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NEW RETAIL: AN EXPLORATORY STUDY ON END-TO-END VALUE CHAIN DIGITISATION IN CHINESE AND ESTONIAN GROCERY INDUSTRY

Master's Thesis

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I herewith declare that I have written the Master's thesis independently. References have been indicated for all the publications, claims, opinions and different sources by other authors.

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ABSTRACT

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NEW RETAIL, VALUE CHAIN, DIGITISATION, GROCERY, DIGITAL TRANSFORMATION, CHINA, ESTONIA

The concept of New Retail is a relatively recent development introduced in 2016. As it evolves from jargon into practice, there are increasingly more articles, reports and industry publications written on China than other parts of the world. Academic research on New Retail is still in its infancy, and there is a need to fill the gap by providing unique insights into the phenomenon which may add to the nascent literature. The purpose of this thesis is to investigate the application of the New Retail concept in Estonia by assessing the state of digital transformation in the grocery industry. In this exploratory study, semi-structured interviews and document analysis are employed to investigate China's Hema and five of the most prominent Estonian grocery retailers namely Coop, Maxima, Prisma, Rimi and Selver. The findings are established through a triangulation technique to facilitate the validation of data collected. The results reveal that the Estonian grocery industry is at multi-channel retail, aspiring towards omni-channel. While there are various channels to shop and even more innovative ways to receive products, customer touchpoints operate within separate silos. Findings also indicate that digital transformation in the Estonian grocery industry has been driven by business processes instead of customer experience. Opportunities remain for retailers to move from a product-centric business model to one that is customercentric. As a theoretical contribution, this paper identifies a set of drivers and barriers in the shift to New Retail, and its potential benefits to Estonian grocery retailers. This research will benefit retailers and eCommerce operators, particularly Estonian companies that are embarking on a digital transformation to deliver value to their customers.

INTRODUCTION

New Retail is a term coined by Alibaba co-founder, Jack Ma that defines an integrated omni-channel retail business model where product innovation, customer acquisition, customer service, merchandising, payments and logistics are all digitised (Fannin, 2018). While Alibaba calls it New Retail, other Chinese retail giants have also established their own iterations. Tencent calls it Smart Retail and JD refers to it as Unbounded Retail. The various definitions and permutations share a commonality; they fundamentally stress on improving retail's operating efficiency.

Traditionally, the divide between eCommerce and brick-and-mortar stores was often seen as a zero-sum game, where the success of one meant the downfall of the other. New Retail defies this notion. It emerged as a new concept that capitalises on both online and offline strengths to deliver a seamless and compelling customer experience by building a unified retail ecosystem that features the customer at the centre (Biggs, et al., 2017). In other words, New Retail merges "bricks and clicks" where digital and physical touchpoints work together seamlessly. This revolutionary business model is a result of China's customer-focused retail innovation and fast adoption of new technologies. It became the world's largest and first trillion-dollar eCommerce market with sales in 2017 reaching USD 1.149 trillion (Tong, 2018).

Likewise, in Estonia, the retail sector has been one of the healthiest in Europe with several new shopping areas being opened in recent years (Hille, 2017). According to Statistics Estonia, the total retail sales revenue in 2017 was EUR 6.32 billion, however only EUR 239.4 million came from eCommerce. Interestingly, while normal retail grew by 6%, the growth of eCommerce was 37% compared to the previous year (Väät, 2018). eCommerce revenue is expected to show an annual growth rate of 9.3%, resulting in a market volume of EUR 435 million by 2023 (Statista, 2019). This upward trend along with customer expectations to switch between offline and online effortlessly signal a huge potential for retailers to shift

from traditional business models to an integrated omni-channel experience. With Estonia being at the global forefront of both Internet users and the development of parcel terminals as well as courier network (Europa, 2017), the adoption of New Retail may offer opportunities for Estonia to thrive in the future of commerce.

Evidently, digital innovation constitutes a key element for competitiveness in the Chinese and Estonian retail industry. This is unsurprising as the former has a reputation for being an emerging tech superpower and the latter was named the world's most advanced digital society (Kynge, 2018; Reynolds, 2016). However, while the New Retail phenomenon in China has been widely documented, few studies have been published on similar progress in Estonia.

The concept of New Retail is a relatively recent development introduced in 2016. As it evolves from jargon into practice, there are increasingly more articles, reports and industry publications written on China (Ye, et al., 2018; Hardaker, 2018; Zhang, 2018). In Europe however, retailers are only beginning to understand New Retail. According to Ahmed and Kumar (2015, p. 1), "a number of studies have investigated motivations and challenges in multi-channel retail (Zhang, et al., 2010), customer buying behavior (Neslin, et al., 2006) and customer experience (Mitra and Fay, 2010). However, various channels under multi-channel retail are operating in silos and there is a lack of seamless integration (Zhang, et al., 2010; Madaleno, et al. 2007)". Gallino and Moreno (2012, p. 4) state that "given that online-offline integration is a recent phenomenon, it is not surprising that there is limited literature that studies it".

Academic research on New Retail is still in its infancy, and there is a need to fill the gap by providing unique insights into the phenomenon which may add to the nascent literature.

This research will benefit retailers and eCommerce operators, particularly Estonian companies that are embarking on a digital transformation to deliver value to their customers.

1. THEORETICAL FRAMEWORK

1.1. Literature review

The literature obtained focuses on two inter-related areas of this research; value chain and digitalisation. First, this section presents the evolution of value chain and how digital technologies increasingly disrupt age-old sources of value. Next, the digital transformation of retail and key concepts of New Retail are discussed.

1.1.1. Value shift in the digital age

Digitalisation creates value by connecting people and machines throughout the value chain in a new digital thread (Nanry, Narayan and Rassey, 2015). Value is at the heart of every business. Understanding how a company creates value and looking for ways to create more value are critical to developing a competitive strategy. Michael Porter discussed this in 1985 in his book "Competitive Advantage", in which he introduced the concept of the value chain, defined as a set of activities that an organisation does to create value for its customers.

According to the Porter's value chain model, any business organisation has at least two value chain drivers; primary activities and support activities. Primary activities are facilitated by support activities, such as firm infrastructure, human resources management, technology development and procurement (Porter, 1985). Traditionally, support activities were regarded as consuming value and resources rather than creating value, therefore information technology (IT) was not seen as a clear and direct contribution to the value chain of business organisation (Daraban, 2018).

Due to the paradigm shift resulting from the information age, in which data, information and knowledge are the main commodity (Perry, 1999), IT has moved from a supporting function of yesterday's value chain, to a critical component of today's. Information technology is now prevalent in the value chain since every

activity uses embedded information technologies (Elena, 2017) and that has allowed business support activities to play a decisive role in a company's value creation process (Daum, 2001).

A natural evolution of Porter's model is Value Constellation proposed by Normann and Ramirez (1993) which states that in today's rapidly changing competitive environment, strategy is no longer about positioning a fixed set of activities along the value chain. While the old linear model does not account for the nature of alliances, competitors, complementary and other members in business networks, Value Constellation focuses on the value-creating system itself. A constellation of actors in the business network with different assets and competencies work together to co-produce value (Vanhaverbeke and Cloodt, 2005). They form a symbiotic transactional web where each participant in the network may create and consume value, just as how data has come to be the global currency in this digital age (Eggers, 2019).

Adner and Kapoor (2009) share the same view of interdependency in value creation wherein they point out that for a company to successfully innovate, it depends on the efforts of other innovators in its environment. In the same vein, Vertical Architecture introduced by Jacobides and Bilinger (2006) believes that if a company's value chain is open or permeable, resources can be utilised more efficiently, market requirements and capacities are identified more easily, and the creation of more innovation platform is encouraged.

In an alternative view, the term Value Grid was developed to highlight the fact that although the value chain allows managers to formulate profitable strategies and coordinate operations, innovation can be suppressed, as innovation often originates outside a traditional, linear perspective (Pil and Holweg, 2006). Pil and Holweg think that the greatest opportunities for innovation are to break free of linear chain thinking and view value creation from a multi-dimensional grid perspective. The Value Grid framework allows the company to increase its performance in new ways; vertical, horizontal and diagonal. "Whereas the vertical paths explore opportunities upstream and downstream from the adjacent tiers in their value chain, the horizontal paths describe the opportunities from spanning similar tiers in multiple value chains, and in the diagonal paths, companies look across value chains and tiers for prospects to enhance performance and mitigate risk" (Vugt and Jacobsen, 2017). Figure 1 summarises how business model has been impacted by digitalisation:

Figure 1. A shift in the location of value creation. Source: Composed by authors (2019) based on TPA Global, 2018.



The value shift can also be seen in the four different types of business models defined by Libert, Beck and Wind (2014); (i) Asset Builders, (ii) Service Providers, (iii) Technology Creators, and (iv) Network Orchestrators. The models are differentiated by the underlying technology that was leveraged to develop them. Asset Builders, for instance, emerged from the Industrial Revolution when factories powered business. Service Providers developed in the mid-1970s, when companies started to service what they sold. Technology Creators flourished during the 1990s' information revolution. And Network Orchestrators are the companies that have embraced technologies, such as the cloud, analytics, social networks, Internet of Things and mobile technologies, to create value through leveraging unique information, and by orchestrating value generation by network participants. Although a company's business model may not reflect when a particular company was founded, it does represent what technologies and methods it uses to create value (Libert, Beck and Wind, 2014).

In today's digital world, value is provided by connectivity and the creation of a platform for participants to interact and socialise with other members is the perfect strategy (Valiente, 2017). Consistent with this view, Libert, Beck and Wind (2014) call for companies to embrace network-based business models.

