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Online grocery shopping in Jyväskylä
Business models & Demand

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Abstract

The online grocery market is subjected to grow in the next few years in Finland. 72% of Finnish population shops online for goods and is comfortable experiencing the exponential growth of e-commerce. However, grocery retail is still practiced the traditional way of dragging a shopping cart down the aisle and waiting in the checkout line to purchase goods. If an online grocer provides quality service at the right price, there is a lot of potential for the growth of electronic grocery shopping in Finland.

The aim of the research was to predict the demand for an online grocery service in Jyväskylä and discuss which business model can be used to target that demand. The research could provide useful background information for building an online grocery service in the region of Jyväskylä.

The study conducted used mixed research methods of qualitative and quantitative. Business models were studied adopted by e-grocers of the present and past using qualitative methods. Success factors and potential pitfalls are also considered, providing a better understanding of e-grocers strategies. The research is limited to case examples from the UK, the US and Finland. Quantitative methods such as survey research were used for the latter part of the study. A questionnaire was conducted in the region of Jyväskylä to gather sample data for analysis. Statistical inference methods of confidence interval estimation and hypothesis testing were used to draw conclusions on behalf of the population from the collected data sample. Market analysis for the demand structure were conducted and characteristics of the targeted population were closely evaluated. Conclusions were drawn for the demand for an online grocery service in Jyväskylä and business models were discussed. Research objectives are met and suggestions for further research mentioned.

Keywords/tags (subjects) questionnaire study, e-grocery, success factors, statistical inference, sample data, online grocery, market analysis, demand, Infomediary, Bricks and Clicks

Miscellaneous "Appendices on data analysis 12 pages."

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1 Current Affairs

Although Europeans are not practicing online grocery shopping, it does not necessarily mean they do not want to. Most find the idea intriguing to save time by not having to trek to a supermarket, push a shopping cart along shelf after shelves, then wait in the checkout line to purchase groceries. The convenience of online grocery shopping is attractive, but convenience is not the only selling factor for consumers. They only wish to shop for groceries online if the offer is tempting, they are not willing to sacrifice the price, quality, and range of products that they have grown accustomed to in the traditional supermarket. They will not put up with inconvenient delivery or pickup arrangements. Until now only a handful European retailers have given consumers a compelling reason to switch from the neighborhood grocer to the web interface. "The online grocery market is poised for growth. But only early movers will win and only if they are adept, disciplined, and agile." (Galante, Lopez, & Monroe 2013, 22).

After conducting a research including a scan of global practices and a survey of more than 4,500 European consumers in France, Spain and the United Kingdom, Galante and colleagues (2013, 22–23), strongly suggest that the demand among consumers for an electronic grocery shop exist. An online grocery will be practiced differently in each country and for each retailer depending on margins, current market share and other several internal and external factors. However, in general the financial stakes are high and the market is changing rapidly. "Only early movers will win and only if they have an outstanding value proposition, a relentless focus on profit optimization, and the willingness to place big strategic bets."

In 2012, EU28 observed that 75% of the individuals aged 16–74 had used internet in the past 12 months and nearly 60% of these internet users had shopped online. The highest shares of online shoppers were registered in the United Kingdom, 82% of the British population. Meanwhile in Finland, 72% of the population engaged in online shopping. The fraction of online shoppers, practicing online food and grocery shopping were observed, the UK lead in 21%, while in the majority of member states of EU 28 this share was 10% or less. In the period of four years out of 2008–2012, Unit-

ed Kingdom saw of growth 7% from 14%–21% in the sector of online food and grocery shopping compared with the slight shift of 2% in Finland from 2%–4%. Review Appendices 9 for a detailed overview. (Nearly 60% of EU internet users shop online 2013.)

In Finland for the past 20 years, the grocers' retail trade has been closely associated with the transformation of shopping facilities. Today grocery stores are situated in areas where business is profitable, the areas with highest population density. The majority of the grocery sales in Finland are controlled by central wholesale companies, which lack a feasible home delivery service. E-commerce has successfully penetrated throughout Finland and general Finnish population is comfortable with electronic shopping. It is still observed that the growth of online grocery practices is slow in comparison with other countries. According to Punakivi, and Saranen (2001, 156), "The decision-makers of the largest grocery retailing companies in Finland share the opinion that e-grocery may take over around 15 to 20 percent of the Finnish grocery market by 2010." On the contrary, it turned out to be a false estimate as by 2012, only 4% of the Finnish population is shopping online. This raises a serious question if demands for EGS even exist in Finland.

1.1 Research Aim and Scope

The research scope is to provide background information for building an online grocery service in the city of Jyväskylä. Grocery shopping in Jyväskylä is still carried out the traditional way. Many brick and mortar stores do not provide home delivery service. The aim is to find the demand for such a service in the city and gain market knowledge for targeting this demand. The research also studies what type of business models are followed by e-grocers from the present and the past around the globe, and which factors can result in a successful operation or a potential pitfall for an EGS operator.

The research conducted is broad, it can be used in the near future as a reference providing necessary information of the current market in Jyväskylä and the business models that can be followed by an e-grocer entering this market. The author believes anyone can continue this study further to widen the perspective and thicken the answers for research questions.

1.2 Research Objectives

The research objectives revolve around finding the demand for an online grocery service in Jyväskylä and comparing the different business models an e-grocer should adapt if, when targeting the market.

- To predict the demand for an online grocery service in the region of Jyväskylä.

- Which business model can lead to a competitive advantage when targeting that demand?

1.3 Focus and Limitations

Conducted research focuses on predicting the market for an online grocery service only in the region of Jyväskylä. It does not discuss how to build an online grocery service neither does it discusses the phases after the online service is launched nor it answers the questions how to continue the business or make the business profitable. It does not discuss how to set up a company behind the online store.

The core focus is on finding, what is the demand for such a service among the population of Jyväskylä? Other questions are focused on finding information related to nature of the existing market. These included, what are the amount of times consumers shop for groceries in a week? How much does the market wish to pay for such service? Which age group should be a target for this service? Should the marketing be focused on females or males? Which areas in Jyväskylä must be considered first when entering the niche? Should foreigners be targeted or Finnish nationals? Which grocery giants do customers prefer shopping from, is it the S-Group, K-Group or Lidl? What are the types of business models being followed by e-grocers worldwide? Answering these questions helped the author to plot the structure of demand in the region and perform business models and market analysis.

The study is limited to business models followed by grocery giants in the UK, the USA, and Finland. Many articles online discuss the possible business models an online grocer can follow to enter the niche. However, theories do not always work in practice. Due to the location where the research was conducted, external and internal factors vary from the sources used to construct the body of the study. The research results are also limited to the population in Jyväskylä and do not classify conclusions for all whole Finnish population.

1.4 Structure of the Research

The introduction section discusses the relevant background information about the current situation, research aim and scope, research objectives, and focus and limitations of the study. Research methods attempt validating the results concluded by explaining the tools used to conduct the research. The body of the research discusses business models from the present and the past. As well, provide detailed information on the most important success and failure factors of an e-grocer. Research design reviews information on the statistical inference methods used to draw analysis. Research results are discussed following by reliability and ethical issues of the research. The final part of the study draw's conclusions based on the analyzed data and the discussion digests all of the information that is gathered in a few paragraphs.

2 Research Methods

The literature review looks into which business model can provide a competitive advantage when devising an operating service model. It also focuses on which factors are considered fruitful and potential failures for an e-grocer. The empirical part of the research studies the market for an online grocery service in Jyväskylä. The research conducted was of qualitative and quantitative in nature.

"Qualitative research is synthetic or holistic (views the separate parts as a coherent whole), heuristic (discovers or describes the pattern or relationships), with little or no control and manipulation of the research context, and uses data collection procedures with low explicitness. There is less of an emphasis on statistics and more of an interest in the individual and immediate context." (Tavakoli 2012, 503.)

The review of the business models of EGS operators is qualitative in nature. Secondary data was collected through various articles and electronic publications in visual and textual form, and most analyses were done by following existing business models. "*Qualitative research is fundamentally interpretative, indicating the research outcome is ultimately the product of the researcher's subjective interpretation of the textual data. The researcher is essentially the main measurement device in the study and provides a detailed description as opposed to the quantification of data through measurements, frequencies, scores or rating. Providing a natural and holistic representation.*" (ibid., 504-505).

On the other hand, Tavakoli (2012), in his dictionary for research methods describes quantitative research as "systematic, rigorous, focused and tightly controlled, involving precise measurement and producing reliable and replicable data that is generalizable to other contexts." It is related to our first objective of the research where the proportion of target audience in Jyväskylä had been assessed that wish to practice online grocery shopping, by conducting a survey research. "Quantitative research is the primary example of hypothesis testing research investigated through data quantification and statistical analysis." (ibid., 508-509.)

