roles and responsibilities of individual actors involved in the development of shared analytical capabilities in the context of consumer goods retailing.

For managers, our findings provide actionable guidelines for building shared analytical capabilities. In particular, our study maps resources and inter-firm routines that support the development of shared analytical capabilities related to both SD and UD, in collaboration with broader business networks.

2. Developing analytical capabilities

Analytical capabilities are dynamic capabilities that allow firms to leverage existing data and analytical skills to better understand the market in which they are operating to improve their decision-making (Gupta, Drave, Dwivedi, Baabdullah, & Ismagilova, 2019; Zhang et al., 2020). Existing research generally defines dynamic capabilities as organizational routines (Amit & Schoemaker, 1993; Winter, 2003) that allow firms to perform different tasks by using available resources (Forkmann et al., 2018). These routines not only represent “learned and stable patterns of collective activities” (Zollo & Winter, 2002, p. 340), but also guide future resource configuration (Day, 2011; Gittell & Weiss, 2004). This makes analytical capabilities vital for a firm’s “ability to integrate, build, and reconfigure internal and external competences to address rapidly changing environments” (Teo et al., 2007, p. 516).

Previous research suggests that developing analytical capabilities requires three types of resources: data and technologies, skills and competencies, and organizational culture (Dekimpe, 2020; Gupta & George, 2016). That is, firms need access to high-quality internal and/or external SD and UD as well as technologies that can work with such data (Cao et al., 2019; Erevelles et al., 2016). Firms also need to acquire the technical ability required to collect and analyze data, as well as the managerial skills needed to develop insights from the data and use them effectively in decision-making (Markham et al., 2015; Wamba et al., 2017). Finally, firms should develop an organizational culture that promotes the use of data and analytics to support their operations and strategies (Lin & Kunnath, 2019; Zhang et al., 2020).

Furthermore, the development of analytical capabilities is not a one-time exercise; to establish sustained competitive advantages, capabilities must develop with markets (Day, 2011; Eisenhardt & Martin, 2000). The selection of analytical tools available in the markets is evolving continuously (e.g., Dekimpe, 2020; Erevelles et al., 2016). When firms upgrade their analytical technologies, they also need novel training for their employees (Dekimpe, 2020; Gupta, Qian, Bhushan, & Luo, 2019). They may also need to update organizational routines to make the most of evolving sources of data and technology (cf. Gebhardt, Carpenter, & Sherry Jr, 2006). In line with these notions, Day (2011) defines four barriers to the development of organizational capabilities, which are also applicable to the development of analytical capabilities: (1) path dependency and lock-in, (2) inertia and complacency, (3) structural insularity or organizational silos, and (4) lagging reactions.

First, path dependency and lock-in occur when over-commitment to extant organizational routines prevents firms from looking for new opportunities (Cavalcante, Kesting, & Ulhøi, 2011; Teece, Pisano, & Shuen, 1997). Second, inertia and complacency refer to managers’ inability to realize that the application of once-successful practices may no longer be useful or necessary in changed environments (Danneels, 2011; Day, 2011). Third, structural insularity or organizational silos occur when firms fail to establish cross-functional information and resource-sharing arrangements (Aaker, 2008; Narver & Slater, 1990). Fourth, lagging reactions represent firms’ unwillingness and/or inability to react timely to market changes (Day, 2011). In summary, the successful development of analytical capabilities requires firms to invest in relevant data- and technology-related resources and to develop suitable routines supporting the use of data and analytics in decision-making. When developing such capabilities, firms also need to overcome various barriers that prevent them from proactively applying data to decision-making. Finally, the development of
analytical capabilities represents an ongoing, iterative process that is tied to the continuously changing market environment and requires continuous attention.

3. Sharing analytical capabilities

Recent studies have recognized that dynamic capabilities can sometimes be extended beyond the boundaries of individual firms (Alinaghian & Razmoozdoost, 2018; Ogundipe et al., 2022). That is, in addition to investing in internally developed capabilities, firms may also take advantage of broader resources and capabilities available in their networks (Gulati, 1999; Versalainen & Hakala, 2014) by co-developing or sharing them with business partners (Dubey et al., 2018; McEvily & Marcus, 2005). In this study, we define shared capabilities as resources and routines that extend beyond the boundaries of single firms, allowing them to capture advantages within business networks (Eisenhardt & Martin, 2000; Forkmann et al., 2018). Accordingly, shared analytical capabilities entail, for instance, mutual data and information sharing, collaborative sense making, and/or the integration of knowledge.

In particular, we propose that shared analytical capabilities build on network resources—data and analytics assets owned by firms’ partners that can be accessed by the firms through the direct and indirect ties with those partners (Gulati et al., 2011). In line with previous research (Alinaghian & Razmoozdoost, 2018; Wassmer & Dussauge, 2011), we further suggest that to realize the potential of such network resources, firms need to leverage supporting inter-firm routines. Alinaghian et al. (2020) introduce a taxonomy consisting of three main types of such inter-firm routines in buyer-supplier dyads: unilateral routines, which include activities, processes, and practices of one party that are informally (and sometimes accidentally) supported by the resources possessed by the other party; quasi-unilateral routines, which consist of activities, processes, and practices originating within the boundaries of one party but are supported by the other party, based on implicit agreements between the two parties; and bilateral routines, which include more formalized activities, processes, and practices that require the mutually active commitment of both parties involved.

In the context of analytical capabilities, unilateral routines relate to instances when buyers and suppliers strive to learn from data and insights gathered and shared by their partners, often as part of annual meetings, to guide their product/offering development (Kumar & Venkatesan, 2021; von Briel, Schneider, & Lowry, 2019). An example of a quasi-unilateral routine is when one of the immediate partners starts a project, and invests in data and analytics to derive the necessary insights for decision-making, and another party, sensing potential personal benefits, more formally shares supporting insights (Grewal et al., 2021; Mu, Thomas, Peng, & Di Benedetto, 2017). Finally, bilateral routines are exemplified by cases in which buyers and suppliers work closely towards common goals, such as stimulating consumer demand and optimizing logistics, which require the active and continuous exchange of relevant data and insights and even the creation of cross-organizational analytics (Corsten & Kumar, 2005; Dekimpe, 2020).