1.1.2. Digital transformation in retail

The increased use of new technologies such as smart mobile devices and social networks as well as the growing importance of technological solutions in-store create new opportunities for retailers (Dimitrova and Rosenbloom 2010; Lewis, et al. 2014; Schramm-Klein, et al. 2011; Zhang, et al. 2010). These changes have had a significant impact on business models, sales channels and, above all, customer behaviour and demand (Backhaus and van Doorn 2007; Brynjolfsson, et al. 2013; Dimitrova and Rosenbloom 2010; Verhoef, et al. 2015).

The development in the variety of channel formats and the progression from single, to multi, then to omni-channel has made shopping and buying more convenient for customers.

Single-channel retail focuses on only one sales channel, where a company owner sells either at a physical store or an online store. This model was effective back in the day as it helped to minimise expenditure and drive growth in sales (Thum, 2019). Then the digital revolution came about, and multi-channel retail was born.

Multi-channel retailing is the practice of selling merchandise or services to customers on more than one channel (Zhang, et al., 2010). According to Neslin, et al. (2006), it encompasses "the design, deployment, coordination, and evaluation of channels to enhance customer value through effective customer acquisition, retention, and development" (p. 96). This model offers customers various shopping channels e.g. physical shop and online shop. However, its multiple sales channels never interact with each other. For example, an item bought online cannot be returned in store. This suggests that the multiple channels are not interconnected. In fact, the channels are handled separately and generally by various teams, each with its own agendas and objectives (Mirsch, Lehrer and Jung, 2016). Furthermore, there is no channel integration and therefore no exchange of data across channels (Lazaris and Vrechopoulos, 2014). The focus of

multi-channel management is on each channel as a separate entity (Beck and Rygl 2015; Verhoef, et al. 2015).

Omni-channel retailing represents an evolutionary step of the multi-channel. Compared with the two previously described concepts, the line between online and physical channels is blurred (Brynjolfsson, et al. 2013; Trenz, 2015). Customers use all channels (store, catalogue, call centre, web and mobile) simultaneously, not each one separately (Ortis, 2010). For example, customers would go online using their smartphones while being at the physical store for price comparison in order to negotiate prices with the physical store's sellers. An important characteristic of omni-channel retailing is data integration. Channels and touchpoints interact with one another, allowing a seamless customer experience, a unique brand image, data sharing and overall management (Mirsch, et al., 2016). As presented by Dijk, Laing and Minocha (2005), multi-channel management is complex and dynamic, as retailers have to deal with multi-channel integration and coordination, both at the front-end (e.g. responsive design) and at the back-end (e.g. online and offline data integration) of their operations. If a company is able to align their physical and electronic touchpoints with their multichannel strategies, then they can create customer insights and provide an enhanced shopping experience at all times (Brynjolfsson, et al. 2013; Trenz, 2015). Figure 2 below illustrates the discussed retail trends:



Figure 2. Retail trends. Source: Composed by authors (2019) based on Thum, Y.L. (2019).

In recent years, with the development of the Internet and eCommerce industry, retail formats have undergone another profound change. In October 2016, Alibaba co-founder, Jack Ma introduced the concept of New Retail at the Hangzhou Yunqi Conference (Ko, 2016). The core of New Retail is that "the company relies on the Internet to upgrade and transform the production, circulation and sales process of goods through the use of advanced technologies such as big data and artificial intelligence, thereby reshaping the business structure and ecosystem, and integrating online services, offline experience and modern logistics to form a new retail model" (Zhang, 2018). In short, the shift from single, multi and omnichannel retail to New Retail is characterised by data-driven and customer-centric approach, enabled by digitalisation through the entire value chain.

New Retail is not just transforming customer engagement but the entire value chain. It is one step further than the omni-channel approach. In the previous models, the value chain is a series of largely discrete, siloed steps taken through marketing, product development, manufacturing, and distribution, and finally into the hands of the customer. New Retail brings down those walls, and the value chain becomes a completely integrated ecosystem, fusing both online and offline commerce to deliver a seamless, compelling customer experience (Liu, et al., 2017).

According to a Deloitte report (2014), supply chain in the New Retail model is smarter, more flexible, multi-purpose and can orchestrate demand-based inventory product development that shortens time to market. Since the entire retail journey is digitised, inventory planning, warehousing, logistics and procurement are flexible and responsive (Schrauf and Berttram, 2016). Supply chain becomes a business service function that is capable in responding to customer's demand and request, instead of a supporting function as seen in traditional models (Deloitte, 2014).

The use of cloud, mobile, big data and other technologies improves operational efficiency and promotes innovation by integrating digital and physical worlds seamlessly (Moghe, 2018). The merge of virtual and physical marketplaces increases the number of customers and the amount of activity dramatically.

In what Towson (2018) describes as the Network Effect, the more data from transactions, browsing and other activities; the more personalised and engaging the experience it is for customers, which in turn enables more spending and engagement.

To rise above competition and dominate retail, the key is to focus on the customer, to understand customer demand in the new era and to adapt flexibly (Ge and Li, 2018). In the world of New Retail, products and delivery are inspired by customer data and they are highly personalised (Biggs, et al., 2017). New concepts created by retailers attract the attention and curiosity of customers, which then inspire another innovation and discovery cycle (Biggs, et al., 2017). Moreover, blockchain-based cloud network enables retailers to offer sourcing traceability which can build trust with customers (Hsu, 2018).

In a report by Pricewaterhouse Coopers (2018), New Retail is characterised by three key areas; (i) genuine consumer-centric operating models, (ii) digitisation and integration of the entire retail value chain, and (iii) using data to enable smarter, faster decision-making and business impact. Figure 3 explains PwC's New Retail digital transformation framework:



Figure 3. New Retail digital transformation framework. Source: Composed by Pricewaterhouse Coopers, 2018.

PwC's New Retail framework involves an operation model that puts customer at the centre. Apart from front-end marketing and sales channels, full stack digitisation covers product development, supply chain, procurement and production. This makes data play a key part in the decision-making process in the New Retail model (Lai, 2018).

In every corner of the retail business, disruptive businesses and technologies are emerging. The competitive advantage is no longer in the hands of those who can master eCommerce technology, but of those who understand how to create truly pan-digital organisations (Carter, 2018). If digital retail such as eCommerce channels is leading the market, then the future is moving toward a New Retail era that will see end-to-end digitisation of the value chain (Lai, 2018). As shown in Figure 1 and 2, digitalisation has influenced value creation, value delivery and business models. Given limited empirical studies on New Retail, the framework by PwC is valuable and highly relevant to explore and understand the application of New Retail by assessing digital transformation of the value chain.

1.2. Research design

This study focuses on the grocery industry for two main reasons. First, grocery stores are experiencing some of the most rapid changes in recent years where increasingly more automation and use of technology are visible (Shein and Lewis, 2018; Baird, 2018). Second, groceries amount to a significant 40% of the total retail sales in Estonia (Elmik, 2017). Moreover, with Alibaba Group CEO, Daniel Zhang calling Hema the prime example of New Retail (Choudhury, 2017), the prolific retailer became a fascinating object of study. On the Estonian front, five of the most prominent grocery retailers were analysed namely Coop, Maxima, Prisma, Rimi and Selver. Purposive sampling was used for interviews with representatives from the retailers who possessed practical insights in the research area.

1.2.1. Purpose of the research

The purpose of this thesis is to investigate the application of the New Retail concept in Estonia by assessing the state of digital transformation in the grocery industry.

1.2.2. Research questions

- What is the current state of digital transformation in the Estonian grocery industry?
- What are the drivers and barriers in the shift to New Retail?
- What are the possible benefits of New Retail to Estonian grocery retailers?

1.2.3. Qualitative research

There is a lack of previous studies that provide a better understanding about the New Retail landscape in Estonia. Considering this, the exploratory research design is believed to best contribute to the development of this thesis, as its main purpose is to build a better understanding of the phenomenon and help lay the groundwork that will lead to future studies of retail value chain digitisation. In this research, two data-gathering methods were employed: semi-structured interview and document analysis. A triangulation technique was then used facilitate the validation of data collected through the two different methods to study the same phenomenon (Denzin, 1970). Figure 4 is an illustration of the empirical research steps:

Figure 4. Three-stage model of empirical research. Source: Composed by authors based on Denzin, 1970.



1.2.4. Document analysis

The research focusing on both the New Retail development in China and Estonia was approached by conducting an extensive document analysis. Document analysis applies historical, written sources as the basis for research (Bowen, 2009). It refers to a systematic procedure involved in the reviewing or evaluation of data from the examination of documents and records relevant to a specific study (Bowen, 2009). The researchers looked at a variety of document types written on Hema and the five selected Estonian retailers that were useful as empirical materials such as publications from organisations, official reports, printed and online journals. Documents can be analysed through a quantitative content analysis that focuses on counting words and phrases, or through a more sophisticated, interpretive approach that focuses on the language used and the context in which the documents were developed. The latter approach was used in this study, referred to as qualitative or interpretive content analysis. The implications of the study help raise and specify questions to inspire continuous academic research on New Retail and provide insights which could be a valuable addition to the existing knowledge base (Bowen, 2009).

A number of limitations are inherent in document analysis. Given that most documents are produced for general use, they do not provide sufficient detail to answer a research question. In addition, language barrier and the availability of English translated documents can make accessibility and retrievability difficult. As a result, biased selectivity (Yin, 1994) could result from the choice of publications that corporations chose to make public. Despite these limitations, "given its efficiency and cost-effectiveness in particular, document analysis offers advantages" (Bowen, 2009, p.31) that can serve the research purpose.

1.2.5. Semi-structured interviews

To address research questions in the Estonian context, interviews were conducted. There are three types of interviews for data collection; structured, semi-structured and unstructured. Structured interviews require the researcher to ensure that all interviewees have standardised questions in order to obtain comparable information suitable for quantitative analytical procedures. Unstructured interviews do not involve asking predefined questions to interviewees, but often start with a rather general question that gives the researcher more flexibility to raise and pursue new problems (Saunders, et al., 2007). Semi-structured interviews are a combination of the two above and allow the researcher the flexibility to pursue an idea in a response in more detail. Semi-structured interviews were used in this research.