By using mixed methods, the research objectives were studied more thoroughly and findings evaluated precisely. The research part focused on business model theories, and the potential affecting factors led to the inquiry about the model, which may result in a competitive advantage to start-ups. A questionnaire was used to collect data. Quantitative statistical inference methods such as point estimation and hypothesis testing were used to determine the demand in the region. This concludes the research is conducted by using a combination of quantitative and qualitative mixed research methods.

DATA COLLECTION

Data collection for the quantitative part of the research was primary in nature. The researcher constructed a questionnaire which was used to survey a large group of people in the city of Jyväskylä. Surveys are often used when conducting a quantitative research. The questionnaire consists of six following questions:

1. Basic information for analysis (Zip code, Email, Nationality, Age and Gender).

2. How many times a week you shop for groceries?

3. Which local markets you prefer when shopping for groceries?

4. Would you use an online grocery service in Jyväskylä?

5. If YES, how much are you ready to pay for the door delivery service?

6. Provide us with a ballpark time when you would want your groceries to be delivered?

A combination of open-ended and closed-ended questions was used to collect sample data. When using closed-ended questions all possible answers are covered, it helped in easily organizing the data for analysis. Question (Q) 1 and 4 are closed-ended questions used in the questionnaire. Q2, 3, 5 and 6 are examples of open-ended questions. In these questions, the successors fill in the answers according to their liking.

Cluster sampling approach was decided to collect the data for analysis, according to Levine and colleagues (2008, 257), "In a cluster sample you divide the items on the frame into several clusters so that each cluster is representative of the entire population." Each city block can be considered as a cluster, grocery markets in Keljo, Seppälä and Palokka regions of Jyväskylä were decided as the three clusters where data could be gathered. But for the reasons of lacking a permit to conduct a survey on several premises, the location for practicing the questionnaire was changed to the center of Jyväskylä and the Simple random sample approach was applied. In a simple random sample, "Every item from a frame has the same chance of selection as every

other item. Simple random sampling is the most elementary random sampling technique." (ibid., 253.)

The questionnaire was prepared using JAMK's webropol portal under the guidelines and instructions provided with the JAMK survey format. The questionnaire was tested online using a series of the random computer generated answers, from the website. However, the questionnaire was not published online for responses, to collect data sample, it was decided to conduct the survey in person with random successors. For the ease of successors, questionnaire's in English as well as Finnish language were printed. This also helped to minimize the risk of collecting data just from the English-speaking population in the region. Review Appendices 10 & 11 for the original and the translated versions. The target age for conducting this survey was over 22 years old. It was decided keeping in mind that the target group had to be of adults, responsible for their finances that are unable to shop for groceries in their own time.

A countless number of residents were approached to participate in the questionnaire. However, only 73 successors showed interest in presenting their views through the survey. The successors were informed about the objectives of the research and were taken into confidence that their personal information will not be misused under any given circumstances. This is important when conducting an ethical research.

3   Business Models for E-Grocers

Since the 1990s, the computer based retail systems had been tested and observed. However, only three type of computer based retail system considered appropriately fall under the category of EGS. This included Bricks and Clicks, Pure Play and Infomediary business models. The most economical and quickest to be implemented is termed as Bricks and Clicks. This method is based on in-store fulfillment, where a current retailer tries to maximize and utilized its existing store's network. The most expensive approach is to build e-commerce based purely on warehouses termed as Pure Play. It is adopted when an enterprise does not have a brick and mortar network. The third approach is normally for small and medium-based retailers. Usually, adopting the contract based approach where customer management and the web ordering services are contracted to third parties who handle their logistic services and consumer information. Logistics providers usually look into moving stock, ordering stock and the delivery of stock from retailer to customers, this approach is coined as Infomediary. (Murphy 2007, 942.)

3.1   Bricks and Clicks

According to Hays, Keskinocak, and Lopez (2004, 10), Large brick-and-mortar companies delayed entering the e-grocery market but survived better than pure-plays. Traditional grocery stores did not initially perceive the importance of offering online ordering and delivery services. The entrance and perceived success of pure-plays ignited the clause for them to re-evaluate their strategy. The most visible benefit for the traditional stores approaching this strategy is the retaining of their original customers and the possibility of tapping new ones in a new market. The bricks-and-clicks strategy gives customers the flexibility of shopping the brick-and-mortar store, as well as ordering groceries via the Internet. Consumers can also pick up their order at the store or have the order delivered. By already operating in the industry, bricks and clicks strategy gives brick and mortar stores an advantage over competitors, by simply shifting their focus on targeting the online consumer market with spending less capital. However, this business model is only limited to companies who wish to enter the niche with existing grocery stores.

The first honorable mention for Bricks and Clicks method is of the largest and quickest growing store Tesco in the British retailer market. Tesco had adopted Bricks and Clicks method in 1996 and was highly criticized by U.S press at that time for its backward and limited store based method. Tesco's chief executive Terry Leahy appointed in 1997 was quoted in Sunday Times saying "We will be the world's biggest online grocery retailer, and we intend to become the UK's No.1 e-commerce business." (Chadwick, Doherty, & Anastasakis 2007, 713).

In early stages, Tesco Direct services operations were based on orders request received from customers and forwarding the order to the nearest available store to customers' home. Allocated staff picked all the ordered items from store shelves, once orders were packed optimized delivery route planning played a major role in delivering items to customer's home. This method was inexpensive but far from perfect. It had many weakness and conflict because retail stores were highly inefficient and labor intensive, storage rooms were incapable of managing online orders and optimization of delivery routes was difficult under these circumstances. Stores had around 20,000 items versus items offered online were 30,000 it created the problem of what item's customers should be allowed to order. The worst problem facing Tesco was that the store staff picked orders for online customers with the regular customers which leaned to an unexpected sales drop in stores compared with online customers. (ibid., 714).

Later in its Bricks and Clicks model, Tesco upgraded to the computerized order scanners that have the capability to pick multiple orders, embedded with next item location within the store. There proved to be more efficient and time saving compared with single order picking. After picking orders for customers, all orders were put into separate boxes for delivery. Still subjected to human error the only problem laid with the system was that a picker can place an order in the wrong box. Once boxes are ready they were put into delivery vans, from the back room in the store. This operational model helped Tesco to save costs rather than building technologically advanced warehouses. Instead, temperature controlled vans were used. Tesco had replicated these fulfillment centers smoothly in hundreds of its stores across the UK and by the end of the year, 2006 sales revenues reached £1 billion. (Murphy 2007, 943.)

Tesco determined to prove its critics wrong in three years' time, by the year 2000, offered 90% of the British population its wide range of products. It did not limit itself to the United Kingdom. Tesco started to expand its online growth outside the UK as well, for instance in Ireland, which is the first country where in the year 2001, the first online grocery store was born. Tesco started to export its technology to South Korea, the United States, and the Far East. By 2002, just before Christmas Tesco claimed to have had delivered to more than 1 million households. With a fleet of 950 vans it is safe to consider Tesco was playing a vital role in changing the trend towards online grocery shopping in Great Britain. By 2003, 96% of the United Kingdom's population could shop online from its website. From the overall sales, 65% consisted of grocery sales and the remaining of the percentage covered by telecom and other products such as financial services. By 2006, sales revenue increased by 36.5% from the last year and annual profit reached £60 million as seen in Figure 1. (Chadwick et al. 2007, 714; Murphy 2007, 943.)
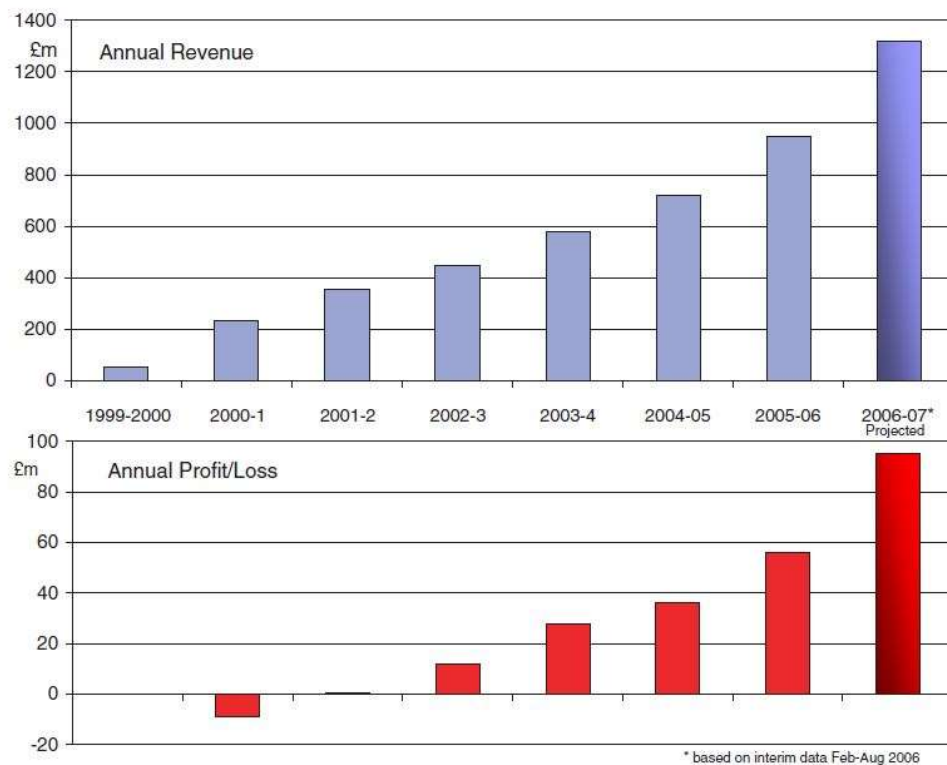
Figure 1 Tesco annual sales and profits, 2000–2006 (Murphy 2007, 943.)