Shared analytical capabilities may relate to entire business networks that include not only buyers and suppliers, but also external collaborators who have access to complementary data and analytical capabilities (Handfield, 2019; Trada & Goyal, 2020). For example, consumer goods manufacturers tend to follow consumer behavior trends and developments pertinent to their particular product categories; sharing such insights with retailers in their business networks might help partnering retailers refine their selections (Seevers, Skinner, & Dahlstrom, 2010; Shamshullah, Chmielewski-Raimondo, Bell, & Kachouie, 2021). Retailers often have well-established methods for gathering point-of-sales data, their suppliers can use to anticipate changes in consumer preferences or temporal fluctuations in product demand (Ganesan, George, Jap, Palmatier, & Weitz, 2009; Huang, Guan, & Chen, 2018). It is also customary for consumer goods manufacturers and retailers to cooperate closely with third parties, such as consultants and data analytics providers, that have access to global and local consumer data, and possess more general insights into market trends (Wedel & Kannan, 2016). Consumer goods manufacturers and retailers can also collaborate with independent partners outside of their industry, such as grocery delivery firms. Such collaboration can open access to data on unique consumer behavior (e.g., queries and engagement in mobile apps) that would otherwise be impossible to access.

4. Barriers to analytical capability sharing

Sharing analytics-related capabilities does not come without challenges. When firms decide to develop shared analytical capabilities, their motives for sharing versus withholding are likely to collide. For example, a supplier that shares insights with partnering retailers may benefit the partners, but those partners might leak such insights to other suppliers, which could undermine the initial supplier’s competitive advantage (Varman & Costa, 2009). Because of the complexity of contemporary business networks (Bradford, Stringfellow, & Weitz, 2004), the interests of individual firms within any network are likely to be partly aligned and partly in conflict (Jensen & Meckling, 1976; McLoughlin & Horan, 2002). The conflicting interests demand well-defined procedures for sharing analytical capabilities.

In more theoretical terms, sharing any types of capabilities involves forming agency relationships in which some responsibility for capability development is delegated to partners external to the firm (Jensen & Meckling, 1976). Successful agency relationships require three main conditions (Bergen, Dutta, & Walker, 1992): (1) the external partner possesses or has the ability to develop the desired capability (Combs & Ketchen, 1999; Fehrer & Nenonen, 2020); (2) the partner’s goals align with the focal firm’s goals (Combs & Ketchen, 1999; Gilgor et al., 2021); and (3) the roles, obligations, and expectations of each party are clearly established (Dyer & Singh, 1998; Keegan, Rowley, & Tonge, 2017). These requirements can be translated into four specific barriers that might limit firms’ ability to take full advantage of their shared analytical capabilities: (1) the challenge of finding appropriate partners, (2) lack of sufficient resource allocation, (3) fears of opportunism, and (4) stagnation. We will now discuss each of these barriers in more detail.

4.1. Finding appropriate partners

A common barrier to capability sharing is identifying suitable partners within firms’ existing networks (Dyer & Singh, 1998; Parida, Patel, Wincent, & Kohtamäki, 2016). Even if most firms already work with various external partners, it may be difficult for them to find partners that possess the specific complementary resources they require (Richey, Tokman, & Dalela, 2010). In particular, firms may experience difficulty finding partners that possess the unique capabilities needed to establish and maintain competitive advantages within the business networks (Handfield, 2019; Rindfleisch & Moorman, 2003) and that have common or aligned goals and interests (Dubey et al., 2018; Pavlou, Liang, & Xue, 2007). Besides, in new partnerships it is often difficult to evaluate the partner’s precise resources and capabilities (Dyer & Singh, 1998) and how they might benefit the overall network (Dhundiyal & Coughlan, 2022; Eriksson, Nummela, & Saarenketo, 2014). For example, retailers may struggle to select partners for collaboration from a wide range of consumer goods suppliers, all of which have unique in-house analytical capabilities and data cultures (Gupta & George, 2016; Vidgen, Shaw, & Grant, 2017).

4.2. Lack of sufficient resource allocation

In addition to differences in internal resources and capabilities, firms may also differ in the extent to which they would be committed to investing resources to support the development and comprehensive use of shared capabilities (Combs & Ketchen, 1999; Eriksson et al., 2014; Tong & Crosno, 2016). For example, sharing analytical capabilities often...
demands establishing novel channels for sharing information and insights (Spralls III, Hunt, & Wilcox, 2011), as well as further investment in human resources for managing mutual information flows to ensure their effective application to decision-making (Hanssens & Pauwels, 2016; Wassmer & Dussauge, 2011). This requires firms to be prepared to make additional investments (e.g., tools, employee training) and introduce novel practices to support such capability sharing (Day, 2011; Liu, Luo, & Liu, 2009). In turn, lack of resource allocation is likely to lead to inefficiencies in sharing data and analytics, or even damage relationships in the partnerships (Dhanda & Coughlan, 2022; Dyer & Singh, 1998).

4.3. Fear of opportunism

Fear of opportunism refers to the suspicion that other parties involved in partnerships are acting out of self-interest and without regard for the success of others (Williamson, 1996). Such suspicion discourages information sharing (Pavlou et al., 2007), which is central to the sharing of analytical capabilities (McEvily & Marcus, 2005; Trada & Goyal, 2020). Thus, the fear of opportunistic behavior may be particularly harmful in the context of sharing analytical capabilities, because such sharing demands the regular exchange of valuable information that may, at times, even contain trade secrets (Gunasekaran et al., 2017; Leonidou, Aykol, Fotiadis, & Christodoulides, 2018), such as consumer data (Kraft et al., 2021). For instance, manufacturers may resist sharing some of their data out of fear that retailers will use it to collaborate with competing firms (Bradford et al., 2004; Huang et al., 2018), and vice versa, a scenario that could lead to negative consequences in the performance of the dyad (Musarra, Bowen, Robson, & Spyropoulou, 2021).

