

Role of Customer Loyalty in the Application of Customer Data within Supply Chains

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Abstract

In this paper, we explore the drivers behind the use of customer data in retail supply chains. While past literature has primarily posited that power and trust among retailers and suppliers is created by the sizes of organizations, further determining how supply chains share and utilize customer data, we seek to extend this understanding. Based on our analysis, we identify end-customer behavior as an important attribute that determines decision-making regarding usage of customer data. The more customer data of individual end-customers is dispersed among retailers – i.e. the less loyal customers are – the more likely it is that the retailers share data with their suppliers. Building on this, our study enhances the current understanding on the sources for power and trust and discovers a new dynamic for why customer data is not always applied throughout the supply chains. It also identifies new aspects to consider for policy makers looking to support the development in the use of data that is highly important for many economies.

Keywords: Resources; Customer data; Power and Trust; Technological transformation; Supply chain management; Grocery retailing.

1. Introduction

Like many other business sectors, the grocery retailing sector – consisting of an entangled web of relationships among retail companies, suppliers, and consumers – has been going through dramatic transformations over the past two decades (Cuthbertson et al., 2023). One change that has had a major impact on the functioning of the sector and on how the different actors interrelate has been the move away from point-of-sale data to customer data (Paavola & Cuthbertson, 2021).

It has been widely acknowledged that customer data – typically collected by the retailer – is a resource that provides value not only for the retailer but also potentially for the entire supply chain. Once the entire supply chain can consider the same end-customers, it can operate much more effectively, providing various competitive advantages. Hence, the governments of many countries have begun both joint and independent programs seeking to support such development, which is highly important for national economies (Cuthbertson et al., 2023).

Past literature and research have attributed the challenges to this development as factors of the available technological resources, capabilities to implement and analyze data, or inter-organizational dependence created by the size differences among organizations. Hence, research and funding that seek to advance development have typically focused on encouraging inter-organizational collaborations through financial support or building technology-related capabilities through the subsidizing of investments or education.

In this research study, our initial aim was to create a state-of-the-art understanding of the global development in the use of customer data. Our aim was to identify factors that have hindered or supported the development at a global level. Once we began building our understanding of the past developments, we realized that decision-makers within retail sectors of different countries have taken very different decisions when seeking to apply customer data. More specifically, we noticed that different sectors with the same technological capabilities and competencies have made different decisions despite receiving support to drive the transformation further. We could not fully explain the varied decisions only by looking at the predominant theories.

To understand the background drivers, we decided to focus on the UK and Finnish retail sectors, as they represent complete opposites in the

transformation. While the UK sector has been a frontrunner in the global development, gaining major profits from customer data and the businesses built around it, Finland has been closely following the successful development in the UK but has not chosen the same path despite possessing the same technological capabilities. In both countries, customer data has provided retailers with significant power over the suppliers.

After conducting in-depth research on the reasons for these developments, our analysis concluded that one of the key barriers to Finland's transformation lies in the behavior of end-customers. While the customers of UK grocery retailers tended to shop with various retail chains, the customers of Finnish retailers were more loyal and shopped primarily with one chain. This led to a situation where individual Finnish retailers had a much fuller picture of the profiles of the customers that shopped with them. Having a more complete picture of customer behavior and knowing that end-customers are unlikely to switch stores provides advantages to retailers with regard to pricing. Similarly, the same information, i.e. knowing how the customer profiles of the various retail chains differ, would have enabled retailer-specific pricing for certain suppliers. To avoid this and the loss of subsequent negotiating power with their suppliers, Finnish retailers have been very protective of the data on their customers.

Our results have implications for both theory and practice. Past research has identified power and trust as key drivers behind data-sharing decisions among suppliers and retailers. However, past research typically attributes the power and trust to derive from the size differences among organizations that consider to share data. Our study extends this discussion and provides an alternative explanation related to customer loyalty. No matter how well the use of data is supported, transformative changes may remain unpredictable because of end-customer preferences. Building on this, our study proposes that future research in this context should aim to find new ways to encourage development in the use of data, which is vital to the economies of most countries.

2. Theoretical background

2.1. Data as a resource for competitive advantage

The resource-based view (RBV) has recently actively discussed the role of data in organizing various activities within and among companies.