It complements the document analysis method by adding constructive rapport, high legitimacy as well as allowing deeper discussions of the issue at hand (Adams, et al., 2014). Furthermore, the geographical location of the researchers and accessibility to the companies operating in the country made both face-to-face and VoIP calls (voice over Internet protocol) such as Skype for Business interviews feasible.

While interviews allow for deeper insights into the topic, they also posit shortcomings (Adams, et al., 2014). In order to overcome possible limitations such as the risk of misunderstanding questions or answers, and the prejudice that might lead to false information, selection of the samples was carefully conducted and the funnel method of asking follow-up questions was deployed (Adams, et al., 2014). The researchers also took into account the context the interviewees were

in, their motivation and the coherent value of their responses to the study (Morgan, 1988). The researchers in addition, produced a broad framework and interview guide before the interview in order to help maintain a certain focus during the process (see Appendix 1). In congruence, both research methods would help derive value that contribute to answering the research questions despite limitations as discussed above.

1.3. Results

Data from this research were obtained through document analysis of Hema, Coop, Maxima, Prisma, Rimi and Selver, followed by semi-structured interviews with four of the five Estonian grocery retailers who agreed to participate on condition of anonymity. All interviews were conducted with a representative, except one which was attended by a team of cross-functional members. Key findings are categorised into five components of the value chain as depicted in PwC's New Retail digital transformation framework.

1.3.1. Sourcing and production

The interviews reveal that Estonian retailers automate most of the steps in the sourcing process. Using EDI (Electronic Data Interchange), paper-based and email exchange of business documents is eliminated. In the process called 4-Doc, purchase orders, delivery notes, confirmation receipts and invoices flow between the retailers' and suppliers' internal system. The computer-to-computer delivery process reduces unnecessary work and bring direct benefits to both parties such as reduced cost, increased processing speed and reduced errors. Invoices are much more accurate as they are drawn upon confirmation of receipt. Confidential information such as prices is also better protected since they are not displayed on delivery notes. Compliance with the 4-Doc delivery process requires suppliers to change both internal processes and IT systems. Due to this, not all suppliers have made the initial investment to join the system, therefore procurement is still being done traditionally.

Hema utilises a centralised cloud solution that includes the solicitation of bids from various suppliers. The system automates and tracks all the steps from RFQ (request for quotation) and RFP (request for proposal) documents. Responses from suppliers are then automatically analysed without having to comb through reams of spreadsheets comparing terms and pricing. By leveraging automation in the cloud, the requisition process is quicker and more streamlined as procurement contracts can be built using a set of established policy and requirements used to select suppliers.

Estonian retailers are realising the growing demands from customers for more product information especially about the food they eat. People are becoming mindful of allergies such as lactose and gluten and want to shop for the foods that meet their specific requirements at grocery stores. All of the five retailers have product information published on their eCommerce websites and two have also made it available on mobile apps. Information offered includes product description, list of ingredients, nutritional value and country of origin.

Hema provides customers with a food provenance feature on its mobile app. Customers can see the farm-to-store journey for over 3,000 items in nine categories including meat, seafood, rice, tofu, soy products, fruits, vegetables, poultry, eggs, dairy and cooking oil. The food-tracking system is developed based on blockchain technology that uses an immutable central ledger to achieve endto-end traceability and transparency. By scanning the unique QR codes tagged to each product, information appears on the Hema app such as the place of origin, dates of production or harvest, delivery dates and storage temperature throughout the journey. Photos of the farms, the distributors' business licenses and food safety certificates are also available. Customers shopping from home can access the information on the mobile app as well.

1.3.2. Supply chain

One out of the five Estonian retailers operates a hi-tech warehouse led by AI (artificial intelligence) robots. Automation begins as soon as the goods are ordered. The supplier sends an advanced notice to the central intelligence system when the order is ready and prints out pallet tags from the supplier portal. Data collected upon inbound receipt of pallets is instantly and accurately captured and transmitted in real-time, allowing the retailer better visibility into available stock and automated routing of inventory to the most appropriate storage medium. Using predictive analytics, they can proactively align fulfilment resources to

optimise delivery processes, re-route overstock or additional inventory to replenish a store with higher demand. Other retailers interviewed who do not have such sophisticated technologies in place make use of more common automation solutions such as voice-directed picking, RFID (radio frequency identification) scanning and WMS (warehouse management system).

The traditional flow of goods from supplier to warehouse to store is observed in all five Estonian retailers. Only two combine traditional warehouse with an eCommerce fulfilment centre. Picking eCommerce orders for the rest is done at their largest hypermarkets. On demand planning, separate in-store and online forecasts are generated by the respective category managers, except for one retailer who has a dedicated eCommerce arm that manages the online business as an independent unit. The traditional time-series forecasting by means of statistical tests is most commonly used to model different kinds of sales patterns such as trends, seasonality and weekday-related variation in demand. While the planning system is coupled with the underlying transaction systems, none has access to realtime data. Sales information is also not willingly shared with suppliers.

Hema physical stores are its warehouses and fulfilment centres. It operates a streamlined supply chain without the multiple layer wholesale and complicated distribution systems commonly found in traditional retailers. Its supply chain and logistics are digitised using Aliyun (cloud computing), Alipay (mobile and online payment platform) and Cainiao (logistics platform), all exist within the Alibaba ecosystem. Hema sources directly from farms and suppliers around the globe for its imported fresh products. It makes use of China Eastern Airlines and Frutacloud, chartering flights to transport fruits, vegetables, seafood and meat from farm to table in 24 to 48 hours. The data from both online and offline customers are combined in their back office using big data and algorithm techniques to improve purchasing with more accurate demand forecasts. This also enables each Hema store to tailor its stock based on the spending habits of those who frequent the shop. Product replenishments are done in small batches each time according to real-time sales performance which it shares with its suppliers to help their businesses and improve overall store operations.

1.3.3. Product development

Two out of the five Estonian retailers interviewed for this study have in-house product development teams. Sales performance and category trends inform the human decision-making on what category of product should be developed and launched in the market. Data is amassed from POS (point-of-sale) terminals and TPS (transaction processing systems) that track inventory and purchases made by cash and credit or debit card in stores and online. Only one of the product development teams deepens its understanding of customer insights by establishing an online survey for customers who return its private label products. All of the Estonian retailers collect customer-specific data by enrolling them into loyalty reward programmes either by digital or paper format. Enrolled customers receive a physical membership card with unique identification numbers. Customer insights are established using advanced analytic techniques, specifically statistics and predictive analysis to seek out future product trends.

Hema's product development team uses big data and AI-powered analytics to optimise its in-house product testing and launching; Hema Daily Fresh (private label products), Hema Taste (ready-made meals in partnership with celebrity chefs), and Hema Plus (a line of bulk home goods and supplies). At Hema, mobile device technology is a primary data collector as its app drives the discovery of customer preference and delves deeper into purchasing behaviour. Hema app gives access authorisation to sensors within the mobile device (e.g. global positioning system and camera). When customers enter the store, iBeacon (a location and proximity marketing software) sends personalised offers directly to their smartphones while mapping interaction points between products and customers. Electronic shelf labels generate digital logs as customers use their smartphone camera to scan product barcodes. Synchronising in-store and eCommerce data allows Hema to get an accurate understanding of customer needs which it uses to optimise product offerings. Advanced technology is deployed to make sense of the data through big data computing. The application of big data, AI and machine learning reveals patterns, trends, and associations relative to customer preferences.

1.3.4. Marketing

All Estonian retailers promote special offers by either flyers, postal mail, eNewsletter or television advertisements. At the store, price offers for loyalty card members are displayed on shelf (alongside non-loyalty card member pricing). Two out of the five Estonian retailers use online advertisements to promote campaigns. One of them uses online tracking tools to measure effectiveness of the advertisements. Best-performing ones are then optimised for social network sites such as Facebook, Instagram, and Vkontakte. Only one retailer directs customers to its eCommerce website using the online advertisements.

Hema leverages on a strategic alliance network of online platforms (e.g. Taobao, Tmall, Youku, and Koubei) for its marketing efforts. These platforms have highly engaged customers interested in shopping, networking, and entertainment. Data harvested through these channels are used to generate real-time discounts and deals. Converting new customers and re-engage segments occur simultaneously based on browsing and buying patterns within the network. At the store, Hema's campaign offers are emitted via Wi-Fi to customers' mobile devices using iBeacon technology.

Inside the Hema app, there are entertaining short-form videos including cooking tutorials. Customers can like, share, and review products that they buy. The app also makes personalised recommendations, recipes suggestions, and stores purchase history to inspire customers to buy more. Additionally, there are chatbots to facilitate conversations between Hema and customers.

1.3.5. Sales channels

Only one of the five Estonian retailers does not own an eCommerce channel. Two operate a website, one has both a website and a mobile app, and another list products on its delivery partner's mobile app. The most common home delivery service method is via trucks and vans that involves the courier picking up a shipment from the store or the warehouse and delivering it to the customer within the desired time frame. Same-day delivery is available provided customer completes the order before a specific time, which ranges from 12.00pm to 4.30pm. Delivery via Starship Technologies robots is also offered by a retailer, although service area is limited to a district. Customers make purchases via the delivery company's app and have the flexibility to choose where to deliver the goods, either to home, work or any other location within the scope of coverage. The robot is capable of carrying the equivalent of two grocery bags and completing deliveries within 30 minutes from the store. The robot's location can be tracked in real-time using the app and unlocked the same way when it arrives.