Tesco's smart strategy resulted in its online grocery business gaining high popularity among UK's population. Taking advantage of its robust growth, more products along with non-food products as well as financial services were offered online. This massive expansion of product range had only become possible by adopting e-commerce into its strategy. Internet and e-commerce had proven to bypass space restrictions, as Tesco's CEO addressed, "On the Internet, we are not constrained by space as the store can be as large as we like." Adopting an online method of delivering products helped them match Wal-Mart. (Chadwick et al. 2007, 714.)

Tesco pioneered the bricks and clicks business model with its online grocery service using the existing brick and mortar infrastructure to fulfill the niche and creating value. Tesco is not alone when it comes to companies which have adopted the Bricks and Clicks model. Other successful practical examples of were observed in Tesco competitors, ASDA and J Sainsbury in the United Kingdom. Moreover, in the United States, France, The Netherlands, New Zealand and Australia supermarkets such as Albertsons, Safeway, Carrefour, and Woolworths respectively mentioned bricks and clicks models successfully fitted into their business strategy, but none of them gained the financial returns in terms as Tesco. (Murphy 2007, 943.)

3.2 Pure-Play

In Pure Play model a company mostly focuses on the aspect of distribution and storage of goods, it enters the niche with no brick and mortar stores. From a business perspective, the pure-play e-grocer model with no retail storefronts, only web ordering, delivery, and possibly one or more warehouses have several advantages over the traditional retail grocery model. Firstly, following a Pure Play e-grocer do not have to relate to high costs associated with multiple retail locations, including rent, parking, and high property taxes like their counterpart bricks and clicks. Secondly, by holding the inventory in fewer locations, an e-grocer manages its inventory very efficiently. Results in reducing inventory holding costs and increasing inventory turnover rates. It leads to less spoilage of products and shorter lead times from the producer to the consumer, an important key advantage when selling perishable products. Thirdly, an e-grocer can collect detailed information about its customers' buying habits and preferences. Expand its CRM program which can then be used for targeted marketing and personalized promotions. This approach gives an advantage over traditional grocers who are trying to do the same by using loyalty cards to track purchases of their consumers. Fourthly, by integrating a Pure Play model an e-grocer can generate incremental sales growth from the industry. (Hays et al. 2004, 5.)

The US media's favorite online grocery model during the dot-com boom was of Webvan, a Pure-Play company with a bold target to rival that of the Amazon. Webvan identified and targeted the potential market of $1.5 trillion in the U.S. The Webvan group did not just focus on selling groceries on the internet, but in contrast to aimed till the last mile. This meant delivery of a wide range of products to households. Webvan's mission was to automate the grocery business by picking from its large warehouses, investing in infrastructure on the edge of town locations. The size of warehouses ranged about 300,000 square feet which were almost three times bigger than a supermarket costing $40 million to build each. The investment targeted the web based shopping pie, using warehouses equipped with technology which featured of computerized controlled rotation racks, conveyor belts and rotating rack bringing the goods itself to the picker. Going public in 1999, Webvan became one of the largest initial public offerings of that banner year for technology stocks, raising

nearly 800 million in the public and private sector. It had aggressive expansion plans wanting to enter 16 cities across the United States with a single large fulfillment center hub, and neighborhood delivery was managed from drop locations. Webvan failed to exploit the first-mover advantage and due to lack of liquidity closed its virtual shop in July 2001. (Murphy 2007, 944.)

According to Neely, Smith, & Winemiller (2000, 3), we exploit the failure of Webvan by applying Michael Porters five forces analysis. External and internal factors must be considered by e-grocers when choosing their following strategy.

THREAT OF SUBSTITUTIONS

The threat of substitute products was very high, the consumers had many other choices to fulfill their grocery shopping need. It was very clear for Webvan that it had no power to charge a high price for delivery. Webvan never had the competitive edge, which meant consumers had high power and freedom to choose other options for shopping.

THREAT OF RIVALRY

By the time, Webvan introduced online grocery services, there was no significant threat of rivals. There were no existing competitors, Webvan group being the first who introduced an online grocery store in that region.

THREAT OF NEW ENTRANTS

The threat of new entrants was extremely high, usage of internet technology kept growing very fast and became very common in daily human life increasing the target market which had to be addressed. Then the market of online shopping services had great potential and scope even in the future. The new companies could easily enter into online grocery business, barriers were considered very low in contrast to Bricks and Clicks businesses also faced a lower risk in establishing e-commerce locations for their products.

BUYER'S BARGAINING POWER

The evidence showed that bargaining power of buyers did exist. If we make a comparison with prices and services offered by Bricks and Mortar grocers to Pure-play grocers. Bricks and Mortar customers were very satisfied, why would they bother using services of Pure-play grocers like Webvan.

SELLER'S BARGAINING POWER

Bargaining power of suppliers was low, manufacturing companies in food production business cannot influence much on buyers and play with increasing the price of their products. Many other existing food producers in the market are offering the same products. The food manufacturer could only take advantages to display their products on Webvan shelf to increase their sales revenue.

In light of Porters five forces model, Webvan held a favorable position going online and offering their services to home users. However, it spent more money on infrastructure and eventually completely ran out of money. Their operations cost were very high and had employed 2000 personnel, concluding that its business model was not sustainable.

Where Webvan had failed a successful implementation of Pure Play model, there are a few existing successful pure play stories seen in the British market such as Ocado. An online supermarket located in the northwest of London. It started as a joint venture with John Lewis, a partner in the very well-known Waitrose supermarkets. Ocado had a single warehouse about 1.2 million square feet, 12 times bigger than an average supermarket. Workers picked orders from depots and delivered to end consumer in Midlands and Southeast. Ocado's operations based on interchangeable pods, carried to the depots on a multi-pod transporter which assists rapid cross docking to local delivery trucks without the need for reloading. It reduced pickup and drop off times, by using only a single warehouse. This resulted in drastic financial savings compared with Webvan. (Murphy 2007, 944-945.)

3.3 Infomediary

The third model used in e-commerce grocery business is Infomediary, in this model the contracted company does not handle the physical fulfillment. However, acts as an agent creating a link between the customer and retailer. Infomediary manages and maintains the website in a slightly different manner, orders taken from customers are connected to retailer's database by using Electronic Data Interchange (EDI), emails or fax. The retailer's stores pick and pack the goods for delivery to customers. The advantage of using Infomediary is cost savings to develop, manage, and maintain your own websites and other marketing expenses. One of an excellent example of Infomediary is Peachtree Network, which offered a website for small and frequent sole store operators in North America. Providing a consistent and established web order taking services which forwarded received orders via email or fax to stores or warehouses and interacted with their customers. (Murphy 2007, 945.)

Sometimes warehouses and the vast stores network choose to start EGS operations with the help of Infomediary, later once they achieve the sufficient scale in growth and sales they become Bricks and Clicks providers. Stongs used the same technique in response to the business environment changes, Peachtree Network supported it. Another example of Woolworth's supermarket, a leader in electronic grocery retail started its operations as part of Great New Zealand shopping mall. Shared its website along with a bank and other retailers, it was hosted and fronted by Ad-Pacifica. On other hands, EGS organizations can also outsource their operations to Infomediary like websites, hosting providers for logistic support. Quick.com's web server was hosted by an outsourcer in Calgary, it depended on fast connections between its customers and head office. (ibid., 945).

3.4 Success Factors for E-Grocers

Companies entering this niche market need to understand that the digital technologies are transforming the retail and consumer goods landscape. According to Galante and colleagues (2013, 26), six most critical questions on the following topics need to be addressed to provide broader thinking on digital consumer excellence in respect for changing technologies to be successful.

Strategy. Identifying, must win category battlegrounds? Identifying, roles played by each channel in a category? What strategic bets should they make on emerging platforms such as smartphones and tablets? How will digital technologies shape the store of the future?

Digital-sales stimulation. Identifying, opportunities to boost e-commerce traffic, conversion rates, and average order values? How can they harness web data to achieve a step change in customer-life-cycle management?

Digital marketing. When targeting the consumer decision journey, which touch points should they focus on in their multichannel? How can they use social media and web data to optimize their marketing expenditure?

Category management. What should multichannel pricing, promotions, and assortment strategy be?