4.4. Stagnation

Finally, sharing analytical capabilities must be nurtured continuously to maintain currency and relevance (Day, 2011; Teece, 2007). Partners also may fail to update their shared capabilities and instead treat them as static (Helfat & Peteraf, 2003; Teece et al., 1997). That is, in addition to allocating resources to initially establish capability sharing, the successful development of shared capabilities demands continuously updating the internal resources and capabilities of each party involved (Eisenhardt & Martin, 2000; Zollo & Winter, 2002), as well as updating the processes for their sharing (Keegan et al., 2017; Ogundipe et al., 2022). With regard to analytical capabilities, collaborating firms must continuously evaluate the accuracy of their data and analytical tools to accommodate developments in related technologies (De Luca, Herhausen, Troilo, & Rossi, 2020; Xu, Frankwick, & Ramirez, 2016). For example, the rapid advancement of UD analytics (Balducci & Marmona, 2018) requires firms to consider the mutual uses of additional types and sources of data (Sorescu, 2017).

Taken together, the listed barriers/challenges related to the development of shared analytical capabilities underline the need for firms to select partners carefully, to meticulously align their goals, explicitly agree on responsibilities related to capability sharing, and develop mutual trust. Finally, the shared capabilities must be regularly monitored and continuously updated to ensure their worth and long-term relevance.

5. Research setting

Consumer goods retailing provides a particularly interesting context for studying analytical capability sharing for four main reasons. First, both retailers and consumer goods manufacturers are generally considered leaders in the use of both SD and UD analytics (Bradlow et al., 2017). Second, because retailers and consumer goods manufacturers work closely together (Duperre & Gruen, 2004), they are likely to share their capabilities (Shamsollahi et al., 2021; Vesalainen & Hakala, 2014). Third, both parties represent forerunners in gathering, analyzing, and sharing diverse data (Kraft et al., 2021; The CMO Survey, 2022). Fourth, they often have large networks of external business partners with which they collaborate closely (Bradford et al., 2004; Seegers et al., 2010).

Fig. 1 depicts the flows of data and information across the diverse parties involved in a retail network. Because consumer goods manufacturers possess data about their own products and brands, they offer retailers important product- and brand-specific information (insights stemming from both SD and UD) related to their own performance, competitor intelligence, and market developments. Retailers collect category-level data, so they can, in turn, provide suppliers with aggregate-level or comparative insights drawn from sales data and their own market research. Both parties purchase data and insights from third-party firms, including research institutes, media agencies, and consultancies. They also publish firms’ financial and other reports, which third parties use to produce aggregate reports about market shares, trends, and developments. In addition, retailers and consumer goods manufacturers increasingly collaborate with independent partners outside of the dyad’s industry (e.g., developers of food delivery platforms) by exchanging information relevant to specific projects, such as updating in-store product selections to better match consumer demand in particular geographical areas. The flow of information among parties is supported by practices for the collection, analysis, and distribution of data inside firms’ boundaries and mutually developed practices.

We conducted in-depth, semi-structured interviews with representatives of retailers and consumer goods manufacturers who use analytics in their daily work. To select suitable informants, we adopted purposeful sampling (Patton, 2002) and sought maximum variation in the product categories represented in consumer goods retailing. We focused our recruitment efforts on leading international firms likely to implement SD and UD analytics. Our final sample consisted of 21 informants: 15 senior managers from consumer goods manufacturers from diverse sectors and six representatives of large retailers operating in the Nordic countries (Denmark, Finland, Norway, Sweden, and Iceland) (see Table 1).

The interviews lasted between 31 and 152 min. We continued interviewing new informants until we reached data saturation (Giøia, Corley, & Hamilton, 2013). We began the semi-structured interviews with general questions about data collection practices and sources of data, as well as the use of data in decision-making. Next, we posed more specific questions about working with different forms and sources of data and the challenges associated with these processes. We also asked about the skills and competencies managers would need to leverage available market data successfully. Finally, we inquired about sharing data and analytical insights with partners in business networks. During the interviews, we encouraged informants to provide concrete examples, which increased confidence in the trustworthiness of their claims and led to a better understanding of the practices they used to develop shared analytical capabilities. We recorded and transcribed each interview and complemented the interviews with field notes. We used the qualitative data analysis tool NVivo to manage and code our data.

6. Data analysis and findings

We started our data analysis by defining the resources firms need to develop shared analytical capabilities. Following Miles and Huberman (1984), we first analyzed the interview transcripts in detail, coded them based on emerging themes (first-order concepts), then compared them with previous findings from relevant research. Next, we compared codes across transcripts in an iterative manner to detect emerging patterns and links among the first-order concepts (Glaser & Strauss, 1967) and to develop second-order themes. Finally, we aggregated the second-order themes into third-order dimensions (Giøia et al., 2013), denoting two key groups of external resources necessary for the development of shared analytical capabilities, as shown in Fig. 2.

After defining the groups of resources firms use to develop shared
Fig. 1. Flows of information in a consumer goods retailing network.
analytical capabilities, we carefully reviewed the data to distinguish routines that support sharing such capabilities. We started by coding inter-firm routines based on the taxonomy of buyer-supplier routines introduced by Alinaghian et al. (2020). While performing this exercise, we also coded those routines that fell outside of the buyer-supplier dyad, such as collaboration with third parties and independent partners, following the same procedure we employed to define resources for the development of shared analytical capabilities. We will next present the detailed outcomes of our data analyses.

6.1. Resources required for developing shared analytical capabilities

The interviews identified two key groups of network resources retailers and consumer goods manufacturers use to build shared analytical capabilities: (1) access to data and analytics through partners, and (2) structures supporting data and analytics sharing. Each of these groups of resources builds on sub-groups of resources (Fig. 2), which we will now discuss in detail (see Table 2 for illustrative quotes from our informants).

6.1.1. Access to data and analytics through partners

The first group of resources needed for sharing analytical capabilities builds on the network of partners that provide access to unique data and analytics. These include (1) data and analytics shared by collaborating partners (most importantly buyers and suppliers; also, potential partners from neighboring industries), and (2) data and analytics provided by third parties. First, data and analytics shared by collaborating partners are accessed through partnering firms interested in exchanging data and insights to achieve mutual business objectives. Direct business partners, such as retailers and consumer goods manufacturers, work closely together to serve consumers, and are likely to exchange at least information necessary for the alignment of common practices. In such partnerships, consumer goods manufacturers usually share basic information requested by retailers (e.g., product descriptions) as well as additional insights that can contribute to either getting new products to retailers’ shelves or information that can help retailers increase sales of certain products (e.g., consumer trends) (see Table 2 for illustrative quotes). On the other hand, retailers tend to share basic numeric data, such as sales data, and offer consumer goods manufacturers more comprehensive reports for additional payment.