To meet demands of customers who prefer to collect the groceries themselves, delivery to parcel terminals makes it possible without them ever having to enter the store or keeping to the store's opening hours. There are two types available depending on retailer. The first type is a regular locker installed around strategic locations in Tallinn by delivery company, DPD. The second type is a food cabinet that can keep goods at the right temperature zones; ambient, chilled and frozen, which is owned and run by the retailer itself. They are placed at petrol stations along the main Tallinn motorways. The cooling and freezing function allows both fresh fruits and vegetable, dry ingredients and deep-frozen products to be delivered in the same order. In both solutions, customers get a code by SMS that they input on a touch screen for the doors to open.

Besides the physical and online stores, one retailer also launched a store-onwheels to service customers in more remote locations. The bus that carries about 1,000 different products is meant to provide those who do not have transportation into the city with daily necessities. If a product is missing from the assortment, customers can place an order, and have it delivered the next time the bus visits. It travels six days a week and makes over 100 stops. Customers can follow the journey of the bus on the website or call a dedicated phone number to find out its whereabouts.

At the physical stores, stationary self-checkout system is common among all retailers. Customers move the product across a bi-optic laser and a security scale ensures that the scanned item is truly the item it claims to be. A user interface guides them through all of the processes. Meanwhile, mobile scanning solutions are available at two retailers where customers use a handheld device to scan products throughout their shopping trip. A screen on the scanner shows all scanned products plus the amount and price in an article summary. To pay, customers then proceed to a self-payment kiosk.

One of the five retailers currently accepts mobile payment, offered by a provider called mTasku. Also, only one retailer operates 24-hour stores in selected locations.

In contrast to traditional retailers, Hema chooses its physical store locations by analysing the number of active users of Alipay and their purchasing power. It then establishes customer information through Wi-Fi probe and RFID to obtain customers' age, gender, shopping preference and shopping frequency. The store serves three core functions; supermarket, restaurant and fulfilment centre, all tied together by Hema's own native app.

The part-retail theatre, part-dining experience, and part-logistics business create a compelling proposition that turns retail into entertainment. Every Hema store comes with customer dining areas. A large portion of floor space is dominated by fresh products including an expansive live seafood section. Once customers are done shopping, they can have Hema's large team of cooks prepare the produce for them in a number of different styles at the various restaurants in the store.

The entire shopping experience from payments, product discovery, in-store research and more is bound together by mobile. In order to shop at Hema, customers would need to download the app, which logs all purchases, delivery address and preferences to create a personalised product page. If a customer has used any of Alibaba's services such as Alipay, Tmall or Taobao, their spending history can all be linked directly to the app allowing Hema to understand the type of customer they are based on their activity across these platforms and services.

Hema guarantees a 30-minute delivery to a 3-kilometre radius. Some stores offer 30-minute delivery 24 hours a day. To deliver the promise, it optimises its store layout by arranging products by scenario instead of category. For example, items such as wanton, noodle and dumplings which tend to be picked for breakfast purchase are placed together. Staff collects all products on orders they receive on their handheld devices into a thermal bag in seven minutes or less. The bags are colour-coded and tagged with a QR code corresponding to the online order. It is

then is hooked onto an automatic conveyor belt that goes into the product placement team who places them into delivery boxes.

While the Estonian retailers carry more products at the physical store than its eCommerce channels, Hema is quite the opposite. It offers around 3,000 different products in each store, while the Hema app has over 50,000 items. Prices are synchronised between online and offline using electronic shelf label. The price tags in-store are Internet connected e-Ink tags that allow pricing to change dynamically depending on supply and demand.

Large touch screens can be found at most aisles to give customers an overview of the products in that aisle, show recommendations for similar products, suggest pairings, and show the most popular products.

Customers who have scanned their products but decide not to carry the items home can pay for their purchases on the app and have them delivered. For those who want the groceries there and then, they proceed to a cashier-less checkout machine and scan the QR code on their app to pay. Only Alipay mobile payment is accepted. Since Alipay has facial-recognition capabilities, the process is almost instantaneous as customers only need to key in their phone number as an added layer of security. Cash payment is discouraged, although still possible at the service desk.

1.3.6. Discussion

This section discusses the current state of digital transformation in the Estonian grocery industry. Then, key drivers and barriers in realising channel integration are presented, followed by possible benefits of New Retail to Estonian grocery retailers.

RQ1: What is the current state of digital transformation in the Estonian grocery industry?

The results reveal that the Estonian grocery industry is at multi-channel retail, aspiring towards omni-channel. Table 1 summarises key distinctions between Estonian retailers and Hema discussed in the previous chapter.

Table 1. Findings from three-stage model of empirical research. Source: Composed by authors, 2019.

	Estonian Retailers	Hema		
Product information	ECommerce websites and mobile apps show product descriptions, ingredients and country of origin.	Mobile app shows farm-to-table product journey. The product journey powered by blockchain technology.		
Sourcing	Electronic data interexchange automate invoicing with suppliers and vendors.	Centralised, cloud-based solutions. Automated requisition and procurement process.		
Demand planning/ replenishment	Statistical modelling techniques used planning and forecasting.	Cloud-computing, big data, and algorithm techniques used for demand forecasting. Real-time access to data.		
Product development	Predictive analysis used to seek out future trends from historical and transaction data.	Big data and artificial intelligence reveal trends to personalise customer offers in- store and offline.		
Go-to- market	Design-to-market cycle can take 4 to 12 months.	Small batches of products are launched and test quickly, then scaled.		
Channel attribution and ROI	Online advertising campaigns are tracked and optimised based on click-response rating system.	Real-time offers are sent directly to a customer mobile device within proximity of physical store.		
Customer engagement	Traditional media advertising (e.g. newsletters, commercials) and social media postings.	Network alliance keep customers engaged 24/7 (e.g. short-form videos, livestreaming)		
Sales Channel	Offers up to eight separate sales channels including delivery services with cash / card payments.	The entire shopping experience from payments, product discovery, in-store research and more is bound together by mobile.		

Digital transformation is present and active at all retailers, with initiatives extending beyond IT into other facets of the organisations. Efforts were mainly intended to modernise technological infrastructure while aiming to improve and amplify specific touchpoints and processes. However, upgrading legacy systems to maximise online channels led to retailers adding technology that treats the channels as separate entities rather than a cohesive unit.

This means systems performing the same functions within stores and online, such as order management, merchandising, CRM (customer relationship management) are different and unconnected. While most retailers integrate POS and online transactions plus CRM data into the planning process, fewer have considered how customer information could be used to shape decisions about merchandising, product development and inventory management.

Furthermore, retailers organise themselves by function and category. Marketing, category management, retail operations, eCommerce and logistics are responsible for running their own operation as efficiently as possible. While this provides clear accountability, it created a siloed organisation.

To see how Estonian retailers stack up against PwC's New Retail digital transformation framework, results are mapped onto the diagram below. Among the 25 elements that characterise New Retail, Estonian retailers as a collective unit meet four of them; automated warehousing and robotics, AI demand planning and replenishment, unified online and offline inventory, and multi-channel attribution and end-to-end ROI. Out of the five value chain components, Supply Chain is evolving closest to a New Retail model. The reason could be that retailers view Supply Chain as a core business process that needed to be transformed the most. Understandably so, since the risk of having an inefficient supply chain would be too high for a fast-moving industry. As for the rest of the elements that Estonian retailers do not meet, one commonality can be found, and that is, most of these elements are customer-centric. From product traceability in Sourcing and Production, to co-creation in Product Development, to personalisation in Marketing, to immersive experience in Sales Channels; they are all centred around customers. It can therefore be concluded that digital transformation in the Estonian grocery industry is driven by business processes instead of customer experience.

Figure 5. Results mapping. Source: Composed by authors based on New Retail digital transformation framework by Pricewaterhouse Coopers, 2018.



New Retail elements observed in Estonian grocery industry

Estonian retailers operate based upon a product-centric model focusing on maximising the profit margin from buying low, selling high and optimising everything in between. It is a linear process of transferring a product from a supplier to a customer. To be successful in this business model, retailers need to be good at either buying or producing a product at lower costs, reducing lead time, or selling the product for a premium price. However, the ability to do so depends very much on the power balance between suppliers and retailers. It has also become increasingly difficult for any retailer to differentiate solely on promotion, largely due to customers being conditioned over the years to buy things only when they are on promotion.

This is coherent with the literature by Pil and Holweg (2006) that argued a linear chain thinking prevents companies from reaching a competitive advantage. They proposed in the Value Grid concept that value creation should instead be viewed from a multi-dimensional grid perspective, which interestingly is observable in Hema: vertical dimension (Hema influences demand and explores opportunities both upstream and downstream by capturing customer shopping behaviour from the point of ordering to delivery), horizontal dimension (Hema leverages the Alibaba ecosystem for economies of scale and scope which includes mobile payment, supply chain and logistics), and diagonal dimension (Hema enhances performance and better mitigates risk by having greater visibility through a fully integrated value chain).

Based on The Network Imperative narrative by Libert, Beck and Wind (2014), the approach in which Estonian retailers use to create value can be classified as an Asset Builder. Value is delivered through the use of physical goods by making, distributing and selling physical things. Hema on the other hand, is a hybrid of Asset Builder and Network Orchestrator who besides physical goods, also delivers value through connectivity by creating a platform that customers use to interact, transact, build relationships, give reviews, co-create and more. The ability to tap into both tangible value (physical assets) and intangible value (Alibaba network) helps Hema scale its business by increasing its customer base, market share and the overall value proposition of its products, generating increased profits. Herein lies the fundamental difference that could help explain the contrast; Estonian retailers started off as traditional brick-and-mortar stores, and Hema is a digital native built on the backbone of China's giant eCommerce machine.

In the current research landscape, digital transformation is critical for Estonian retailers so that they are able to move from a buy low, sell high, product-centric model to an insight-driven model that is customer-centric. Great strides have been made to offer customers more options to shop and receive products, the next step in the digital transformation process would be to bring these multiple channels and systems together to create a unified customer experience.