Supply chain. How do their supply chain capabilities compete with the best in class? How can they use digital technologies to improve their operational processes and increase visibility throughout their supply chains?

Agile organization. Identify and prioritize capabilities, how do they build or acquire them? What metrics, processes, and structures are required to make their digital plans a reality and best position for them in an uncertain future?

Further, we study factors affecting the success of an online grocery business and catalog some examples of such advantages

3.4.1 First Mover Advantage

Being the first mover in a niche market can bring many benefits, the most important can be brand recognition. With the attention of the media, a first mover can inherit invaluable free publicity and advertising. This helps to establish a well-known brand as well as gain important advantages over competitors. During the early stages, market penetration can be the main focus for online grocers and being the first mover to the market certainly helps. (Keh, & Shieh 2001, 76-77).

A first mover also takes advantages from building a farther experience curve, enabling it to realize economies of scale and develop technical know-how before its competitors. Peapod as the first mover in the U.S. online grocery industry had been able to take advantage of these benefits and remained in the lead. The U.S media followed its business model innovations very closely, thereby giving it concrete free publicity. However, a first-mover advantage does not last forever. Watching Peapod's moves closely, competitors became fast followers. (ibid.)

3.4.2 Access to Capital

Internet start-ups, until quite recently were faced with difficult challenges to acquire capital. Kickstarter.com is a great example, which lets start-up companies get funded with relative ease compared with the traditional methods of financing for Pure-Play online grocers. The traditional retailer businesses were able to take strong financial support from different means even when generating losses, for example, the Amazon injected liquidity to HomeGrocer operations while Louis Borders saved Webvan. This funding by external means is crucial and necessary, especially when online grocers are still developing and testing out their business models. (Keh, & Shieh 2001, 77).

To survive in a new industry, sufficient and adequate resources play a vital role to maintain sustainable growth in the market for e-grocers. They need cash flow as a backbone of their operations in their start-up years for expansion and building economies of scale. A very common source of increasing capital is through IPOs and venture capitals. For example, Webvan was listed in NASDAQ stock market in November 1999, while Home-Grocer funded $100 million from the Amazon as well as venture

capitalist Kleiner Perkins Caulfield & Byers and Hummer Winblad venture partners. In March 2000, Home-Grocer also raised more $245 million from its IPOs. Peapod, the first online grocer, had its IPO in June 1997, but its share prices had tumbled and was rescued by the Dutch grocery powerhouse Royal Ahold in April 2000. (ibid.)

3.4.3 Strategic Alliances

It is evident that strategic alliance is a kind of strategy that sets fit into e-grocers business model to ensure their viability. No one company can do everything by itself in an industry that relies on several variable factors to operate. According to Michael Porter's competitive advantage theory, a strategic alliance is one of the methods of organic growth in addition to acquisition and mergers. The Pure Play e-retailer are usually looking to exploit and take benefits of being the first mover in a new market by adopting strategic alliances. This strategy allows them to gain rapid expansion, create working synergies by exploiting partner's resources and capabilities. Including the cost and time saving, resulting in gaining the economy of scale in a new market. (Keh, & Shieh 2001, 77).

Taking an example of Waitrose, which began to offer Waitrose@work in 1998, an office based ordering system targeting a specific niche market. After succeeding in the niche, Waitrose started to explore ways to expand its online services to the consumer market, instead of developing an in-house e-commerce unit. Waitrose made an acquisition of 40% share of LMS e-commerce grocery business. It was able to gain rapid expansion in its online services and gave birth to a new online brand Ocado. According to Sir Stuart Hampson, Waitrose's chairperson, "We were able to forge a marriage with a partner who had developed a technologically advanced operating platform, but which lacked the product to give its credibility." Waitrose exploited the sophisticated technology of its partner and provided home delivery grocery solution to its customers along with best customer service differentiating Ocado from competitors. In terms of geographical coverage, 40% of the British market was covered by Ocado's services by the year 2005. (Chadwick et al. 2007, 715.)

3.4.4 The Right Website

The other most important success factor is establishing and managing an excellent website which allows potential customers to navigate and shelf information. The features of a website must integrate with six I's of marketing mix which includes intelligence, interactivity, Integration, individualisation, industry restrictions and independence of location. It is harder to acquire customers by a website, compared with direct interaction with clients, for example, a walk-in customer in a shop. For a website to attract customers, it has to be user-friendly. The competition among online grocery services is just a click away so the website must have a good first impression to the customers. Otherwise, it can cost remedies to the company in the sense of losing the customers and their goodwill. Other issues which can cause damages are the handling of customers' personal data and security of their information. The website must be secured and provide customers' data protection with compliance to the national and international law's. Other common question is having a good search engine within the website to find the right products for the customers. (Keh, & Shieh 2001, 78).

In Customer Resource Management (CRM), a good website can help the e-retailers to observe the customers' product knowledge by having feedback options. It improves the development of new products, in others words, customers become product developers. Moreover, companies can use the customers' information to help them choose right products for them. If health conscious consumers' want to know about the nutritional value of food which they are buying. The companies should provide details of nutrition of food, send offers and promotions to them by email or manage a separate section including such information on their website. The online grocers must design a website keeping in mind the customers they are targeting. It is more likely that if customers feel satisfied with the website experience they would feel more comfortable using it again and recommend it to friends and family becoming loyal online customers. The online grocers should not underestimate the power of information and the access of information, online customers are brilliantly intelligent. Comparisons of prices are easily available online, low prices can attract and help potential customers to stick with one website in most of the cases. (ibid., 79).

3.4.5 Superior Service

As it is noted by various authors that groceries fall under the type of commodity goods which rely on services differentiation element. Therefore, offering premium responsiveness and services to customers, e-grocers can build brand equity and generate repetitive business. It provides a boost in market penetration enabling fast growth and achieving competitive advantages in the industry. While e-groceries are mostly focusing on facing rapid changes in technology, it is very crucial not lose the sight of responsiveness. The key to gain long-term benefits for online grocers is to maintain the relationships, incorporated with functional and emotional aspects of online customers. (Keh, & Shieh 2001, 78.)

Online grocers can build better closer relationships with consumers much faster compared than traditional stores in terms of interaction. Building on the use of existing customers' information like order history, asking if they are willing to buy the same products again, can create a bond. This type of bonding plays a very vital role in the engagement, and retention of customers. The loyalty of consumers is paramount to e-grocers, to obtain long-term benefits. A potential customer can also be influenced by using automatic calculators such as a virtual shopping cart. For example, sometimes customers visited the website and added items on the cart but did not purchase them. They can be approached by personalized services. Such as sending them a postcard to ask whether we did something wrong? Alternatively, offering them some value vouchers to buy products from the online grocer's website can also strengthen the bond. The other essential elements of services for online groceries are efficient and timely delivery. Peapod made arrangements with Walgreen's to deliver Walgreen prescriptions in selected markets and later expanded these deliveries to CDs, fresh flowers, dry cleaning and photo developing increasing their service superiority. (ibid.)

DIFFERENTIATION THROUGH NICHING

The online grocers can also focus on offering different products by attempting to target a specific niche to satisfy the segments of the market with unmet needs and take advantages over competitors. By offering organic food, kosher products, halal food, gluten free and vegetarian food. To meet the kosher food demand among Jews, the Kosher Grocer Inc. started to offer kosher food. The same as GlobalGrocer, a Singapore-based online grocer which began offering Singaporeans and other Asians regional foods and spices worldwide. (Keh, & Shieh 2001, 79).

3.4.6 Value Added Information

In order to attract online shoppers, the provider of online groceries should offer added value information to customers compared with traditional stores. Value added information can include providing food recipes, cooking tips, nutritional data, cooking expert advice, diet experts advise, and much more. It could help the loyal customers to visit the website again and again. (Keh, & Shieh 2001, 79).

Another idea is to establish a platform for added value information in the form of a chat room or a forum on the website, where customers can give comments and share tips with other online shoppers. These types of features on websites engage customers to stick with the website and help build a close relationship with e-grocers. By providing value added services, it could create a sense of belonging to the customers and experience more than just online shopping. (ibid.)

3.4.7 Warehouse and Logistics Structure

It is a fact that storefront can be virtual, but the backroom operations cannot be. Therefore, the online grocers must have effective, efficient warehousing and logistics network at hands to address distribution matters such as delivering goods to all their individual customers in a timely manner. In the grocery business, the situation is magnified by an advance order of supplies, the perishability of products and continual fluctuation of demand from customers. Therefore, when building and designing the warehouses, logisticians should consider the land availability, population density, and geographical location. (Keh, & Shieh 2001, 79).

One of the aspects of grocery shopping is that online grocers cannot stick with the exact immediate delivery of orders from customers. They must adapt, develop efficient storage and distribution channels to fulfill the demand of customers closely for quick deliveries. PDQuick, a small grocery chain based in Los Angeles realized that smart logistics are essential to cope with LA's notorious traffic congestion, it committed delivery within 30 minutes. (ibid.)