Originally, it emerged to explain how firm-specific resources drive competitive advantage (Winter, 2000). During the past two decades, such resources have increasingly shifted to a digital format, providing even more efficiency for organizations. While 'traditional' industrial resources and their use are viewed as being limited by various factors, all the same restrictions do not apply in the digital format (Giustiziero et al., 2021). Most importantly, traditional resources are often restricted by physical production capacities. The cost-efficiency of replicating resources often decreases when scaling up, which makes fulfilling the full demand less cost-effective (Giustiziero et al., 2021). Furthermore, the transportation costs of physical goods to distant markets pose barriers for the use of resources. Due to such logistical challenges, the cost-efficient use of resources is often limited within a certain geographical distance. In comparison to industrial resources, digital resources are considered scale-free and fungible (Giustiziero et al., 2021). Hence, digital resources (such as data and software) can be replicated and shared limitlessly in real time, providing companies with new and scale-free business opportunities.

Due to these characteristics, advances in data analytics have transformed and continue to transform the competitive landscapes in most industries (Brynjolfsson & McAfee, 2014; Cusumano et al., 2019; Siebel, 2019). For example, the competitive advantage of most supply-chains increasingly rests on their ability to interpret and utilize different sources of data effectively (Sawhney et al., 2005). While communication- and connectivity-enabling technologies are considered important factors supporting the success of supply-chains, the decisions of individual organizations to implement digital technologies and analyze big data are playing an ever-increasing strategic role (Brynjolfsson & McAfee, 2014). Many organizations and organizational systems have adopted information technology to more effectively transfer, share, and exchange knowledge and information (e.g. Haas & Hansen, 2007). Increasingly, new forms of data are used in daily operations, from serving a customer, to manufacturing a product, to tracking inventory, and even to managing interorganizational relations. Overall, the advantages of data as a resource can be divided into three categories:

First, data can be used to inform better business decisions. Data is a critical input in almost all decisions. With the help of data, managers learn about an organization's human and financial resources, utilizing it to support daily decision-making. Data may be combined in almost unlimited ways in the search for new opportunities, market niches, process

improvements, and innovative products and services. (Levitin & Redman, 1998).

Second, data can also create business for organizations. The use of data is not only limited to decision-making. Companies increasingly create business models by sharing and analyzing data. Thomas et al. (2023) list data-supply, data-factory, data-service, and data-platform business models as potential ways to monetize data. Increasingly, data is becoming the new capital of the 21st century.

Third, data can be used to create power and trust. Although not much has been discussed in the RBV, data is increasingly intertwined with the creation of interorganizational power and trust (Slaughter & McCormick, 2021). For example, for supply-chain-wide interorganizational collaborations to take place, trust between organizations is critical in order to overcome the risks of being put in a vulnerable situation. Hence, the presence of data-enabled trust can improve the chances of successful supply-chain collaboration. For example, Fawcett et al. (2012) discovered that trust in supply-chains can act as a catalyst for collaborative innovation. On the other hand, Williamson (1971) discussed how the lack of trust may cause transaction costs to rise through misunderstandings and poor performance.

2.2. Data creates power asymmetries within inter-organizational relations

Despite its applicability and numerous benefits, the possession of data by one organization always creates power asymmetries within inter-organizational relations. In inter-organizational relationships, power can be defined as “the ability of one firm (the source) to influence the intentions and actions of another firm (the target)” (McCormack & Johnson, 2002). When new sources of data jolt the existing power and trust balance, new power asymmetries are created.

For example, new sources of data have transformed business relations in retailing. While marketing processes have traditionally relied on product data, new sources of customer data have supplemented the insights (Paavola & Cuthbertson, 2021). Furthermore, various omni-channel business models emphasize the need for this data and require the group of organizations providing the overall service to work together seamlessly (Gouthier & Schmid, 2003). With the advent of the digital transformation era, the realization of data power in enterprise performance has become even more important (Janssens, 2019). This leads to a situation where certain organizations possess data that is vital to the entire service ecosystem, creating power

asymmetries. Kenney et al. (2020) discuss the benefits of data sharing for efficiency, productivity, and sustainability in platform-based business models. In their study, they concluded that the owner of a successful data-sharing platform, e.g. the retailer, acquires significant power in a relationship with the organizations that decide to rely on the platform. Once the choice leads to a lock-in, which it often does, the reliant organization will inevitably be in the position of dependence when continuing its business (Cutolo & Kenney, 2021).