RQ2: What are the drivers and barriers in the shift to New Retail?

The barriers today for Estonian retailers trying to deliver a great omni-channel experience can be categorised into two main levels: technology-related and human-related. From a technical viewpoint, management of data is done individually in the silos, and not across the value chain. This means current business processes are channel-focused to address a specific need that is not extendable to different channels. The use of non-integrated legacy technologies and tools hampers data management and analytics which could otherwise help track customer conversion regardless of the channel which they choose to use. While retailers are generating huge volumes of data from different touchpoints, the absence of a single integrated platform prevent them from refining the data and gaining insights to make them more actionable.

In addition, a retailer conceded that it encountered difficulties in obtaining technology solutions that can cover multiple significant areas of an omni-channel business. There are many advanced POS and eCommerce solutions available, however few can integrate those disparate systems, legacy applications and data. Without the ability to get a 360-degree version of the customer, it becomes impossible for retailers to provide a seamless customer experience. For example, the resolution of an issue following a conversation with the call centre may not be followed through when the customer goes online or into the store. This also restricts customers on how they are able to return products through the channel which is easiest for them, as not having a single database means retailers are not able to access their order details, process the return and provide a refund immediately.

The cost of new systems, infrastructure and applications add up to a considerable initial investment for retailers. Despite the high revenue, grocery business operates on a slim profit margin. This upfront cost is a significant barrier especially in an increasingly competitive market where customer experience comes at a high price. Estonian retailers already have a legacy in-store POS system, order management and ERP (enterprise resource planning) solutions that are bespoke and deeply embedded into their internal business systems, replacing them would incur high costs. Moreover, these large retail chains are naturally inert due to heavy emphasis on fixed physical assets such as distribution centres and physical stores. The implementation of omni-channel therefore requires a huge amount of vision and commitment for it to happen.

External conditions also make it harder for retailers to adapt to technological disruption and changing consumer behaviour. Institutional barrier such as the European Union General Data Protection Regulation (GDPR) is particularly challenging as it dictates how customer data are collected, stored and used. Its scope covers emails, purchase histories, videos, CCTV data as well as paper forms. Sending newsletters and emailing offers or promotions to a customer requires their active consent, so is collecting information about a customer's behaviour and preferences for loyalty programmes. Making accurate, personalised offers becomes more complicated since data are the backbone of the omni-channel customer experience.

The current Estonian grocery industry is quite evenly distributed among the five big players. As a result, retailers are waiting on the sidelines while others make the first move into innovation. This is consonant with the literature by Adner and Kapoor (2009) wherein the success of an innovating company often depends on the efforts of other innovators in its environment. The tendency of waiting on a competitor to introduce innovations leads to a market delay in new technology adoption, which causes a catch-22 scenario where retailers would cite customer readiness as a barrier for change. For example, the limited availability of NFC (near-field communication) terminals at stores has also delayed the launch of mobile wallet systems utilising this technology, although from the number of mTasku transactions at a retailer who has introduced it confirms that customers are ready to embrace mobile payment.

Omni-channel ownership poses another sharp challenge within an organisation. Retail organisations have a complex structure and a large number of employees at every part of the value chain. In omni-channel, every person owns a part of the customer experience from marketing, sales, service, back office, IT and finance. There is no clear sense of ownership among the Estonian retailers interviewed and this may be the biggest obstacle facing the business today. This is especially true for a retailer who has historically been operating a dual authority structure, where co-operatives own the headquarters that are responsible for steering the group that includes the co-operatives. Multiple decision-makers and complex decisionmaking process can cause ambiguity in direction of change.

While Estonian retailers are subjected to historic growth, legacy and current way of working, a digital-born retailer such as Hema faces less inertia. Without the implementation problems associated with traditional retailers, Hema was able to redesign the customer journey and jump straight to a customer-centric business model. The pervasiveness of mobile phones in China, which provides the critical connection between online and offline is a significant factor in New Retail. In fact, China leapfrogged over technological innovations such as personal computers, traditional retail and postal services that Western countries are still controlled by. It entered the age of mobile payment rapidly by skipping the entire credit card era. It is not torn between protecting legacy business and starting something new, as China does not have a traditional retail model to defend.

Digitisation is key to New Retail and such a strategy is essentially based on personal data collection. The Hema app records phone numbers, purchase history, payment activities, financial transactions and addresses. It is not constrained by privacy norms as in the case of Estonian retailers who are hamstrung by GDPR, although it is worth noting that China is currently in the early stages of setting up a data protection regulatory system amidst growing privacy awareness.

Intense competition is another major driver for innovation by Chinese retailers, resulting in companies experimenting and responding to shifting demands at far greater speeds. Due to globalisation, Chinese customers are becoming more selective in their choice of products and are willing to pay for quality. Hema's food traceability system is the result of this demand given rise by food safety scandals which are persistent in the country. By the same token, Hema has also made itself a name for freshness and leveraged this deeply entrenched Chinese cultural preference for fresh produce to give customers a reason to leave their

homes and go shopping. Hema has become not just a place to shop but a place where customers like to spend time.

Therefore, the findings reveal that the shift to New Retail would require retailers to undertake multiple stages of business restructuring, not only technical and operational, but also breaking organisational silos across functions to ensure a laser focus on the needs of the customer rather than the needs of legacy channel structures.

RQ3: What are the possible benefits of New Retail to Estonian grocery retailers?

Changing customer habits and preferences, new technologies and intensifying competition are carving out traditional retailer purchases to disrupt the whole industry. Trips to the stores are declining and online shopping is increasing. According to Statistics Estonia (2018), the number of people aged 16-74 who ordered food and consumer goods over the Internet jumped from 12,000 in 2010 to 196,700 in 2018. Pantry loading trips fell from 10 times to 8.5 times a month over the same period (Tulk, 2018). In a fast-paced world, time-starved customers expect to be able to buy almost anything, anywhere and at any time, thus giving rise to prepared food and grab-and-go options. In addition to the rising popularity of eCommerce, new retailers and discounters could enter the market, intensify competition and put further pressure on store's profitability.

Moving beyond pricing discounts and financial rewards, New Retail found a way to build customer loyalty by focusing on ultra-convenience as the new currency. Today's customers want a fast, seamless sales process, therefore any point where they have to give extra effort such as approaching a staff or being overwhelmed by long checkout process is a point of friction. For example, hypermarkets, where shopping experience is considered to be cumbersome and time-wasting compared to local convenience stores where goods can be bought at a fraction of time spent. New Retail allows businesses to be nimble by facilitating a highly efficient shopping experience, whether at the store or online, delivered to home or picked up at a nearby location. The ideal scenario is that a customer comes into the store, buys a single item, tries it in the store and then decides to order a bulk delivery to their home. It is about making shopping so convenient that customers do not have to buy a lot, but buy often. While customers gain convenience, retailers benefit from increased loyalty and get detailed insight into their consumption patterns and preferences to draw more customers in. This means increasingly personalised recommendations, precise search results and recommendations that show customers products they may not have realised they wanted.

Currently, Estonian retailers are encouraging customers to choose products close to expiry date by offering discounts. The goal is to get these products, particularly food items into more baskets so as to reduce unnecessary waste. They are usually goods due to overbuying and managing them requires high labour intensity. There are thousands of products on the store shelves and it is a big problem perplexing the retail industry on how to guarantee appropriate storage while avoiding either going out-of-stock or wastage. New Retail uses machine learning algorithms to identify patterns in observed data, build model that explains relevant phenomena and make predictions. This way, it is able to learn each product's demand patterns through customers' consumption and as such, ordering can be done more precisely. Data analysis also allows product replenishment to done in small batches each time, according to the updated sales performance. Piling fresh produce high will result in more damage as well as greater labour costs. Reducing stock levels therefore helps boost customer satisfaction as products stay fresher for longer.

There has been a rise of conscious consumerism in Estonia, with preference moving more and more towards organic and eco-friendly products, as well as gluten-free and products suitable for vegetarians and vegans. Pictures and product descriptions are not enough. These customers want to know about the products they are buying; the composition of what they are made, where they come from, what conditions under which they are made, how they get to the shelf, and so on. Product traceability is achievable in the New Retail supply chain by harnessing blockchain technology to follow the product's journey from farm to store. Moreover, marketing departments can leverage this traceability information to tell the story of the food in a way that gets extra brand exposure, to start interaction with the customers and to collect data about them. The growing trend also means that almost every product is offered in different variations. What used to be standard products such as milk, bread and cheese, now come in gluten-free, sugar-free or lactose-free variants. This poses a challenge for retailers in shelf and sales planning since volume is fragmented and no longer as clear. With New Retail, demand forecasting and inventory planning is centralised, and inventory can be reduced to a minimum level. The digitally integrated supply chain makes it possible for suppliers and retailers to have real-time visibility of sales information and to plan their inventory instantly.

Lower inventory level frees up more space in the store. In Tallinn, several new shopping areas have been opened and this could cannibalise existing locations. As rental agreements are usually signed for a longer time period, retailers may face difficulty to leave a certain location when sales have fallen. To achieve profitability, retailers need to keep a certain margin while maintaining low operating expenses and high productivity. Maximising space utilisation is key. Every process in the value chain that is not digitalised and linked to other functions in the company represents a missed opportunity to gather insights, better serve the customer and operate more efficiently. The concept of New Retail is proving its merit wherein Hema's efficiency on the sales floor is three to five times higher than a traditional retailer in China. A traditional retailer will have more or less the same products in all their locations, whereas Hema's big data analytics ensures that product selection is catered to local customers.