3.5 Failure Factors for E-Grocers

It is very useful for online grocers to review success factors for e-grocers to maximize their productivity. However, the failure risks associated with entering the niche cannot be neglected. Some of the most significant failure factors for providers are discussed below.

3.5.1 Seeing, Touching, and Smelling Products

Perishables such as vegetables and fruits, which fall into tangible and intangible categories such as see, touch and smell can result in a potential pitfall for e-grocers. The consumers may not be satisfied unless they smell the essence and get the feel of freshening touch of the fruits and vegetables. Some online grocers are feeling very comfortable having special arrangements for fresh fruits and vegetables. Pickers supply these types of goods in intensive care, but it is very hard to satisfy and change the mindset of consumers as they tend to choose fruits and vegetables with their own hands. (Keh, & Shieh 2001, 79).

Dornbusch mentions, "Looking at and smelling and touching food is a very basic part of their (consumers) lives." In an interview with Yle news Jaana Kojo a customer mentions, "I buy my food from grocery stores because I want to make sure that the products I purchase are fresh." One of the top professional services firm Ernst & Young's revalued in its second annual Internet shopping study in 1999, that the second most popular reason for customers not buying food online after security issues are not to be able to see products before purchasing. (Keh, & Shieh 2001, 79; Finns Haven't Acquired a Taste for Online Grocery Shopping 2012.)

3.5.2 Poor Supply and Delivery

Beyond the facts of having an edge of fast, conveniently, low price and time-saving home delivery, e-grocers are determined mostly by their effective and efficient consumer logistics networking. Many reluctant consumers expect the delivery of orders within minutes when shopping online. According to Keh, & Shieh (2001), 19% of online consumers complained that their orders were delivered late as expected time or not at all. As far as the online grocery market trend is increasing so is the competitions and the consumers' expectations towards speedy delivery are also increasing. One of the main reasons for this response from consumers is that customers do not plan their meals ahead of time. Numerous consumers, who wanted to buy online, are not because of lack of the immediate delivery response. "*Net Grocer's arrangements with FedEx allowed for delivery within only two to three days, thereby enabling the sale of only non-perishables. Compare this with Ur-banFetch.com and PDQuick's promise to deliver within the same day. Ordering online and having someone bring merchandise to your door in under an hour is the height of convenience*." (Keh, & Shieh 2001, 79-80; Huang, Xia, & Zhu 2010, 1541.)

A major portion of delivery problems are identified by the choice of strategy e-grocers implement regarding geographic coverage. Webvan took steps to serve in specific metropolitan areas covered by internet access and used to serve only local markets. However, later on it build the infrastructure for distribution centers, automation systems, and truck fleet to expand its coverage. The other players in the market such as Peapod and NetGrocer seemed to be more aggressive and tried to cover the whole country but due to financial issues these companies were unable to reach their goals by themselves. Therefore, consequently shook hands with third party logistics and the local partners to operate distribution centers. Even though the consumers who lived in the major urban areas still faced delivery problems. (Keh, & Shieh 2001, 79-80).

A few exceptional cases exiting the British consumer market are of Tesco and pure-play retailer Ocado, who made positive moves and ran successful operations. However, Europe's online grocery market is stuck in the middle due to poor supply management which leads to low demand. Many grocery e-tailers failed to maintain the economy of scale which means, they were unable to afford the extra labor and operating cost such of fuel and delivery which were about €4 to €7 per order. In France, about one forth consumers had discontinued online grocery shopping on a regular basis. The other factor which leads to a stop in online grocery shopping for consumers is scepticism about goods quality. Figure 2 discusses the willingness of non-users in France, who will return to online shopping if price, service and convenience related issued are resolved. "*In France, 33 percent of consumers who have never bought groceries online say they would probably or certainly begin to do so within the next six months if the service were available in their area. In Spain, that figure is even higher, at 49 percent. Breaking the vicious cycle will require just one retailer in every market to step up and take the lead.*" (Galante et al. 2013, 23.)
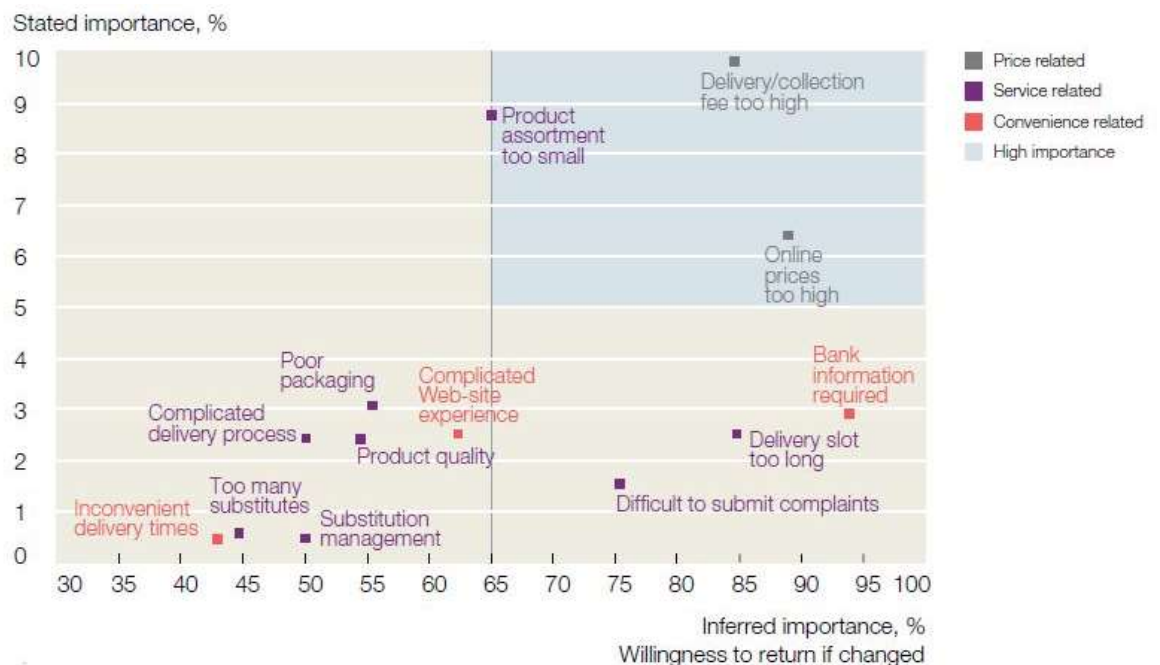
Figure 2 Nonusers who have tried and stopped in France. (Galante et al. 2013, 24.)

3.5.3 Financing and Security

Despite the fact that online grocers had easy access to capital funding in the past does not eliminate the potential hurdles of raising capital for start-up online grocery businesses. Although it requires less financing to start compared with starting a traditional retailer business. Beyond the building of warehouses, it is hard to gain competitive advantages and market shares. Even though many online grocers succeeded raising finance in the past, but recently, many others have faced difficulties in arranging capital from banks and resulted in discontinued operations. The other threat to online grocers is a price war, in future may be industry becomes stagnant due to nature of grocery products. (Keh, & Shieh 2001, 80).

The security is the top reason why the consumers are scared to buy products online. As a result of unexpected online scared events and frauds that happened in the past, they are afraid to practice shopping online. Consumers try to avoid becoming the next victim. Online grocers must give assurance of security and prevention of any potential online frauds. Publish a privacy statement to provide assurance of data safety and not share consumer's personal information with any other third parties. The website must be secure and encrypted to prevent frauds and theft of information such as consumer's credit card details. (ibid.)

3.5.4 Technology

Many authors claim that due to the nature of informatics when applied innovatively to the right place, there is simply not any other better resource for gaining competitive advantage than information technology. However, organizations also face difficulties in order to gain a sustainable competitive advantage directly only through the application of information technologies. It is generally perceived to be valuable, widely available, easy to understand and ultimately easy to copy. In simple terms, it is recommended that sustainable advantage is gained by unique Information Systems (IS) capabilities and unique resources of information technology (IT) applications. For instance, in-house developed applications may run better than commercial off-the-shelf available applications where there is the question of gaining the competitive advantage over competitors. (Chadwick et al. 2007, 703-704.)

Regarding gaining an advantage using IT resources, a retailer must develop a website which clearly offers different but better functionality and services compared with its competitors. IS capabilities work hand in hand with IT resources to enhance the continuous development of a website in respond to rapid changes in the internal and external environment of the company. "*If a retailer's web site is leveraged through the deployment of complementary re-sources, such as service, brand image, customer loyalty or logistics, the organisation may be able to gain a competitive advantage from its online channel, even if its web site is no better than that of its competitors*." (ibid., 707).

3.5.5 Privacy and Seasonal Influences

The trend in the past few years has been that online grocery organizations offer marketers to study consumers' buying habits to target their promotions effectively. Online shopping has provided manufacturers to link online buyers in a way that traditional stores cannot. However, the dark side is that online shoppers are very much concerned about their privacy in all means, whether it is about their buying behaviors, lifestyles or any other kind of information being observed. (Keh, & Shieh 2001, 80-81).