Sometimes retailers and consumer goods manufacturers also form closer strategic partnerships to work on specific projects aimed at providing consumers with improved offerings and/or more competitive prices. In their otherwise large business networks, informants, particularly representatives of retailers, often specified just a few such strategic partnerships built on common goals and a shared vision of competitive advantage. Strategic partnerships require sharing additional (exclusive) data, particularly from retailers that usually share only limited information with their multiple suppliers. In addition, informants representing both retailers and consumer goods manufacturers revealed that increasingly they work together with independent partners, including, for instance, quick commerce firms, food service firms, and meal subscription service providers. Such collaborations allow access to unique data and insights, providing a broader perspective on market trends and consumer behaviors.

Second, in addition to accessing data and analytics through immediate partners, retailers and consumer goods manufacturers can benefit from access to data and analytics provided by third parties, such as commercial research institutions, marketing agencies, and consultancies. These service providers typically perform outsourced data-related functions focal firms are unable to perform on their own due to a lack of suitable capabilities and/or sufficient resources (Dekker et al., 2020). For instance, large measurement and data firms, such as Nielsen and Statista, provide broader reports incorporating general information about market trends and changes, and they can be acquired by

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### Table 1

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<tr>
<th>Informant</th>
<th>Position</th>
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<tr>
<td>Informant 1</td>
<td>Nordic Marketing Manager</td>
<td>Food</td>
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<td>Informant 2</td>
<td>Market Insights Manager</td>
<td>Food</td>
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<td>Informant 3</td>
<td>Nordic Integrated Marketing Lead</td>
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<td>Nordic Marketing Manager</td>
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<td>Informant 5</td>
<td>Marketing Manager, Nordics &amp; Baltics</td>
<td>Personal care</td>
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<td>Informant 6</td>
<td>Head of Insight &amp; Foresight</td>
<td>Food</td>
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<td>Informant 7</td>
<td>Nordic Brand Manager</td>
<td>Personal care</td>
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<td>Informant 8</td>
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<td>Informant 9</td>
<td>Head of Global Brands &amp; Portfolio</td>
<td>Beverages</td>
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<td>Marketing Director</td>
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<td>Director of Brand Management</td>
<td>Home care</td>
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<td>Consumer &amp; Shopper Insight Manager</td>
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<td>Senior Brand Manager Nordics</td>
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<tr>
<td>Informant 21</td>
<td>Business Development Director</td>
<td>Retail</td>
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**Fig. 2.** Data analysis: defining resources contributing to the development of shared analytical capabilities.
Table 2
Illustration of resources contributing to shared analytical capability development.

<table>
<thead>
<tr>
<th>Group of resources</th>
<th>Definition</th>
<th>Illustrative quotes</th>
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<tbody>
<tr>
<td><strong>Data and analytics shared by direct business partners</strong></td>
<td>Data and analytics shared by firms’ direct partners (suppliers/buyers) with which firms collaborate to achieve (basic) common goals (i.e., sell products to consumers)</td>
<td>“Let’s say we create our own segmentation, but then we need to align it with our customers because we want to sell different brands of [products] at the right locations, right, and we do have many customers that sell our [products] in different markets, and with many of them we do business directly.” (Informant 9)</td>
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<td>“Because we have so many suppliers, it is always interesting to see what they have to offer and what their strong sides are… We work with big global companies, but we also have many small local producers, and we have to find a different approach to them. For instance, global companies have a lot of data, also from different markets, but smaller companies often have very limited data.” (Informant 17)</td>
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<td></td>
<td>Data and analytics shared by selected partners (suppliers/buyers), with which firms collaborate closely in solving common business problems</td>
<td>“We also work with our strategic partners, like [Firm Name]. For example, we do our own segmentation, but [Firm Name] also have a very clear segmentation based on their internal data. What we do with [Firm Name], is check our segmentation versus theirs, which helps us in guiding our overall strategy.” (Informant 4)</td>
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<td>“It really depends on the supplier and how important they are to us. For example, with some of the more important partners, we are sharing more detailed information, and they are also actively sharing unique information with us. As a result, we can, for example, continue to improve our marketing activities and pricing.” (Informant 20)</td>
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<td>Data and analytics shared by partners representing related industries that have common interests with the focal firm and the firm’s direct partners</td>
<td>“We also look for new opportunities and new data, I mean, most companies do. If we get interesting suggestions for working together and we can get access to cool new data, we look into it.” (Informant 1)</td>
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<td>“We recently started working with [firm] and we got a lot of data about shopping behaviors of consumers online. I think we have a lot of work ahead of us to really understand how we can benefit from this partnership, but it looks promising.” (Informant 21)</td>
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<tr>
<td><strong>Data and analytics provided by third parties</strong></td>
<td>General reports (e.g., market reports) third parties offer to all interested stakeholders</td>
<td>“We are buying a lot of data on a regular basis, like point-of-sales data from retailers and [research institute] reports. We use this data in many big decisions, like strategy development, demand planning, pricing, and so on. We are such a big company that I feel we cannot operate without the data we get from them [third parties].” (Informant 6)</td>
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<td></td>
<td>Custom data and services (e.g., ad hoc local market reports) supporting firm’s day-to-day decision-making, provided by third parties</td>
<td>“We buy scanner data, which is basically customer data. If you buy your product and it’s getting scans at the cashier, this data is quite broad, so we need to make sense of it, but it is vital for us. We are also buying customer data. So, if you have a personal loyalty card from a certain supermarket chain or retail chain, we buy those data as well. We buy a lot of data from different social media platforms, for example, from Facebook, Instagram, all of these digital platforms.” (Informant 15)</td>
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<td></td>
<td>Custom data and services for specific projects provided by third parties</td>
<td>“We, like many FMCG companies, use research companies, basically all the time. For instance, to monitor brand awareness, brand preference, and so on. This data helps us keep track of consumer behaviors and indicate whether we need to take any immediate action.” (Informant 9)</td>
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<td>“We do also use third parties for collecting data and analyzing data; for example, consumer demographics and consumer trends and such, which can be used to support our plans. So, this kind of data is actually collected more on a systematic basis, at least twice a year or so. We use this data to verify that we are still doing the right thing.” (Informant 14)</td>
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| | Custom data and services for specific projects (e.g., local consumer preference studies prior to launching new products to a market), provided by third parties | “I think, in a way, we outsource most of the data collection. If we do market any kind of research, we usually do it in collaboration with research companies, or we buy already available reports. But especially for specific purposes we often use research companies who collect and analyze data” (continued on next page)
### Table 2 (continued)