Power can be utilized in many ways. Sridharan and Simatupang (2013) discuss several forms of power, including control over rewards, punishments, information, resources, rulemaking, work assignments, and decision making. Although previous research indicates that big data and related technologies are power sources for enhancing firm performance (Yadegaridehkordi et al., 2020), some firms are still struggling to determine the value of this phenomenon (Segarra et al., 2016).

2.3. Decision to share data or to retain the power

Traditionally, both power and trust have arisen from/stem from the size of the organizations. For example, Kumar (1996) describes how power and trust dynamics have shifted among retailers and suppliers, as the bargaining power of the companies have grown alongside their organizational sizes. These identified shifts were realized in the 80s and 90s while many retail chains grew rapidly as global enterprises, in many cases surpassing the sizes of their suppliers and producers. However, at the turn of the century, and especially within the last 10 years, the value of volume-driving resources has reduced. Today, competitive advantage is being achieved less and less via huge sales capacities and acres of retail space (Treadgold & Reynolds, 2016). Instead, the ability to innovate and effectively use masses of data has provided the means of developing richer customer experiences. Consequently, “big data” has risen as another important asset in supply-chain management and related decision-making (Collier & Sarkis, 2021). Very often, the organization that possesses the best information on demand has an edge when negotiating with supply-chain partners. On the other hand, data can be shared to create trust in the interorganizational relationship. Overall, power and trust have been seen as the key drivers behind data-sharing decisions (e.g., Jain et al., 2014; Patnaik et al., 2020).

Organizations are faced with decisions to either share data or to retain the consequent power. In this paper, we analyze how and why similar resources have

led to very different decisions in terms of sharing data or keeping power. By understanding the dynamics behind these decisions, we seek to advance our understanding of the antecedents and circumstances that influenced these decisions. Hence, we ask the research question: What drives decisions regarding sharing data or keeping power?

3. Methods and data

3.1. Empirical setting

Our empirical setting is the UK and Finnish grocery retailing sectors. Although these countries have adapted the same technologies for the collection of customer data, they have chosen very different paths for utilizing it. In both sectors, the access to customer data has, since the beginning of its collection, been founded on customers' use of various loyalty cards. While before the launch of loyalty programs and the subsequent loyalty cards, retail analytics were based on point of sales (POS) data collected on what products were scanned (and sold) at different store locations, the retailers now increasingly investigate which customers buy which products. The shopping customers are identified as they swipe their loyalty cards at the till while making their purchases and simultaneously seeking to receive various loyalty benefits (rebate and other offers). Most households in the UK possess loyalty cards for all four biggest retailers (Tesco, Sainsbury's, Morrisons, and Asda), and most Finnish households possess a loyalty card to both of the two big retailers, S-Group and Kesko.

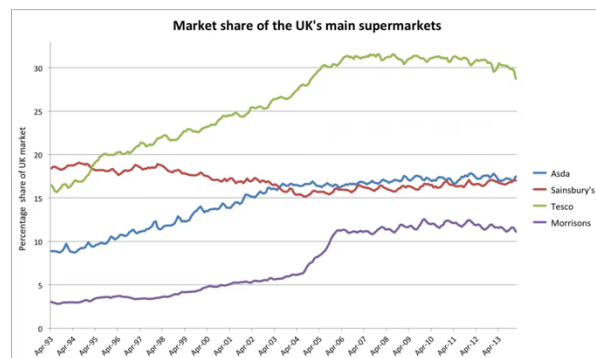


Figure 1: Market shares of UK's main supermarkets (source Kantar).

The development in both the UK and Finnish sectors began in the mid 90s. In the UK, Tesco was the frontrunner in the development as it introduced its loyalty card, the Clubcard, in 1995. Right from the

start, the use of the Tesco Clubcard was embraced by customers who were attracted to the 1% discount on their shopping bills. By the time the scheme had been running for 3 months, 5 million Tesco customers had used their Clubcards. Tesco's main rival, Sainsbury's, launched a competing program in 1996. Within 4 months of the launch, the program reached over 70% of Sainsbury's 9 million customers. As the price on data analytics slowly decreased, discounters Morrisons and Asda launched corresponding programs (UK's main supermarkets' market shares are depicted in Figure 1).