Traditionally, products are offered based on mass market research, and customer at the end of the value chain passively receive the value produced by the supplier. With New Retail, businesses see customers as co-creators of products. This would be aligned with the theoretical concept of Value Constellation wherein different capabilities work together in ways that result in customer-specific, customerappropriate value-creating offering which enables these very customers to create value (Normann and Ramirez, 1993). By gathering real-time data to dig deeper into customer desires, New Retail enables companies to tailor products and services to a specific customer segment, even predicting trends before they happen. Retail is one of the most data-rich verticals. Despite this, many still struggle to interpret multiple data sets across channel, customer segment, region, store format and shopping mission. The focus is mainly on monitoring sales, margin, market share and availability but little behavioural data is being used although it provides a clearer picture of how customer behaviour is impacting sales performance. It is difficult for category managers, buyers and marketing directors to know what is driving sales, and as a consequence, heavy reliance is put on supplier data. This leads to suppliers taking control over decision-making. However, suppliers are concerned about their own brands and not the overall strategy of the retailer. This is where New Retail can empower retailers by helping to draw meaningful insight from a complex array of data sources and deliver a clear action plan. Armed with business intelligence and a complete picture of customers, retailers will be firmly in the driving seat for collaboration with suppliers. Having the ability to make decisions with more confidence and more accuracy than competitors is the true competitive advantage in retail.

1.4. Conclusion

The purpose of this research was to study the New Retail phenomenon and investigate its application in Estonia. China's Hema was discussed as the prime example of a New Retail-driven retailer, and Estonia's Coop, Maxima, Prisma, Rimi and Selver were analysed through document analysis and semi-structured interviews. Guided by PwC's New Retail digital transformation framework (2018), this research explored each of the five components of the value chain; Sourcing and Production, Supply Chain, Product Development, Marketing, and Sales Channels.

The results reveal that the Estonian grocery industry is at multi-channel retail, aspiring towards omni-channel. While there are various channels to shop and even more innovative ways to receive products, customer touchpoints operate within separate silos. Findings also indicate that digital transformation in the Estonian grocery industry has been driven by business processes instead of customer experience. Opportunities remain for retailers to move from a product-centric business model to one that is customer-centric.

In order to create a seamless customer experience, retailers need to orchestrate new processes across multiple existing system. The barriers today for Estonian retailers in achieving a unified commerce can be categorised into two main levels: technology-related and human-related. They include difficulties to integrate disparate legacy systems, costs, ownership issues, data privacy regulations and organisational structure. On the other hand, Hema's successful implementation of New Retail is driven by fast adoption of new technologies in China, intense competition, and the large Alibaba ecosystem that endowed it with the necessary tools to lay a solid foundation for its business.

Retailers hold a treasure trove of data. New Retail can empower retailers by turning those data into insights, and then turning those insights into action. Armed with business intelligence and a complete 360-degree picture of customers, retailers will have the ability to make decisions with more confidence and accuracy, giving them a true competitive advantage.

There are several potential limitations to this study. While the five Estonian retailers were selected are considered to be representative of the industry, the number is relatively low, which may impact on the generalisability of the results. Future research could test the results in a broader context with a bigger sample, including other small and medium-sized retailers. Furthermore, results are related to the grocery industry only. This may establish a bias in the research as the state of digital transformation, drivers and barriers could be different in other sectors.

In this regard, future research could consider exploring other business sectors or developing a confirmatory study with large data set to reinforce research generalisation. Moreover, the scope of this study is primarily confined to grocery retailers adopting digital transformation. Future studies could further explore this topic from the perspective of other actors in the value chain, such as manufacturers and suppliers.

Finally, due to the exploratory nature of this study, this research uses PwC's New Retail digital transformation framework as the main study lens. Future research could also account for other theoretical concepts when New Retail becomes more mature in the industry.

2. THESIS PROJECT PLANNING AND MANAGEMENT

The following section provides an overview of the project management plan for writing this Master's thesis.

2.1. Defining and organising the project

The thesis is organised by a three-step project management process. The first phase delves into the structure of the exploratory study to focus on the theory, methodology and approach connected to the thesis project. The second phase provides a deeper understanding of the roadmap that guides how project activities would be completed to meet critical submission deadlines. The third stage is focused on project and teamwork assessments to close out the thesis. Figure 6 represents stages of the project management process.

Figure 6: Thesis project management process. Source: Composed by authors based on Bowen, K., 1996.



2.1.1. Defining the team

Project managers

The project team consists of Goh Seng Jone and Taranika Tionna Nurmik who both shared equal responsibilities as project managers for leading and ensuring the team accomplish its goals (see Table 2). Goh and Nurmik are second-year MBA students in the Digital Society programme. Collectively, the team has sales, marketing, communications and management experience in retail, manufacturing and fast-moving consumer goods industry. Bruce Tuckman's team development model (1965) was applied to drive high performance and to activate positive interpersonal communication in the team. The five phases of Tuckman's model; forming, storming, norming, performing and transforming, aim to address uncertainties when building new relationships to achieve a shared goal or objective. It encourages teams to tackle issues related to human feelings (e.g. anxiousness), process competencies (e.g. decision-making) and content (e.g. task quality) as a natural part of good dialogue hygiene. By supporting team growth, performance and maturity development, individuals would become more committed to the goal of a project which contributes to the team's efficiency and productivity as a whole (Stein, 2019).

Name	Role	Responsibility	Contact	Location
Goh Seng Jone	Project manager	Project lifecycle; planning, managing and implementing activities	seng.goh@ebs.ee	Tallinn
Taranika Tionna Nurmik	Project manager	Project lifecycle; planning, managing and implementing activities	taranika.tionna@ebs.ee	Tallinn

Table 2: Thesis	project team.	Composed b	y authors	based o	n Bowen,	К.	1996
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Initially, the project was founded by three members who shared a common interest in digital transformation of commerce. However, the third person left the group to pursue a different objective. The remaining members decided to proceed as a team of two and redefined the thesis topic to one that would harness the cooperative use of complementary skills, abilities and strengths of each member. As a result, New Retail was chosen as the topic of research and a mutual agreement was made to share decision-making authority over the direction of the project. Figure 7 illustrates the team development phases.

Figure 7: Thesis project team development phases. Source: Composed by authors based on Tuckman, B., 1965.



Project managers took joint ownership over primary and secondary responsibilities to ensure milestones were achieved within schedule. Primary tasks included developing the work structure, preparing the timelines of activities, and establishing a risk management plan to guide deliverable outcomes to stakeholders (i.e. EBS Study Department and project sponsors). Secondary tasks involved managing communication with internal and external stakeholders. Two assessment tools were developed to keep track of the progress and quality of work as follows:

Teamwork assessment tool is a metric-based system to evaluate personal growth and team contribution throughout the project lifecycle. Criteria measured include time spent on project, team member treatment, conflict resolution, and dependability among others, which emphasise on reflecting one's emotional state and personal interaction with others. This is coherent with the emotional intelligence framework by Daniel Goleman (1995) that calls for teams to strike a balance in four domains; self-awareness, self-management, social awareness, and relationship management in achieving successful teamwork.

Table 3: Teamwork assessment tool. Source: Composed by authors based on Duke University evaluation tool, 2019.

	Criteria	10 points each	5 points each	0 points each
1	Time spent on project	acceptable	bare minimum	not enough
2	Listening skills	excellent	average	awful
3	Analytical skills	excellent	average	clueless
4	Assigned tasks	completed on time	completed but late	not completed
5	Conflict resolution	assertive, raised issues	non-assertive, passive, aggressive	consistently avoided conflict and issues
6	Team spirit	cooperative	compliant	obstructive
7	Team member treatment	support/respect	neutral	offensive
8	Dependability	completely dependable	inconsistently dependable	not dependable
9	Communication	clear/direct	mostly clear/direct	unclear/indirect
10	Team goals	contributed a lot	minimal contribution	distracted/disruptive
TOTALS for each column		add column	add column	0

Project assessment tool is a 31-point checklist that guides the writing sequence (i.e. introduction, theoretical framework, results and conclusion) and sets the foundation for quality standards (see Table 4). Adherence to the checklist ensures that all the thesis requirements would be met.

Table 4: Project assessment tool. Source: Composed by authors based on Estonian Business SchoolMaster's Thesis assessment criteria, 2019.

		Fullfilled
1	Introduction	
1	Begins the report by introducing the reader to the general topic in the first sentence.	
2	Identifies the problem and states it succinctly; may mention several problems or sub-problems.	
3	Documents the importance of the problem.	
-4	Identifies 2-3 ways that knowledge about the problem is lacking to indicate the need for the study.	
5	Identifies 2-3 audiences who will benefit from learning the results of the study.	
6	Provides clues to indicate the need for a quantitative or qualitative approach as found in words such as "explanation" or "exploration".	
7	Writes the introduction so the reader is encouraged to read on, realizing that an important problem is being studied.	
	Theoritical Framework	_
1	Reviews RELEVANT literature on the study's topic.	
2	Covers recent literature (at least last 10-15 years) to develop an up-to-date description of the literature.	
3	Includes MINIMUM 30 references high quality publications, focusing primarily on journal articles (research reports and otherwise).	
4	Includes at least 20 references from books, handbooks, statistical data studies, dictionaries, and conference papers.	
5	Includes at least 10 references od RELIABLE online sources (existing authors and institutions).	
6	Includes numerous citations to the literature used that are accurately cited according to the EBS style manual.	
7	Comprehensively shows the literature on a topic and positions the study within this literature (such as literature map).	
	Purpose/Aim of Study	_
1	Uses words such as "purpose" or "aim" to signal the reader.	님
2	Is concise and clearly states the intent of the study.	
3	Consists of relationships among variables (quantitative study) or specifies a central phenomenon (qualitative study).	
4	identifies the participants and sites in general way.	
5	May mention a theory if one is being used to direct or inform the study.	
	Research Questions	
1	Use words such as "what", "How", or "why" (Quantitative study) and "What", and "How" (qualitative study).	
2	Consist of relationships among variables (quantitative study), or specify a central phenomenon or sub-questions (qualitative study).	
3	Indicate a relationship among variables (quantitative) or uses neutral, exploratory language (qualitative).	
4	Are set the start of the study by the researcher (quant) or allowed to emerge and change during the study (qual).	
	Qualitative Research Design	
1	Uses specific qualitative design rather than a "generic" general thematic approach.	
2	Identifies the type of research design used so you know the plan for conducting study.	
3	Includes up-to-date references about the design within the method section to indicate the author's knowledge about the design.	
-4	Matches the selected research design to the study's purpose and research questions.	
5	Uses rigorous procedures of data collection, analysis, and interpretation within the selected design.	
	Conclusion	
1	Includes recommendations for further development and implementation of the research results.	
2	Presents at least three alternative scenarios for the solution and development.	ō
3	All scenarios should have justifications and analysis of possible consequences.	ō

Project stakeholders

Internal and external stakeholders made direct and indirect decisions related to the final acceptance of the thesis project. Within Estonian Business School, Toomas Danneberg, Head of Master's Studies reviewed the chosen research topic to ensure that it would meet MBA Digital Society programme requirements. Danneberg required interim reporting during the initiation and closing phases of the project. Marge Täks, Head of the Department of Management advised on every aspect of the thesis project leading to the final submission. Täks required monthly reporting in the initial, planning and closing phases.