<table>
<thead>
<tr>
<th>Group of resources</th>
<th>Definition</th>
<th>Illustrative quotes</th>
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<tr>
<td><strong>Structures supporting data and analytics sharing</strong></td>
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<tr>
<td>Coordination of data and insights sharing</td>
<td>Inter-firm coordination enabling inter-firm sharing of data and insights</td>
<td>“There are a lot of the things we’re doing for specific projects. So, we hire a team that works with a certain brand when we start to look into a project, which looks for some facts that can actually enrich our idea and our plans. These include market trends and social media, but it is very connected to a certain project and, therefore, it is not something that we just do as a routine on a daily basis, or once a week, but really truly connected to what we want to achieve with this specific project.” (Informant 2)</td>
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<td>Inter-firm management of data and analytics sharing</td>
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<tr>
<td>Aligned understanding of shared data and insights</td>
<td>Common understanding about the meaning (insights) behind the shared data</td>
<td>“For certain collaborations with retailers, we allocate some special resources and organize sharing of insights in a more systematic manner. For example, we work together on developing a joint understanding of consumer trends in our categories, based on which we make decisions on what we should do. Then, a lot of the doing is actually on us, but these efforts give us an advantage over our competition, for sure.” (Informant 4)</td>
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<tr>
<td>Clear division of responsibilities</td>
<td>Agreement on specific responsibilities and expectations from each party regarding data collection, analysis, sharing, and use</td>
<td>“Usually, we increase frequency of communication with suppliers when we are developing something new or doing a project together. Then, we need to be in close contact discussing different issues… So, it is a different process… But usually when it is a normal process, we have discussions only a couple of times a year. But this also depends on … because suppliers are really active in their initiative to engage in discussions, and some are really passive. So, there is a lot of variety in them.” (Informant 17)</td>
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<td>Internal management of shared data and analytics</td>
<td>Ability to handle data and insights shared by partners</td>
<td>“For us, it is important to both share information but also get feedback from retailers, so that we are on the same page. For instance, when we develop new packs, we want to know what kind of packs consumers buy, and the pack size varies across markets. So, we really need to work closely with our retailers and have clear communications about what we know about the markets.” (Informant 6)</td>
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<td>Firm’s ability to use data and insights shared by different partners (e.g., with support of analytical tools)</td>
<td>“In our tribe, for example, we have defined five different consumer target groups, and then we need to know what their interests are, what the demographics are, what the size of the tribe is, and so forth. And then we work together with, for example, a media agency in order to see how our campaign has performed and what changes we should make as a team.” (Informant 14)</td>
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<td>“I would say that in our partnerships it is clear who provides what information. Our supplier can buy a lot of information from us; it is available for everyone, but we also know what kind of individual feedback we need to provide to each supplier, and most suppliers know what kind of data we expect from them. This information we provide is a big part of our decision-making, and we, of course, both want to sell products to consumers.” (Informant 20)</td>
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<td>“When our suppliers come in, they have a lot of research about their products. We, of course, have our own data, but it is important for us that these suppliers do their homework, because we cannot know the business as well as they do, and we also have other suppliers, and I think that we do have an understanding with most of them about expectations in our meetings.” (Informant 21)</td>
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<td>“We get a lot of data, and the main task for us is to make sense of all of the data in such a way that it would actually improve our decision-making. For instance, we get our research data, and then retailer data, and so on. We really should not just collect the data and not use it, right? So, it is important that we have systems in place to work with such data.” (Informant 1)</td>
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(continued on next page)
partners, have at their disposal. Firms purchase custom data and market insights from third parties to support their routine decision-making. Such data include, for instance, brand health studies and consumer trends in specific product categories. Furthermore, firms purchase data and insights from third parties for specific needs, such as those related to launches of new products or product categories. These usually represent demanding projects for which firms lack sufficient internal resources (e.g., expertise or human resources) to cover the vast amount of analytical work required.

Finally, several informants mentioned that although gaining access to unique SD through third parties remains a priority, they are increasingly interested in working with partners that specialize in more novel UD analytics:

We have a media company looking into media that would also track what bloggers say…. Now, we are finally applying a new system to do that, so we can follow if people mention our brand name verbally when they talk in the media. We see a great potential in how we can use this.

(Informant 5)

Gaining access to data and analytics through partners forms the basis of developing shared analytical capabilities. In collaborations with partners interested in data and analytics sharing, firms can exchange unique data business insights that would not be possible to acquire on their own. In addition, by working with third parties providing data and analytics services, individual firms can acquire data and business insights that require more resources than individual firms, or their direct partners, have at their disposal.

6.1.2. Structures supporting data and analytics sharing

The second group of resources needed for sharing analytical capabilities refers to structures that support the sharing of data and insights within a business network, including (1) inter-firm management of data and analytics sharing and (2) internal management of shared data and analytics of firms forming the network. First, inter-firm management of data and analytics sharing ensures that collaborating firms exchange relevant data and analytics within business networks (see Table 2 for illustrative quotes). Our informants noted that successful collaborations often entail coordinating the sharing of data and insights related to, for example, forecasting, supply chain, and demand planning. Inter-firm coordination supports the achievement of common goals and helps individual firms improve their competitive advantages (see also Giudici, Reinmoeller, & Ravasi, 2018; Mu et al., 2017). In line with previous research (Gunasekaran et al., 2017; McEvily & Marcus, 2005), our informants also suggested that the development of an aligned understanding of shared data and insights improves the operation of their retail networks. For example, retailers and consumer goods manufacturers may align their reasoning about decreasing demand for certain products, which allows them to take corrective action collectively (e.g., delisting, adjusting pricing, adapting pack size, etc.).