In Finland, S-Group pioneered a loyalty program launch in 1994 and was followed by the other main player in the market, Kesko, in 1997. The loyalty programs of both S-Group and Kesko reached 2.5 million users within a year (the population of Finland at the time was around 5 million). Similarly, as in the UK, discounters followed later once the prices of technologies had dropped. The only discounter in the Finnish market, Lidl, introduced a loyalty program in 2019 (Finland's main supermarkets' market shares are depicted in Figure 2). Overall, by 1997, loyalty programs enabled the identification of customers in well over half of the shopping transactions, both in the UK and in Finland. By 2014, the number in both sectors had risen to around 80%.

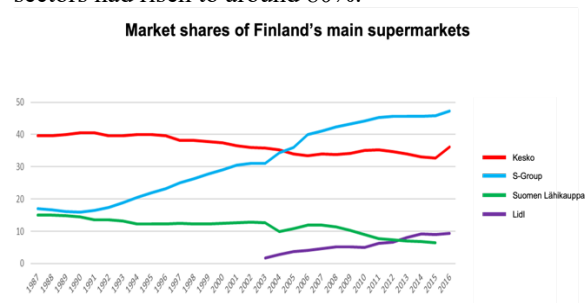


Figure 2: Market shares of Finland's main supermarkets.

Although customer data has been around and available from a large amount of shopping transactions in both sectors for several decades, the utilization of data has varied a lot. In order to answer our theoretical research question on what drives the decisions behind the application of customer data, we established an understanding of the reasons the UK and Finnish markets have taken very different paths in the application of customer data available to them.

3.2. Data collection and analysis

Our data collection and analysis was conducted in two phases. First, given our general interest in the

global development in the use of customer data, we performed an iteration between three main sources – the empirical material, our emerging observations, and the existing literature – in order to further refine our focus (Locke, 2001). Based on this work, we realized that different sectors in the global market had taken very different paths with regard to the use of data. The developments in the UK and Finnish grocery sectors especially caught our attention. While the UK represents a market that has pioneered the use of customer data throughout the supply chain, driving a transformation within the entire sector, the use of data in Finland has been limited almost entirely to the retailers that collect it. It also became apparent to us that, across time, Finnish retailers had possessed the same technological capabilities and were closely following the corresponding developments in the UK. Furthermore, it seemed that customer data had provided UK retailers with power over the suppliers, indicating that it was not only the power of suppliers that forced the retailers to share data. Despite the major benefits that the use of customer data had provided to the entire UK sector, the decisions regarding the use of data had been very different in the Finnish sector. As we were unable to understand the differences among the developments, we considered this worthy of further analysis.

In the second phase, we focused solely on the UK and Finnish retail markets, looking to understand why they had taken opposite paths to development. Since we were interested in why or why not customer data had changed the processes, practices, and values in the supply chains, a qualitative inductive approach seemed appropriate. Overall, we conducted 40 interviews (20 in the UK and 20 in Finland) with key protagonists at the different grocery retailers (Tesco, Sainsbury's, and Morrisons in the UK and S-Group and Kesko in Finland) and a number of their suppliers. Our sources had different managerial functions around the use of customer data within their organizations.

We designed a list of semi-structured interview questions that were used throughout the interviews conducted. We prompted our interviewees to reflect on the meaning of data in everyday life, how its use had changed everyday practices, and what had supported or hindered the development. The interviewees were asked to share their views on the phases of change that the field and individual organizations had undergone, to explain and illustrate why and how the changes occurred, as well as to discuss the cause-and-effect relationships within the sector. The interviews lasted between 30 minutes and 2 hours, and all interviews were transcribed verbatim.

Once we had completed the interviews, we compared them with each other as well as with the previously collected secondary data and, in cases of contradiction, sent the transcribed interviews back to the respondents for further clarification.