Monika Siiraki, Head of Academic Affairs oversaw the thesis project acceptance process. Siiraki's team helped in verifying project milestones to ensure standard academic integrity policies were abided by. Siiraki required that thesis proposals and interim reports be sent to Maarja Laos, Academic Affairs Specialist via email or in person. Additionally, Master's thesis committee members would be involved to critically examine the thesis in the final stages of this project.

Ragnar Siil and Kai Jia provided academic research mentorship to the project managers throughout the project lifecycle. As project sponsors, they received scheduled status reports and requests for feedback on the thesis. Their support has been invaluable in the making of this thesis.

Lastly, interview respondents who represented four of the five Estonian grocery retailers indicated interest in the research findings. Other retailers and eCommerce operators in Estonia would also find the thesis informative and useful. Figure 8 illustrates the interests of stakeholders in the thesis project.



Figure 8: Thesis project stakeholder map. Source: Composed by authors, 2019.

2.1.2. Defining the thesis project parameters

Project Management Manual (Bowen, 1996) defines project parameters in terms of expected outcomes or scope, schedule and allocated resources to ensure energy is spent on target activities. The objective of this project was to produce a Master's thesis by conducting an exploratory research on New Retail.

Part 1 of the thesis focuses on the New Retail concept within a business problem context followed by a literature review on value chain and digitalisation of retail. A study of previous works helped form the questions selected for semi-structured interviews with Estonian grocery retailers. Three core research questions laid the groundwork for the study: i) what is the current state of digital transformation in the Estonian grocery industry?, ii) what are the drivers and barriers in the shift to New Retail?, and iii) what are the possible benefits of New Retail to Estonian grocery retailers?

Part 2 focuses on the project planning and managing process of writing this thesis. The three-step process includes i) defining the project and action plan; ii) developing a tracking tool to manage the seven-month workflow of activities; and iii) creating evaluation metrics to measure progress and quality of work.

In meeting the project objective, project managers had to manage and resolve issues while keeping quality in check. This required flexibility in the amount of effort that was allocated towards project-related tasks. Caccamese and Bragantini (2012) suggest using the Project Management Triangle to monitor and control constraints. The Project Management Triangle is a conceptual model used to identify project constraints (scope, effort and time) and to make decision on which component is either flexible or fixed. Since time and scope were pre-determined for this thesis project, effort was the only flexible resource in which an increase would help drive the quality of work to the level desired.



Figure 9: Thesis project management triangle. Source: Composed by authors, 2019.

Project managers identified key activities, deliverables and submission dates within each phase of the project management process. In the initial phase, project managers submitted the thesis declaration outlining the chosen research topic, questions, methodology and list of main literature to review. The declaration was signed by project sponsors and submitted to the Study Department on December 15, 2018. Upon approval, the project moved into the Project Parameters phase, which aimed to formalise the project plan by January 18. The project plan can be viewed in section 2.2. The final draft was then shared with project sponsors on April 25; and subsequently submitted to the Study Department on May 2. Table 5 details the list of critical activities.

Activities	Deliverable / Outcome	Dates	
Project organisational struture			
Select thesis theme and problem development	declaration approval	05/12/18	
Define requirements	"DigiMBA thesis structure	05/13/18	
Select team formation	recruit internal and external supervisors	05/14/18	
Project Parameters			
Develop project management system	Gantt chart and status report	18/02/2019	
Define milestones	Part 1 and Part 2 milestones	18/02/2019	
Prepare document structure	EBS style document structure	18/02/2019	
Business problem identification	introduction and problem statement	02/18/2019	
Research design	literature review and theoretical framework	02/23/2019	
Data collection	empirical evidence and interviews	02/29/2019	
Data analysis	results	03/15/2019	
Conclusion	overview of study and findings	04/20/2019	
Thesis submission	acceptance documents	04/25/2019	
Initiate feedback and reviews	acceptance documents	05/2019	
Initiate required rework	agreements on final standards	06/2019	
Prepare document for print	agreement on final formats	05/2019	
Closing			
Conduct final and detailed of document	Master's Thesis and presentation	06/2019	
Agree on follow-up meeting with participants/ supervis	d agree schedules	06/2019	
Accept and sign-off document	final acceptance documentation	06/2019	

Table 5: Thesis project key activities and deliverables. Source: Composed by authors, 2019.

2.1.3. Defining the project framework

Teamwork management

Time can be saved by pre-determining how team members are to communicate with one another (Bowen, 1996, p.16). During the team development stages, project managers agreed to meet twice a month in person. Smart devices and online applications were used to facilitate communication, progress tracking, feedback and overall project management.

Google Drive was a primary tool for managing files. Project plan, project timeline, assessment tools and the thesis document were uploaded and maintained on the cloud-based platform.

Issue management

Project managers tracked issues related to writing and editing the thesis document. Status reporting was highly-productive for ensuring that edits were resolved before being sent to stakeholders for formal reviews and interim reporting. Table 6 provides an overview of the issue management log.

Issue	Date	Action and Impacts	Due Date	Status Resolution
Revision	12/17/2018	Scope of research update		Focus on Grocery Industry
				Focus on value chain/
Update	12/28/2018	Theoretical framework proposals	1/12/2019	digitalisation using PwC's digital
				transformation framework
Undate	1/12/2019	Establishment of thesis structure	1/15/2010	EBS Int MBA Part 1 and 2
Opuate	1/12/2019	and outline	1/15/2019	structure
		Refined research questions,		RO 1.2& 3: Evolution of Porter's
Update	1/15/2019	theoretical framework, and	2/6/2019	Value Chain
		literature review pathway		
	2/6/2019	New Retail Project, Part 1 (pp. 1-		data collecting missing interview
Draft		12)	0/10/2010	guide for interviews with
			2/10/2019	respondents.
Draft	2/10/2010	Semi-structured interview	2/ 20/2019	Add references to specific
	2/10/2019	question design		business activities
n		New Retail Project, Part 1		Synthesis Lit. Review looking at
Revision	2/ 20/2019	revision 1	2/1/2010	Value Chain Digitalisation and
		(pp. 1-22)	3/1/2019	Digital Transformation of retail
n · ·		New Retail Project, Part 1, Part 2		Add in results, findings and
Revision	2/15/2010	revision (1-25)	2/15/2010	conclusions and accompanying
	3/15/2019	M. Davil Device Device Device	3/15/2019	ngures
Revision	4/1 /2010	New Retail Project, Part 1, Part 2	4/ 10/2010	Modify visualisations,
	4/1/2019	revision (1-34)	4/ 10/2019	discussions and conclusions
Revision		New Retail Project, Part 1, Part 2		Modify diagram, editing,
i conston	4/18/2019	(1-52)	4/22/ 2019	assessments

Table 6: Thesis project issue management log. Source: Composed by authors, 2019.

2.2. Planning of the project

Project plan

Project managers visualised the project plan and timeline using the Gantt Chart (Gantt.com, 2019). Widely used in Project Management practice, Gantt Chart is shown as a bar chart that is horizontal (see Appendix 2). The horizontal bars differ in lengths to represent the project timeline. The length of the bar shows both predecessor and successor activities. This means the first activity should be completed before the second activity commences.

There are three main attributes of the project plan and timeline: i) Numerical order of the activity correlates with parts of the Master's Thesis document; ii) Task and task owner are associated with activities, deliverables, and level of work in progress to track status; iii) Calendar weeks are blocked up until the date of final submission of the Master's Thesis document. Table 7 illustrates the project plan and timeline in the project defining and organising phase. Accompanying the project plan are a list of main deliverables to stakeholders identified (in Table 8), and the time and workload estimates (in Table 9).



Table 7: Thesis project plan and timeline. Source: Composed by authors based on Gantt Chart,2019.

Table 8: Thesis project main deliverables, formal reviews and key events. Source: Composed by authors, 2019.

Dates	Main deliverables	Formal reviews	
5/12/ 2018	Topic finding	Danneberg and Täks evaluation	
15/12/2018	Thesis Structure	Study Department formal review for approval	
18/03/18/2019 Intro, Lit review / theoretical framework		Project Sponsor for formal review and feedback	
20/04/2019	20/04/2019 Research design, data collection, results Project Sponsor for formal review		
22/04/2019 Interim Report		Project Sponsors and Study Department formal review for approval	
25/05/2019	Complete Master's Thesis Project Sponsor for formal review		
6/05/ 2019 Submit Master's Thesis		Study Department for formal review (optional) Complete Master's Thesis	
15/06/2019 Preliminary defense		Presentation in front of Master's Thesis committee (10 mins only)	
23/ 06/2019	Final thesis (key event)	Study Department for formal review (optional) Complete Master's Thesis + Hard copy	
30/ 06/ 2019	Final presentation deadlines	Study Department Review	
3-7/ 07/ 2019 Final defence (key event)		Presentation	

Table 9: Thesis project time and workload estimation. Source: Composed by authors, 2019.