In relation to working with direct partners, our informants suggested that firms need a clear understanding of their responsibilities to their network and their partners’ expectations (see also Combs & Ketchen, 1999). For example, with regard to UD, the respondents largely agreed consumer goods manufacturers were responsible for understanding the needs and wants of their target consumers. Representatives of the retailer firms shared that their use of UD focuses on broader category levels, such as consumer trends (e.g., increased demand for vegan food). However, with regard to individual products (brands) and product categories, retailers maintained it is the responsibility of manufacturers to gain insights from relevant UD and to combine it with SD to convince retailers that their (new) products are worth selling:

When we take new products into our assortment, we, of course, do not have the sales data. So, when making decisions we use our hunch, our knowledge and experience. Then, it is usually the suppliers who need to convince us that we should take the new product. So, it is more their responsibility to do all the market studies and make a nice presentation for us.

(Informant 17)

In addition, firms must clearly communicate their (evolving) expectations to the service providers as well (Keegan et al., 2017). However, we discovered that managers often fail to recognize the need to revisit established agreements (e.g., in light of UD), which might result in missed opportunities to take advantage of more complete data and derive insights from it:

When we use other companies to make research, we often forget that they do not know the business as well as we do… So, when we get the reports, they often miss insights that we thought we would get, because it is obvious for us that we need them, but we did not tell the company that, at least not explicitly. For instance, I would get the numbers, but no answer to the question “why?” because we did not ask for it.

(Informant 7)

Second, internal management of shared data and analytics comprises firms’ structures that allow for the integration of data and insights shared by partners and their dissemination across the whole organization for...
improved data-driven decision-making. Most importantly, our informants (see Table 2) suggested that their firms need to have the ability to handle different SD and UD as well as business insights shared by partners at different organizational levels. Here, they hinted at the challenges related to business partner reliability (see also Bradford et al., 2004; Williamson, 1996). In particular, our informants stressed that rather than blindly relying on information provided by partnering firms, they need to be able to critically evaluate its objectivity as well as fuse it with internal knowledge. Furthermore, our informants pointed to the importance of dissemination and the reuse of external data into and within their business network. Notably, they felt the need to carefully evaluate how external data and insights could be used within the whole organization. In turn, the ability to disseminate and reuse data and insights at different organizational levels allows firms to make sure they take full advantage of the resources accessed through their business networks.

To summarize, in addition to having access to data and analytics through partners, firms need to establish structures that support the sharing of data and analytics. While some of these structures need to be developed in collaboration with the partners, other firms need to create or adapt internally. These structures not only support the smooth exchange of data and insights, but also ensure that firms take full advantage from the accessed network resources on both individual and network levels.

### 6.2. Shared analytical routines

The interviewees also pointed to five specific types of routines that underline the development of shared analytical capabilities. In addition to the three previously defined types of routines (Alinaghian et al., 2020): (1) unilateral routines, (2) quasi-unilateral routines, and (3) bilateral routines, our analysis further identified two types of routines that extend beyond the buyer-supplier dyad: (4) multilateral routines and (5) joint multilateral routines. Fig. 3 presents an overview of shared analytical routines with visual representation and illustrative quotes supporting our findings.

![Illustration of shared analytical routines](image)

Fig. 3. Illustration of shared analytical routines.

Notes: A = buyer (i.e., retailer); B = supplier (i.e., consumer goods manufacturer); C = third party (e.g., research institution, media agency, etc.); D = independent partners.

Lines with arrows indicate the flow of data and insights (➔ low input; ➔ medium input; ➔ strong input).

*Routines relevant to outsourcing (buyer-supplier-third party collaborations).
First, unilateral routines, which refer to “activities, processes, and practices that originate in one party’s boundaries but are aimed at the other party... intended to tap the resources held by, or accessible via, the other firm” (Alinaghian et al., 2020, p. 117), appear to be common in the sharing of analytical capabilities between consumer goods manufacturers and retailers. Because retailers typically have several suppliers for most product categories, they often receive different insights from different manufacturers (see Fig. 3 for illustrative quotes). This information may include only basic information about the product requested by retailers, such as statistics concerning relevant market shares; however, it may also contain many additional insights stemming from comprehensive global or local market research conducted (or purchased) by the manufacturer. Sharing information is particularly common when manufacturers want to introduce novelties to the market. This is because although retailers may often be reluctant to change their offerings, they are still concerned about having up-to-date products in these offerings, and, therefore, are willing to add new products when manufacturers provide strong evidence of a demand for such products.

Second, quasi-unilateral routines, defined as “activities, processes, and practices that originate within either party’s boundaries but without formally binding the other party, while entailing its somewhat supportive and responsive engagement” (Alinaghian et al., 2020, p. 117), are also common in the development of shared analytical capabilities in consumer goods retailing, particularly in relation to the development of new products. The representatives of retailers shared that when they receive an interesting idea for a new product pitched by their suppliers, they tend to step in and participate in the process by sharing their in-house data and taking part in product experimentation (see Fig. 3 for illustrative quotes). Some of the representatives of consumer goods manufacturers also noted that they have received contributions for the development of new products for local markets from selected retailers (Informant 3, Informant 6).

Third, bilateral routines, which Alinaghian et al. (2020, p. 117) define as “more formalized activities, processes, and practices that are enacted and shaped by both parties’ mutually active involvements,” are particularly obvious in strategic partnerships between retailers and consumer goods manufacturers. Such strategic partnerships are commonly initiated by retailers, who invite selected suppliers (consumer goods manufacturers) to work jointly on solving business problems with the aim of growing business and improving practices that strongly affect both parties (e.g., production and supply chain) (see Fig. 3 for illustrative quotes). In these collaborations, both retailers and manufacturers formally share valuable and unique business insights derived from SD and UD, such as insights related to consumer behaviors, shopper metrics, and consumer feedback. Our data suggest that while this type of collaboration generally requires the most resources, especially for manufacturers who often carry most of the costs (see common practices quote shared by Informant 4, Table 2), they result in important gains related to new product introductions, improved products, and shelf placements, and strengthen the relationship between the involved partners.