The analysis of our interviews revealed that an important factor influencing the decisions on data sharing was the shopping behavior of end-customers. This seemed to be something that past theories had not considered. While the customers of UK grocery retailers tended to shop with various retail chains, the customers of Finnish retailers shopped primarily with one chain. This led to a situation where the individual Finnish retailers (S-Group and Kesko) had a much fuller picture of the profiles of customers that shopped with them. Because of the difference in the way customers of these two retailers reacted to prices and promotions, while still remaining loyal, customer data would have enabled retailer-specific pricing for suppliers. To avoid this and the loss of subsequent negotiating power with their suppliers, Finnish retailers have been very protective of the data on their customers. Unlike in Finland, UK retailers are able to sell the customer data to their supply chains without losing their negotiating power. The prices of retailers' products are more aligned in the UK. Based on our data collection, we created a theoretical model on our key finding (Figure 3).

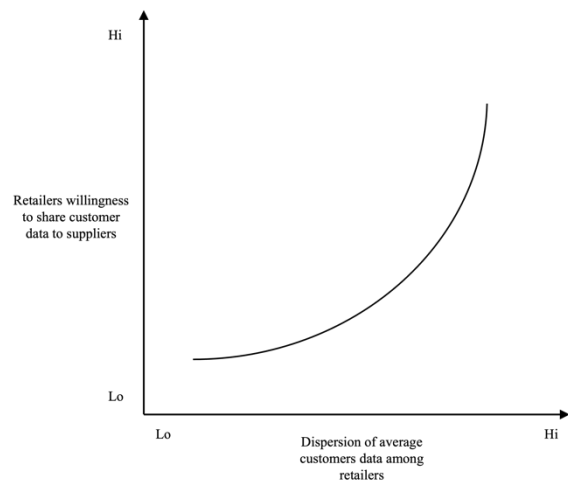


Figure 3. Theoretical model: Dispersion of customer data vs. willingness to share customer data.

4. Findings

In this section, we provide some illustrations of how customer data available to retailers has been applied within the UK and Finnish grocery retailing sectors at different levels. We discuss the use of

customer data by end-customers, retailers, and suppliers in that order.

4.1. Customer data usage by customers

When Tesco launched its loyalty program in the UK in 1995, 1% rebate was enough for customers in exchange for their customer data (Hunt et al., 2008). After most households had quickly become accustomed to using the Clubcard with Tesco, the same households also embraced Sainsbury's loyalty program a year later. Currently, UK households possess, on average, 3.5 loyalty cards with 4 of the main grocery retailers (Loyalty Guide, 2017). Although loyalty drives customer behavior, customers often visit more than one retail chain regularly. As was explained to us by one informant, by far the cheapest way to shop is to visit several shops instead of one and to select the items that are in discount in each one of them.

Over time, the use of customer data has grown in sophistication. According to our analysis, UK retailers can now increasingly adjust the pricing to various customer segments that often buy different products. Through tailored discounts, customer data may even enable customer-specific pricing of the same products, further helping the retailer to serve a variety of customers with a single store or website (Paavola & Cuthbertson, 2021).

After the launches of S-Group and Kesko's loyalty programs, the development began to take place in a very similar way in Finland – the majority of customers embraced the loyalty cards of both retail chains. However, although most households possess the loyalty cards of both big players, the Finnish market is more divided. According to recent research, customers tend to shop primarily with either S-Group or Kesko (e.g. Hoikkaniemi, 2022). Although consumers are actively on the lookout for discounts in the stores that they visit, discounts drive customers to change the decision of which shop they visit less often (in comparison to the UK market).

In Finland, such routine and loyal shopping behavior has been encouraged during the past years by retailers that enable customers to use their own shopping data. According to one of our informants, *"Finland is perhaps the most advanced country in the world in sharing of customer insights to the customers themselves."* The mobile applications of Kesko and S-Group often provide the means for customers to analyze, for example, what they buy, how healthy they eat, and how much money they spend. However, the corresponding applications in the UK would not succeed equally well in this. This is because data in the UK is often scattered among a number of different

retailers, giving them a less complete picture on the shopping habits. According to an informant, *"giving the data to the customer is a strategic choice made by the Finnish retailers to drive loyal customer behavior."*