Another failure factor for e-grocers could be that purchasing preference of customers vary from season to season. In winter times, consumers may want to prefer shopping online more compared with summer time due to cold and hot weather seasonal demand for example. Online grocers need to watch these seasonal variations for the inventory management and plan production schedule closely. (ibid.)

4   Finnish E-Grocery Market

Adoption of the online grocery shopping, in Finland had been slow in comparison with other countries in Europe. There are only handful food shops' networks operating to deliver groceries at home for customers. Some of them deliver the so-called food bags, which contain several days of food according to recipes chosen by customers. Some online stores work like regular food stores where customers can fill a shopping cart on their websites and groceries are delivered to the doorstep. Honorable mentions such as Foodi.fi, Kauppahalli24.fi, Ruoka.net, Kauppakassi.com, Tavaraverkko.com, Svarfvars.fi, Syohyvin.fi, Middag.fi, Antonanton.fi, Avada.fi, M-kotivayla and Mukava ruoka offer online services in the form of home deliveries and pickup from shops for customers in various regions of Finland. (Voiko ruokaakin ostaa netistä? [Can you also buy food from the internet?] 2016.)

4.1   E-Grocers in Jyväskylä

The city of Jyväskylä is located in the region of Central Finland, 270 km north of Helsinki. It was incorporated as a town in 1837. It is the seventh largest city in Finland with 137000 residents. A few operators provide online grocery services in Jyväskylä. (Statistics on Jyväskylä 2016.)

AVADA

Avada is an online grocer working in the region of 15 km, from the city center of Jyväskylä. Delivering groceries to customers' doorsteps from 16–19 pm, Monday to Friday. Payments can be done by a banking card on the arrival of the groceries. Customers can choose to order either ready-made grocery bags or order groceries by their choice by sending the grocers an email or by calling the customer service. Two types of ready-made grocery bags are available on the website, a Family bag, which consists of groceries a family can use for a few days. Another, the so-called Little bag, which provides food for the day. Avada charges customers €12 for each delivery. (Avada – ruokaostokset kotiovellesi [Avada – Grocery shopping at your doorstep] 2016.)

Johannes Lahtinen and Markus Saintola, young entrepreneurs explain that on average they deliver groceries to five customers in an hour, operating only three hours per day. In Laukaa, they also provide groceries for home care clients and other household customers twice a week ranging from 25–35 customers a day. Economic viability and the ecological footprint are their priority when planning home delivery logistics, the more customers they can deliver on a single route, the more entrepreneurs have access to hourly wage and at the same time, transport emissions per household are decreased. "We strive to drive the routes as rationally as possible, in the same area at the same time avoiding the waste of kilometres." says Saintola. (Kivimäki 2014, 10.)

The entrepreneurs follow an Infomediary business plan for their EGS operation. They buy groceries on behalf of the customers from traditional bricks and mortar stores located in the region and simply deliver them to the customers. However, Lahtinen disagrees that it is an easy task to accomplish, the entrepreneurs have made grocery shopping for their customer's nothing less than an art. They plan the logistics such a way that environmental footprint is at the lowest, and they can shop for their clients in time. "The shopping list has to be designed so that the food products on the list are in the same order as they appear in the store. Otherwise collecting groceries can take too much time." says Lahtinen. (ibid.)

MUKAVA RUOKA

An online grocer operating in Jyväskylä closed shop beginning of 2015 after operating for a mere couple of months following a Pure-play business model. On their website, Jussi and Sanna co-founders of the online service mention, "We see a lot of potential in the future for online groceries services, and we think that the purchasing habits of consumers have the potential to change, but for a company this size the change is too slow." (Mukava Ruokakauppa kotonasi [Mukava Ruoka at your home] 2016.)

M-KOTIVÄYLÄ

Operating in the region of Jyväskylä M-Kotiväylä is following a Bricks and Clicks model. In 2006, it constituted of 60 stores all over Finland owned by independent traders, which reflects in the consumer service as well as the competitive prices locally with a broad inventory. M-Kotiväylä offers a wide range of groceries and some stores also offer a comprehensive range of consumer goods. Currently located in the Keljonkangas and Taulumäki region of Jyväskylä it offers an online service for the residents. This Bricks and Clicks grocer offers thousands of products which consumers can order from using their website. The deliveries of goods are conducted within the defined time intervals. Customers can order groceries before 9 am and can receive them the same day by 11 am. Mia Karhunen, a worker at M-Kotiväylä on an interview with a local newspaper, says, "I believe that the home delivery service is very handy for housewives, who may have more children and may not use a car, can save time and money." (M-Kauppias toteuttaa asiakkaitten toiveita [M-Kotiväylä fulfills customers wishes] 2013.)

4.2 Regulations in Finland

The Ministry of Agriculture and Forestry, Finland (23/2006, amendments up to 352/2011 included) Section 11 refers to the requirements concerning the handling, storing and transportation of food as follows. (L 8.4.2011/352.)

1. Food must be handled, stored and transported in a way that does not endanger the high hygiene standard of food.

2. Further provisions are issued by Decree of Agriculture and Forestry on:

- Handling and transportation of food.

- Temperatures for handling, storage, transportation, selling and serving food and temperatures of food.

- National implementation of the Agreement on the international carriage of perishable foodstuffs and on the special equipment to be used for such carriage (Finnish Treaty Series 48/1981; the ATP agreement).

TRANSPORT

During the carriage, control solutions should include measures to prevent weakening of the hygienic quality of food. Self-supervision must accordingly show the actions covered by the plan, the person in charge of transport, requirements for transportation equipment and rolling stock. Transport containers should regulate according to mentioned transport temperatures. A temperature monitoring system must be present to ensure necessary steps are taken to control food hygiene. The supplier and the recipient are responsible for carrying check-ups upon the transportation of food. The best way to perform these tasks is to integrate their check plans upon loading and unloading activities. Food business operators must keep up to date in-house control. (Kuljetus ja Varastointi [Transport and Storage] 2010.)

STORAGE

Immediately after the arrival of food, it should be transferred to an appropriate storage facility, storage or in the case of food being sold. The required product temperature, humidity and the smell of the sensitivity of the product must be taken into account. There must be different storage rooms for different types of products, dry storage, cool storage, cold storage, frozen storage, fresh meat of poultry, meat and fish should have their separate storages. Storage of raw materials and finished products must be organized in such a way that they are not in contact with each other so that cross-contamination or pollution does not happen. The storage must comply with the product group storage temperatures and storage conditions. (Kuljetus ja Varastointi [Transport and Storage] 2010.)

There must be separate control plans for Storage, control and monitoring of food. Certain people should be named responsible for that specific storage of product group. The most important factor of Storage control is regular monitoring and recording of storage room temperatures. A system must be in place to record temperatures of different storage sections on a regular basis, Cold and frozen facilities should include thermometers. Surveillance tapes for facilities and temperature registrations should be stored for one year. (ibid.)

5 Research Design

To analyze the demand of an online grocery service in Jyväskylä a survey was conducted in the region. Data collected in the form of a questionnaire was analyzed using statistical inference. "Statistical inference refers to using known quantities to draw conclusions about the probability of unknown quantities. It describes any procedure for extracting information about a probability distribution from an observed sample." Three principals when conducting analysis through statistical inference are observed such as point estimation, hypothesis testing and set estimation. (Trosset 2001, 147.)

5.1 Defining Variables

Characteristics of unknown items or individuals that are analyzed using statistical methods are called variables. Variables consist of different values, which have operational definitions. Two types of variables exist, categorical and numerical variables. Categorical variables have values which can be placed in quantitative categories such as Yes or No. Numerical variables consist of values which represent quantities. Discrete numerical variables answer questions such as, how many? Consist of a counting process of whole numbers. Continuous numerical variables measure any numbers answering questions such as, how much? (Levine et al. 2008, 4–10.)

Using level of measurement is another way of classifying data. There are four widely recognized levels of measurement namely Nominal scale, Ordinal Scales, and Interval/ Ratio Scales. Nominal scales classify data into distinct categories in where no ranking is implied. It is used if values in questions are in categories. Ordinal scales classify data into distinct categories where ranking is applied contrary to nominal scales. Interval and Ration scales are ordered scales in which the difference between measurements are meaningful quantities not involving and involving a true zero point respectively. These are used when values are numerical in nature. (ibid.)

5.2 Data Collection

Data sources can either be primary or secondary in nature. In a primary source "The data collector uses their own collected data for analysis. Such as data from a political survey, data collected from an experiment or observed data." In a secondary source, "The data collector is not performing data analysis. Such as analysing census data and examining data from print journals or data published on the internet." The data was collected by conducting a survey using hard copies. The data analyses are performed by the author himself hence concluding the source of data for this research is primary. (Levine et al. 2008, 6.)