In addition, we noted that retailers tend to engage in extensive sharing of analytical capabilities with selected suppliers, particularly when they observe unexpected changes in consumer behaviors that require quick and efficient responses from both parties. The beginning of the COVID-19 pandemic is a good example of such a scenario:

And now, with the COVID-19, our sales [of Vitamin C] have exploded, and we started to run out... So, we quickly asked our suppliers if we could do something about this. Usually, it [demand] is very stable, and the rule of thumb is that in all my categories, there are two negotiations [with suppliers] a year, unless there is something interesting or important. In this case, we really needed to be flexible and act quick.

(Informant 17)

Notably, in addition to buyer-supplier dyadic exchange, our interviews suggest that firms can further leverage unilateral and quasi-unilateral routines when outsourcing data- or analytics-related tasks to third parties (e.g., research institutes, media agencies, and consultancies) for a specific need or project. Unilateral routines are particularly common when firms fully outsource data- and analytics-related functions to service providers; quasi-unilateral routines apply to instances when firms take a rather active part in the collection, analyses, and interpretation of the desired data provided by third parties:

We have only one market research manager in-house, and she cannot do this kind of work on her own.... So, of course we use different agencies to help us with the market research. But the reports they provide are usually quite general... we could probably ask them to provide us with some additional, qualitative, insights.

(Informant 7)

We do use quite a lot of external partners to help us collect data because we don’t have the expertise on everything in-house and also because we do not have enough people to perform all these tasks. So, by buying hours from someone else we don't need to have all the experts in-house. So, we do use a lot of external expertise, especially in data collection and analysis. Then, my team looks through the reports and decides how and what we should do.

(Informant 5)

Fourth, we define multilateral routines as an additional group of routines—activities, processes, and practices that extend beyond the buyer-supplier dyad—by including at least one third party that provides data and insights benefitting the buyer-supplier dyad. Such routines are initiated by one party, who, for instance, requests data and insights from another party, who then obtains the requested resources from (or in collaboration with) a third party (or parties). In the consumer goods retailing context, such routines are usually initiated by retailers (i.e., buyers) asking consumer goods manufacturers (i.e., suppliers) for additional insights, such as market trends or consumer studies on their (new) products (see Fig. 3 for illustrative quotes). Our informants representing consumer goods manufacturers noted that retailers are particularly interested in local market studies to support their introduction of a new product to the market. In this case, when these manufacturers do not have the necessary in-house resources and capabilities, they turn to external data and analytics service providers to gain the required insights, which they then share with retailers. Interestingly, data gathered by individual manufacturers and shared with retailers can also (indirectly) benefit competitors by supporting retailers’ decisions related to entire product categories (Informant 18, Informant 19).

Fifth, and finally, our interviews pointed to joint multilateral routines as an additional group of routines that involves several parties with more diversified (and sometimes shared) roles. These routines include activities, processes, and practices that involve multiple suppliers, buyers, and partners, often beyond the focal dyad’s core industry. Joint multilateral routines are characterized by sharing data and insights among partnering firms to support the achievement of common goals. As an example, our interviews suggest that retailers and consumer goods manufacturers increasingly collaborate with independent partners representing such industries as quick commerce and food service (see Fig. 3 for illustrative quotes). In such collaborations, retailers and manufacturers gain access to unique data and insights on consumer behaviors in new contexts, which allows them to better direct their efforts in marketing and distribution and improve their general understanding of their consumers. At the same time, actions taken by retailers and manufacturers directly benefit the independent partners by, for example, increasing sales through their own platforms and improving reach to consumers.

Taken together, analytical resources within the firms’ networks along with shared analytical routines allow firms to leverage the available data and analytics beyond the firm’s (or dyad’s) boundaries, thereby...
developing shared analytical capabilities. Such capabilities, in turn, extend the advantages offered by the internal analytical capabilities of individual firms.

7. Discussion and conclusions

This study addresses the development of analytical capabilities that extend beyond the boundaries of individual firms in business-to-business networks, particularly in consumer goods retailing. We define two types of network-level resources and five types of inter-firm routines that support the development of what we call shared analytical capabilities for the benefit of individual firms and their business networks.

7.1. Theoretical contributions

The theoretical contributions of the present study are fivefold. First, we introduce the concept of shared analytical capabilities to complement the internal analytical capabilities possessed by individual firms (Gupta & George, 2016; Saldanha et al., 2017). We define shared analytical capabilities as the resources and routines required to continuously define and extract insights from relevant data that extend beyond the boundaries of individual firms, and enable firms to take advantage of broader analytical resources within their entire business networks (McEvily & Marcus, 2005; Zhang & Watson IV, 2020). They are particularly helpful because the internal resources required for collecting and analyzing SD and UD are often scarce (Mikalef et al., 2020).

Shared analytical capabilities also allow firms to further exploit the analytical resources and capabilities they develop in-house by sharing them throughout their business networks. In addition to contributing to the success of entire business networks, such sharing may bolster the image and role of individual firms within these networks (Fehrer & Nenonen, 2020) and, in particular, strengthen their relationships with individual partners (McEvily & Marcus, 2005; Sena & Ozdemir, 2020).

Second, we define two key groups of network resources that contribute to the development of shared analytical capabilities (cf. Gulati et al., 2011): (1) access to data and analytics through partners, and (2) structures supporting data and analytics sharing. First, we propose that firms need to have an established network of business partners which they can leverage to gain access to unique data and analytics either through collaborations (cf. Corsten & Kumar, 2005) or by buying specialized services (Dekker et al., 2020). Second, we argue that firms also need to establish inter-firm and internal management structures that support the exchange of data and analytics as well as the use of the shared data insights on both internal (Gupta, Drave, et al., 2019) and network (Tong & Crosno, 2016) levels. Accordingly, the proposed taxonomy of resources provides novel insights on the main drivers of analytical capabilities that extend beyond the boundaries of individual firms.