4.2. Customer data usage by retailers

It is widely acknowledged that the retail sector in the UK is highly competitive. Retailers have, since the launches of their loyalty programs, focused on tailoring individual customer offers to maximize their perceived benefits. This is an important tool to compete within the sector. As explained to us by our sources, understanding how individuals react to promotions and prices is very important in such a competitive market. Analyses on customer behavior have identified a number of different reactions to discounts: some people are ready to switch their favourite brand to another one that is in discount, some are not. Some people might stock up the discounted products in their cupboards. Then some might cherry pick and to visit a number of different stores to get the products that are on discount. The reactions to different offers provide an important dimension to customer segmentation (most retailers have divided customers into over 20 segments).

We realized it was the promotional behavior of customers that made the biggest difference to the way data is used among the UK and Finnish sectors. In Finland, it seemed more unlikely that a customer would decide where to shop based on promotions. This drove the design and promotions into different directions within the markets. In general, the promotions in Finland have traditionally been more moderate.

Since 2001, customer data has not only been utilized in marketing processes, such as pricing, design of promotions, merchandizing etc., but also in collaboration with the suppliers. When asked about this relationship between retailers and suppliers, we were informed that traditionally it has been about *"How cheaply can I get the product?"* The suppliers have been developing their brands, forcing the retailers to buy as much as possible. According to our informants, it's been a power struggle between retailers and suppliers."

Customer data has provided retailers with power over the suppliers. *"Traditionally, it was the supplier that had the best knowledge on the overall demand of the products [with them supplying products to a number of retailers]."* However, now the retailers have begun to receive information on customers that has never been available to the suppliers. According to our informants, this has shifted the balance in, for

example, the (typically annual) price negotiations between the retailers and the suppliers, providing the retailer with additional power through knowledge.

In the early 2000's, when this status quo changed in the UK, when the first retailers realized that the best customer experiences are created through a joint effort among the retailers and the suppliers. The added power gave the retailers the possibility to monetize the new insights they possessed. In 2001, Tesco pioneered the selling of customer data to their suppliers, which turned out to be highly profitable for the retailer (Hunt et al., 2008). Consequently, Sainsbury's copied Tesco's data-business model in 2007, and all retailers in the UK currently create business by selling customer data to the supply chain. After it was realized that customer data was valuable to the suppliers, monetizing the data became an important business for UK retailers.

Although the new source for power would also provide business opportunities in Finland (with suppliers reportedly being eager to pay for access to customer data), Finnish retailers have not followed the example of the UK retailers. Unlike in the UK, most Finnish households shop primarily with one retailer, either S-Group or Kesko. According to several of our informants, if customer data was shared with the suppliers, it would provide a somewhat full picture of the consumption habits of individual customers (who shopped with each retailer). This information would simultaneously allow the suppliers to provide different prices for the products to the two big retailers. In order to retain the possibilities to drive down the pricing of suppliers (i.e. to get the products with the most competitive prices), retailers have not actively sold customer insights down the supply-chain. If the customer data was shared, *"this advantage would be lost for good."*

As explained earlier, Finland has taken a different approach in the use of technological capabilities and resources. Instead of sharing the data with the supply side, the data is utilized more on the customer side. In Finland, a lot of effort has been put into making the data utilizable for the customer.

4.3. Customer data usage by suppliers

After selling the data to the supply-chain partners since 2001, suppliers in the UK have increasingly benefitted from customer data. The real benefit comes from the possibility to talk about the same customers and customer segments. This has benefitted the supplier and enabled new business opportunities for the retailer.

As the retailer and supplier are able to work together, they can maximize the overall sales and

profits, simultaneously optimizing the costs. In several interviews, this was explained to us: The easiest example to understand that is a promotion: It's actually quite easy to design promotions that increase the sales of a particular product. The reality is, is that a lot of that is you sell more of one product, but as a result you sell less of another one.

According to our informants, the retailer actually doesn't really benefit from that. There might be some benefit because the customer gets a feeling that he or she has been provided a good discount deal. However, from the retailers point-of-view, the retailer end up selling the same amount of the products. And in the end of the day, sales is the key business of retailers. As a result of this, retailers and suppliers are increasingly working together to design and fund promotions that increase the total category purchase rather than just product sales.