Data collection can be conducted in a form of a sample or a population. Data collection form as a population consists of all the items or individuals which the conclusion is drawn for, usually includes the entire large group compared with when the data is collected in the form of a sample. A sample is a portion of the population in question selected for analysis. The sample includes answers from a small group. It is almost impossible in this research to conduct a survey for the entire population of 137,000 inhabitants in the city of Jyväskylä. A sample is drawn from the questionnaire conducted, 73 successors attended the survey. Before the data is organized for analysis, the sample went through a cleaning process. Some questions fated wrong inputs by successors which had to be wiped clean for an error-free analysis for the collected data sample. (ibid., 5).

5.3 Organizing and Visualizing Data

Data can be organized and visualized before analysis for better understanding of the sample. In categorical data, responses are tallied into categories and the frequency/ percentage is presented through tables and charts. One categorical variable can be presented using a summary table, it can also be visualized by using a bar chart, a pie chart or a pareto diagram. A contingency table is used for two or more categorical variables. In a contingency table joint responses are tallied so that one variable is located in rows and other in a column, which in graphical form is visualized by using a side by side chart. (Levine et al. 2008, 33–59.)

A summary table for organizing one categorical variable concerning the proportion of people who accept and reject the idea of online grocery service in Jyväskylä from the taken sample in Table 1. Figure 3 depicts the same categorical variable in percentages by using a bar chart.

Table 1 Summary table for organizing one categorical variable.

Number of Successors	YES	NO
73	22	51
Percentage of Successors	30.1%	69.9%
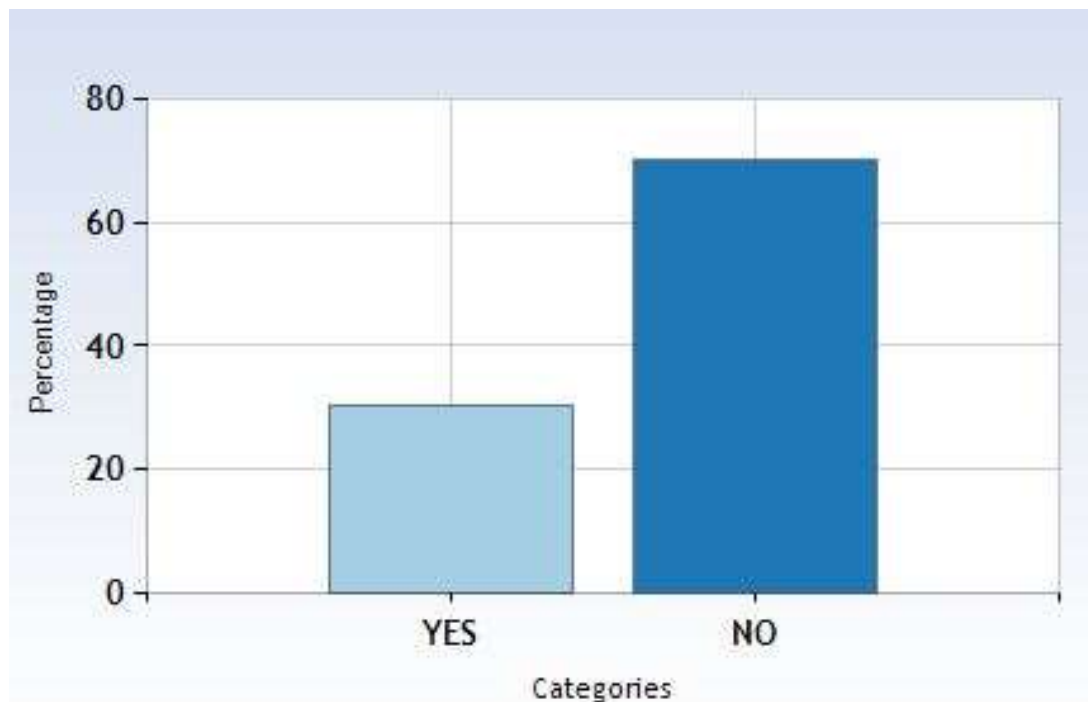
Figure 3 Bar chart for visualizing one categorical variable.

A contingency table, for two variables concerning the Male and Female proportions who accept and reject the idea of online grocery service in Jyväskylä from the taken sample shown in Table 2. Figure 4 visualizes the contingency table using a side by side chart.

Table 2 Contingency table for organizing two categorical variables.

Successor Groups	YES	NO	Total
Male	9 (13.23%)	18 (26.47%)	27 (39.7%)
Female	12 (17.64%)	29 (42.64%)	41 (60.3%)
Total	21 (30.9%)	47 (69.1%)	68 (100%)
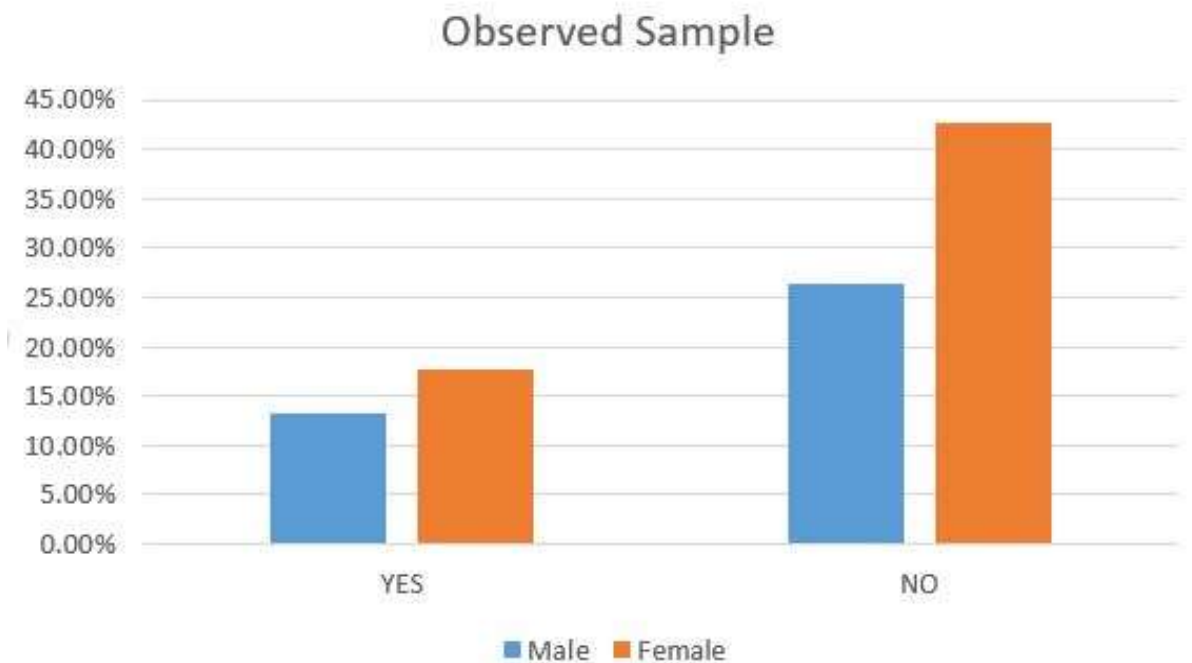
Figure 4 Side by side bar chart for visualizing two categorical variables.

Numerical data can be organized using an ordered array, frequency distribution, and cumulative distribution. An ordered array numerical data can be visualized by using a stem-and-leaf display. Histogram, Polygon, and Ogive are used to portray frequency and cumulative distributions graphically. Scatter plots and time series plots are used for two or more numerical variables. (Levine et al. 2008, 33–59.)

Numerical sample data collected, is organized and visualized using frequency distribution and histogram concerning the amount of times in a week consumers shops for groceries in Jyväskylä, in Figure 5.

Bin	Frequency
1	2
2	17
3	27
4	20
4	0
5	5
6	1
7	1
More	0
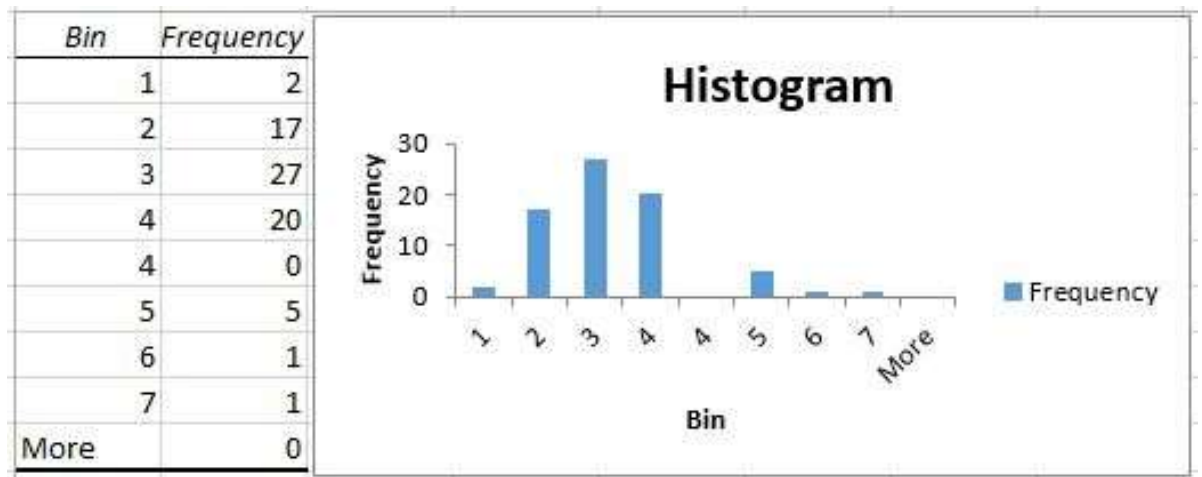
Figure 5 Organizing and visualizing Numerical data.