Third, we identify five types of inter-firm routines that contribute to the development of shared analytical capabilities. Our interviews confirm the relevance of three types of already established buyer-supplier routines in the context of the development of shared analytical capability in consumer goods retailing: (1) unilateral routines, (2) quasi-unilateral routines, and (3) bilateral routines (see Alinaghian et al., 2020). Further, our data analysis reveals that unilateral and quasi-unilateral routines are relevant in dyadic collaborations between buyers/suppliers and third parties. Besides the dyadic routines, we also define two novel routines that extend to a broader set of partners: (4) multilateral routines and (5) joint multilateral routines. In addition to buyers and suppliers, multilateral routines include third parties that provide insights beneficial for the dyad. Joint multilateral routines involve independent partners that have common business interests and goals with the focal dyad. Taken together, collaborations with third parties and independent partners allow individual firms to gain access to wider network resources that span beyond the buyer-supplier dyad. Thus, this study sheds new light on how firms can share, co-create, and leverage analytical capabilities within their broader business networks.

Fourth, we systematically map barriers that can prevent firms from taking advantage of analytical capabilities within their business networks. Previous literature has identified four groups of barriers related to internal capability development (Day, 2011; Teece, 2007). We complement these insights with four additional groups of barriers related to the development of shared analytical capabilities (Dyer & Singh, 1998; Handfield, 2019): the challenge of finding appropriate business partners (Parida et al., 2016), lack of sufficient resource allocation (Combs & Ketchen, 1999), fear of opportunism (Williamson, 1996), and stagnation (Helfat & Peteraf, 2003). By identifying these barriers, we advance the understanding of the potential causes of firms’ ineffective use of data and analytics, which often hinders the application of analytics to decision-making (Day, 2011; Huang et al., 2018).

Finally, we present a systematic analysis of data uses and sharing by different actors in a retail network, including buyers (retailers), suppliers (consumer goods manufacturers), third parties, independent partners, and consumers. The resulting framework maps the internal and external flows of data and insights across the consumer goods retailing network, exemplifying the diverse actors’ roles and responsibilities in developing shared analytical capabilities.

7.2. Managerial implications

For managers seeking to take full advantage of available resources to develop and implement their analytical capabilities, we provide three key recommendations. First, we propose that in addition to developing analytical capabilities internally, firms should recognize the opportunities linked to data, tools, and analytical capabilities accessible through their business networks. By taking advantage of shared analytical capabilities, firms can overcome the limitations of internal resources available for collecting and analyzing data and gain access to a broader range of unique data and insights. This benefit is particularly useful for making use of novel types of UD, the implementation of which is less established and often requires remarkable investments. However, managers who rely on shared analytical capabilities in their decision-making must also acknowledge the potential barriers related to finding appropriate partners, lack of sufficient resource allocation, fear of opportunism, and stagnation, all of which can hinder the development and use of such capabilities.

Second, we provide consumer goods retailers and their suppliers with a map of possible partners and sources of information that can serve as a basis for shared capability development (Fig. 1). Consumer goods manufacturers obtain valuable category-level insights from retailers, and retailers learn from the product- and brand-related insights offered by their suppliers. Both sides can gain further valuable information from third-party firms, such as research institutes, media agencies, and consultancies. In addition, they may take advantage from collaboration with independent partners, who can share unique data and insights relevant to consumer goods retailing. To take full advantage of external resources within their business networks, we suggest that firms (1) develop routines for sharing data and leveraging data shared by other actors in the network, (2) communicate responsibilities and expectations with partners clearly, and (3) continuously update and nurture their partnerships (i.e., choice of partners) as well as data-related agreements and practices to accommodate rapidly changing needs and emerging opportunities.

Third, we advise managers to pay particular attention to two types of resources (Fig. 2)—(1) access to data and analytics through partners and (2) structures supporting data and analytics sharing. Our five-divisional typology of analytical routines (Fig. 3) involving collaborations in dyads (e.g., with suppliers/buyers or third parties) as well as with multiple partners further helps firms to define their roles, responsibilities, and relationships in developing shared analytical capabilities. In leveraging insights offered in this study, we urge managers to consider the development of shared analytical capabilities related not only to SD, but also...
those specific to UD, as many firms currently appear to overlook them.

7.3. Limitations and further research

This study builds on in-depth interviews with a set of 21 respondents which, although relatively extensive, limits the generalizability of our findings. We encourage more quantitative studies to confirm our conceptual findings. Such studies could also investigate the drivers of, and barriers to, the development of shared analytical capabilities, to specify their relative roles, and to identify potentially relevant boundary conditions. Additional studies could also address the ultimate impact of analytical capabilities, both internal and shared, on the performance of individual firms and their business networks.

Our focus on consumer goods retailing reflects the role of this industry as a forerunner in analytics (Balkhi, 2019; Hauser, 2007). Nevertheless, other industries, such as professional services or pharmaceuticals, may exhibit different patterns in their use of analytics, and face distinct challenges. Accordingly, we encourage research in various industries to detail how industry-specific characteristics might affect the development of shared analytical capabilities in diverse types of business networks. Such studies could further enrich our insights and provide industry-specific revelations for managers looking to advance their analytical capabilities.

Finally, the scope of our study is limited to the Nordic countries. Firms and business networks operating in these northern European countries have relatively good access to, and experience of, developing capabilities in analytics (Thoretz & Baptiste, 2021). The highly developed Nordic economies (Ventura, 2020), often referred to as “engineering countries” (e.g., Asheim & Coenen, 2005; Jaakkola, Möller, Parvinen, Evanschitzky, & Mühlbacher, 2010), are likely to offer firms the skills and resources needed to develop and implement analytical capabilities. Nordic countries are among the global leaders in the number of successful tech start-ups (Danske Bank, 2021), many of which focus on analytical techniques in particular (Tieto, 2018). Therefore, compared with firms in other geographical markets, Nordic firms are likely to have greater opportunities to access novel tools designed for working with diverse data and analytics. Studies conducted in less analytically oriented markets or emerging markets may produce different conclusions. The role of market characteristics in the development of analytical capabilities thus warrants further research.

7.4. Conclusion

In this study, we introduce the concept of shared analytical capabilities that allow firms to take advantage of data and analytics that are beyond firms’ boundaries but accessible within their business networks. Furthermore, we define resources and routines that contribute to the development of such capabilities and point to opportunities for the development of competitive advantages through collaboration with diverse business partners. Taken together, this study provides important insights firms and business networks can use to become more data-driven in their decision-making to further develop their analytical capabilities, leveraging the resources of their entire business networks.

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Declaration of Competing Interest

None.

References