In Finland, suppliers do not use complete customer data as retailers wish to retain their power in price negotiations. Similar to how UK retailers have been able to tailor their pricing to different customer segments, customer data in Finland would enable suppliers to tailor their pricing to different retailers, cutting down the margins of the retailer. Suppliers may buy certain analyses from the retailer, but complete data is not provided to them. Hence, unlike in the UK, data does not constantly flow into the supply chain.

5. Discussion and conclusions

5.1. Role of customer loyalty on supply chain-wide customer data use

Past research has identified power and trust as key drivers behind data-sharing decisions among suppliers and retailers (e.g. Jain et al., 2014; Patnaik et al., 2020). However, past research typically attributes the power and trust to derive from the size differences among organizations that look to share data. Our study extends this discussion and provides an alternative explanation. Our results imply that, in the UK, due to customers visiting more grocery retail chains on average, retailers can sell customer data to their supply chains without losing their negotiating power with the suppliers. However, in Finland, such data sharing would more likely lead to the loss of power. Similarly, as retailers are able to utilize customer data to serve different customer segments through tailored pricing, suppliers can utilize the same knowledge for pricing with regard to the retailers. Information on customers, whether it is information about the end-customer given to the retailer or information about the retailer given to the supplier, enables the growth of profit margins – a benefit that no one wants to lose.

Our comparative case illustrates how loyal shopping behavior may drive un-optimal use of customer data resources throughout the supply chain. Although the digital environment provides useful tools for the scaling of data use (Giustiziero, et al., 2021), technologies as such do not make data transfer happen. While past literature highlights the importance of using the same data throughout the supply chains (e.g., Kenney et al., 2020), the nature of the consumers plays a key role in whether the full potential of the customer data resource can be realized. As we have seen in our study, the sharing of data does not necessarily decrease the power of retailers in highly competitive markets. However, it does seem to do so in markets where customers are highly loyal.

Simultaneously, our research adds to the discussion on the role of data as a resource and as the new capital of the 21st century. Our study highlights that the value of data not only lies in its large quantity but, most importantly, in the quality and the completeness of the picture that it provides.

Overall, we conclude that loyal shopping behavior adds to the quality of customer data by decreasing its dispersion among retailers, hence decreasing their willingness to share data with the supply chain. Overall, loyal customer behavior may drive un-optimal use of data resources in the functioning of the supply chain.

5.2. Practical implications and future research

During the past decades, retailers have begun to realize the disruptive challenges created by the emergence of new retail technologies, especially in the online retailing space (Treadgold & Reynolds, 2016). New online retailing tools enable international entrants to bypass heavy investments in fixed assets and also circumvent many regulatory issues, increasing the competition within the retail sectors (Treadgold & Reynolds, 2016). By leveraging substantial economies of scale, cost-efficient international competition has created substantial challenges for established retailers. This has forced retailers around the world to look into the use of various digital technologies.

From the retailers' point of view, the Finnish sector has been successful in creating loyalty by making the collected customer data available to the customers themselves. This is an area within which most retailers globally can potentially develop. Our study implies that providing the customer a complete picture of their shopping behavior may support the creation of loyalty.

However, our research also indicates that such development may sometimes contradict the goals of making the entire sector more competitive. As we have seen, with retailing being one of the most critical industries in most countries, governments and the EU have begun funding several research projects to keep these vital sectors competitive. However, many of these research projects have remained at the general level of primarily focusing on developing technological capabilities and competences, sometimes leading to unintended consequences. The Finnish retail sector is a good example of this. Instead of the technological investments supporting the use of data within supply chains, the investments in technology have driven the creation of customer loyalty, slowing down the wider use of data. We have seen this happen, for example, via the launches of various customer-facing, loyalty-driving mobile applications.

Our research indicates that although government support typically aims to support development in the use of customer data at the sector level, the influence may sometimes be unwanted. Hence, we conclude that although they are all aiming for developments in competitive advantage, the contradicting views among companies and governments may end up slowing down the overall development.

Although our data is narrow and our findings can be viewed as propositions, they provide a strong indication that future research is needed within this space in order to find novel ways to open data sharing into the supply chains in sectors such as the one we studied in Finland.

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