Weeks (n)	Time Estimate	Workload	Resource
Week 1-2	8 hours	Finding Topic	Time, effort and internal advisory
Week 2-4	20-30 hours	Thesis structure	Time, effort and internal advisory
		Introduction	Time, effort and external advisory
		Theoretical framework	Time, effort and external advisory
Week 4-8	20-30 hours	Research design	Time, effort and external advisory
		Data collection	Time, effort and external advisory
Week 8-14	20-30 hours	Findings, assessment and conclusions	Time, effort and external advisory
Week 1-14	68 - 90 hours	Master's Thesis Final Submission	
Week 14-16	20 hours	Revision, publishing, presentations	Time, effort, internal and external advisor
	70 - 120 hours	Final Defence	

Risk management

All projects involve risk, however, developing a Risk Management Plan puts a spotlight on project risks and the need to manage them (Bowen, 1996). During risk assessment, operational and legal risks were identified and ranked (critical, high, medium and low). Operational risks such as incomplete empirical data collection or difficulty in recruiting supervisors could impact the project scope and quality of this study. These were mitigated by having a set of contingency data sources and interview participants (peer-reviewed journals, first-person interviews). Legal risks such as the failure to protect the anonymity of participants could impact the project integrity, therefore project managers codified names of participants and retailers involved in the data collection process.

Risk category	Description of risk	Impact	Rating of Impact	Rating of probability	Description of mitigation	Description of solution
Operational Risk	recruiting field expert supervisors.	unable to submit declaration form	critical	medium	keep roster of available supervisors	recruited 2 project sponsors
Operational Risk	incomplete empirical data collection.	project scope is affected	high	high	schedule interviews with all market leaders	booked 3 out of 4 interviewees
Operational Risk	incomplete research/ poor data integrity	rejection of final document	critical	medium	evaluate publication sources	used high-quality peer- reviewed journals
Operational Risk	loss of team member (from 3 to 2).	project scope	low	high	2 remaining members move forward	2 researchers have continued the project thesis
Legal Risk	maintaining anonymity of participants	protect interviewees business models	critical	low	codify participants and companies in results	results are generalized

2.3. Tracking and managing the project

A best practice is to create files with open access to team members on a cloud-based platform. Project managers found that Google Drive was a useful tool for file sharing, file organising and commenting on all aspects of the Master's Thesis document.

An element that could be improved is connecting the project timeline to the Google Calendar of project managers with alert notifications. Automating the timeline would be helpful for an individual or team to manage time and activities.

A key learning for future projects is to put into action a project plan that is visualised and shared using cloud-based technology.

2.3.1. Assessing closing the project

Project sponsors provided their seals of approval which allowed the thesis to formally move into the closing stage. The Master's Thesis met all 31 criteria on the checklist. Table 11 shows results of the assessment tool.

Table 11: Project assessment results. Source: Composed by authors, 2019.

		Fulfilled
	Introduction	
1	Begins the report by introducing the reader to the general topic in the first sentence.	\checkmark
2	Identifies the problem and states it succinctly; may mention several problems or sub-problems.	\checkmark
3	Documents the importance of the problem.	\checkmark
4	Identifies 2-3 ways that knowledge about the problem is lacking to indicate the need for the study.	\checkmark
5	Identifies 2-3 audiences who will benefit from learning the results of the study.	\checkmark
6	Provides clues to indicate the need for a quantitative or qualitative approach as found in words such as "explanation" or "exploration".	\checkmark
7	Writes the introduction so the reader is encouraged to read on, realizing that an important problem is being studied.	\checkmark
	Theoritical Framework	_
1	Reviews RELEVANT literature on the study's topic.	<u> </u>
2	Covers recent literature (at least last 10-15 years) to develop an up-to-date description of the literature.	\sim
3	Includes MINIMUM 30 references high quality publications, focusing primarily on journal articles (research reports and otherwise).	<u>~</u>
4	Includes at least 20 references from books, handbooks, statistical data studies, dictionaries, and conference papers.	\leq
5	Includes at least 10 references od RELIABLE online sources (existing authors and institutions).	\leq
6	Includes numerous citations to the literature used that are accurately cited according to the EBS style manual.	\leq
7	Comprehensively shows the literature on a topic and positions the study within this literature (such as literature map).	\checkmark
	Purpose/Aim of Study	_
1	Uses words such as "purpose" or "aim" to signal the reader.	≚
2	Is concise and clearly states the intent of the study.	\leq
3	Consists of relationships among variables (quantitative study) or specifies a central phenomenon (qualitative study).	\leq
4	Identifies the participants and sites in general way.	\sim
5	May mention a theory if one is being used to direct or inform the study.	\checkmark
	Research Questions	_
1	Use words such as "what", "How", or "why" (Quantitative study) and "What", and "How" (qualitative study).	\checkmark
2	Consist of relationships among variables (quantitative study), or specify a central phenomenon or sub-questions (qualitative study).	~
3	Indicate a relationship among variables (quantitative) or uses neutral, exploratory language (qualitative).	\sim
4	Are set the start of the study by the researcher (quant) or allowed to emerge and change during the study (qual).	\checkmark
	Qualitative Research Design	
1	Uses specific qualitative design rather than a "generic" general thematic approach.	\sim
2	Identifies the type of research design used so you know the plan for conducting study.	\checkmark
3	Includes up-to-date references about the design within the method section to indicate the author's knowledge about the design.	\checkmark
4	Matches the selected research design to the study's purpose and research questions.	\sim
5	Uses rigorous procedures of data collection, analysis, and interpretation within the selected design.	\checkmark
	Conclusion	
1	Includes recommendations for further development and implementation of the research results.	\sim
2	Presents at least three alternative scenarios for the solution and development.	\sim
3	All scenarios should have justifications and analysis of possible consequences.	\checkmark

Project effectiveness

An effective practice of the thesis project was using the Gantt Chart to organise the project. It provided clarity wherein multiple tasks and timelines were boiled down into a single view. Developing the Gantt Chart itself was a good exercise to check for overlapping activities and to see task dependencies. Another effective practice was developing the project assessment tool using Master's Thesis requirements as a base. It served as a checklist that helped to ensure high-quality standards throughout the project.

A non-effective practice is informal status report submissions to stakeholders through third-party platforms such as Google Drive. This means sending and sharing file links to solicit feedback. Email is a better and more effective medium for this purpose. It is also important to keep an agile mindset when responding to changes. Especially when using a traditional project management tool such as the Gantt Chart, as tasks are arranged and expected to be completed in a sequential order.

Teamwork assessment

Each activity played on the diverse skills and capabilities of the project managers; however, strong team spirit made it possible for task ownership to ebb and flow between the two. Individual contributions from both aided the team in achieving a teamwork assessment score of 95.

Table 12: Team assessment results. Source: Composed by authors, 2019.

	Criteria	10 points each	5 points each	0 points each
1	Time spent on project	acceptable	bare minimum	not enough
2	Listening skills	excellent	average	awful
3	Analytical skills	excellent	average	clueless
4	Assigned tasks	completed on time	completed but late	not completed
5	Conflict resolution	assertive, raised issues	non-assertive, passive, aggressive	consistently avoided conflict and issues
6	Team spirit	cooperative	compliant	obstructive
7	Team member treatment	support/respect	neutral	offensive
8	Dependability	completely dependable	inconsistently dependable	not dependable
9	Communication	clear/direct	mostly clear/direct	unclear/indirect
10	Team goals	contributed a lot	minimal contribution	distracted/disruptive
TOTALS for each column		90	5	0

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APPENDICES

Appendix 1. Semi-structured interview guide. Source: Compose by authors, 2019.

Interview Guide:

Qualitative interview questions Obtain a verbal consent to do an audio recording 45-minute session

Interview Questions:

Source/ Production	 What role does data play in sourcing products for supermarkets? How do you decide what products to source? How are product origins/quality traced using technology (i.e. blockchain)? How can customers find information on the origin of the products they buy? In what ways are sourcing technologies integrated with automated warehousing technologies (robots, machines)? What technology do you use in your warehouse and logistics?
Supply Chain	What roles do statistics and forecasting models play in demand planning
Supply Chain	 what roles do statistics and forecasting models play in demand planning and replenishment?
	 How do you plan stock and replenishment?
	 How frequent is forecasting done?
	 In what ways do these technologies unify online and offline inventory?
	 How do you manage online and offline inventory?
Product Development	What are the roles of data in the product development process?
1 roulet bevelopment	What are the folds of data in the product development process: Where do you find information on what product to develop?
	Are these products piloted on the market for testing?
	 How long does it take for a new product to hit the shelves?
Marketing	• What digital tools are used to target and personalize under your brand?
Marketing	 What digital tools are used to target and personalize under your brand? How do you advertise and market your products?
	How do you gather customer insights?
	What goes into your pricing strategy?
	 How do you build lovalty with customers?
	 In what ways are product development efforts integrated with Marketing?
Salas Channala	What does own i showed integration mean to under your brand? Is
Sales Channels	 what does offinite integration mean to under your brand? is self-service check, online and offline delivery available at under your
	brand?
	Where can customers shop for your products?
	 What innovations have you introduced to enhance shopping experience
	in-store and online?
	 What are the payment options available?
	 What are the delivery options available?
	1
Final question	• What difficulties do you face when implementing new innovations?



Appendix 2. Thesis project plan and timeline. Source: Composed by authors based on Gantt Chart, 2019.