5.4 Analyzing Data

When analyzing data descriptive measures and nature of distribution of data needs to be addressed. When summarizing and describing numerical variables just preparing tables and charts in not enough. Central tendencies, variation, and shape of each numerical variable has to be considered. "*Central tendency is the extent to which all the data values group around a typical or central value. Most sets of data show a distinct tendency to cluster around a central point. When talking about an average value or the middle value or the most frequent value, these are informal names for mean, median, and mode three measures of central tendency.*" (Levine et al. 2008, 96–114.)

Variation describes the spread of the values in the data set. It measures the dispersion of data from the central tendency. The range is the smallest value subtracted from the largest. Variance and standard deviation measure the average scatter around the mean. Mostly used to measure sample variance and sample standard deviation for analysis. The shape is the pattern of the distribution of data values throughout the entire range of all the values. Two useful shapes related in statistics are skewness and kurtosis. (ibid.)

NORMAL DISTRIBUTION

The normal distribution is the most common continuous distribution used in statistics. "A distribution of data where the probability curve rises smoothly from a small number of results at both extremes (the tails) to a large number of cases in the middle." Normal distribution is quite useful as it features a certain percentage of the score which always falls between the mean and distances, above and below the mean known as Standard Deviations. "A normal distribution with a mean of zero and a standard deviation of one is called the standard normal distribution." It is important when conducting statistical analysis for the reasons that numerous continuous variables common in businesses closely resemble a normal distribution. It can also be used to approximate various discrete probability distributions. It also provides the basis for classical statistical inference because of its relation to the Central limit theorem. (Tavakoli 2012, 411; Levine et al. 2008, 219.)

5.5 Sampling Distribution of Mean & Proportion

A sampling distribution is a distribution that is followed by the collected samples. When using statistical inference which uses statistics calculated from samples to estimate the values of population parameters, the concern is to draw conclusions about a population, not the sample. When using the sample (statistic), to estimate the population (parameter), every possible sample of a given size that could occur should be examined and their distributions defined. The sample mean (the statistic) is used to estimate a population mean (a parameter) and the sample proportion (the statistic) is used to estimate the population proportion (a parameter). (Levine et al. 2008, 261.)

The mean of all the possible sample means is always considered equal to the population mean, it is an unbiased property of sample mean. Variation in the sample mean of all possible samples is denoted by the standard error of the mean. Sample acts as a reflection of the characteristics of a population. If the values, in a population are normally distributed the values in the sample should also be approximately normally distributed. The Central limit theorem is applied if the population is not normally distributed or it is unrealistic to assume that the population is normally distributed. The central limit theorem states if the sample size gets large enough the sampling distribution of the mean is approximately normally distributed. It is held true regardless of the shape of the distribution of the individual values in the population. (ibid., 262–269).

Proportion is a decimal number between 0 and 1 that indicates a fraction of interest. The sample proportion, (a statistic) is used to estimate the population proportion (a parameter). A sample proportion (p) is the number of items having the characteristics of interest divided by sample size (n). A standard error of proportion describes the variation of all possible samples. The sampling distribution for proportions follows a binomial distribution. However, normal distribution can be used to approximate the binomial distribution if n*p and n*(1-p) are each at least 15. (Tavakoli 2012, 497; Levine et al. 2008, 272–273.)

5.6 Hypothesis Testing

Hypothesis testing begins with a claim, assertion or a theory about a particular parameter of a certain population. It is appropriate for instances when two possible statements are tested to guess which is true about a population using sample data. (Trosset 2001, 152; Levine et al. 2008, 272-273.)

Seven steps are followed when testing the hypothesis.

1. State a null hypothesis based on the specific question or phenomenon to be investigated.

2. State an alternative hypothesis. It may be a directional or a non-directional hypothesis, depends on the phenomenon being tested by the null hypothesis.

3. Specify the level of significance. In this research 0.05 is used. It represents the maximum acceptable probability of incorrectly rejecting the null hypothesis.

4. Determine the sampling distribution of the sample statistic in interest. Select a one-tail or a two-tail test according to the alternative hypothesis.

5. Evaluate an estimate for the standard error of sample statistic in question. Variation depends on the sample statistic in question.

6. Compute the true value of the test statistic and locate its value on the sampling distribution.

7. Reject or do not reject the null hypothesis, depending on whether or not the sample statistic is located on the sampling distribution at or beyond the value of the test statistic at a given level of significance. (Tavakoli 2001, 267.)

The logic behind hypothesis testing methodology is to determine if the null hypothesis mentioned is to be true after evaluating the sample data. Null hypothesis denoted by H0. If true, the sample statistic is likely to differ from the value of parameter because of variation. However, if the sample statistic is close to the population parameter, it is concluded that there is insufficient evidence to reject the null hypothesis. If there is a large difference between the statistic and hypothesized value of the parameter, it is concluded null hypothesis is false and alternative hypothesis is accepted which is denoted by H1. Evidence suggests that it is far more likely that the alternative hypothesis is true. (Levine et al. 2008, 329–330.)

The level of significance is designed to control the risk level to reach an error free conclusion, denoted by α. After specifying alpha the risk of committing an error is under control. Critical values can be determined related to the level of significance which divides the region of rejection and nonrejection. The size of rejection region is known because alpha is the probability of rejection when the null hypothesis is true. If the test statistic, falls into the critical region also referred as the region of rejection null hypothesis is rejected. If it falls outside the rejection region, the null hypothesis is not rejected. The complement of the probability of committing an error is called a confidence coefficient calculated by $(1-\alpha)$, confidence level of a hypothesis test is multiplying the confidence coefficient by 100 to get value in a percentage. The confidence coefficient represents the probability of concluding that the value of the parameter as specified in the null hypothesis is plausible when it is true. (ibid., 331–332).

5.7 Confidence Interval

The confidence interval is a range calculated using sample statistics to estimate an unknown population parameter with a given level of confidence. Confidence intervals are constructed around population proportions, and population means by using sample statistics as a point estimate. The point estimate serves as the center of the confidence interval. The width of a confidence interval depends on the chosen level of significance and the standard error (Variation). Lower and Upper values around the parameters which are fixed values of the population are formed by using statistics which are known from the sample. However, the true parameter lies between the constructed intervals. The general form of the confidence interval is (point estimate) ± (multiplier) (standard error). (Confidence Intervals 2016.)

For constructing a confidence interval for proportion, proportion of a sample (p) is calculated. If n*p and n*(1-p) > 15 it follows an approximated normal distribution. The margin of error is computed by using a Z*multiplier and standard error (variation). The value of Z multiplier is dependent on the level of confidence. For constructing a confidence interval for a mean, the sample mean is assumed as the population mean. If n > 30 it follows an approximated normal distribution. The margin of error is calculated by using a t*multiplier and standard error. The t multiplier is also dependent on the chosen level of confidence and degrees of freedom (df). (ibid.)

6 Research Results

Two major components of statistical inference are confidence interval estimation and hypothesis testing. They are based on the same set of concepts of interpreting whether a parameter is less than, more than or not equal to a specified value, but are used for different purposes. Confidence intervals are used to estimate parameters compared with hypothesis testing, used for making decisions. The following research questions are answered by exploiting the relation of confidence intervals and hypothesis testing.

1. What is the demand for an online grocery service in Jyväskylä?

2. How many times in Jyväskylä do consumers shops for groceries in a week?

3. How much is the interested population ready to pay for such service?

4. What is the age group of people that are most interested?

5. Do females dominate the idea of online grocery shopping?

6. Which areas in Jyväskylä show the highest demand for an online grocery service?

7. Do foreigners or Finns dominate the idea of online grocery shopping?

8. Which grocery giants do customers prefer shopping from, S-Group, K-Group or Lidl?

RESULT 1

To plot the demand for an online grocery service in Jyväskylä, sample proportion (p) was calculated. The variable in question is categorical in nature, $X_i = 1$, for randomly selected successors who wished to shop online. $X_i = 0$, for randomly selected successors who do not want to shop online for groceries. Sample size (n) consisted of 73 successors with 22 successes ($X_i = 1$) which preferred EGS. $n*p > 15$ and $n*(1-p) > 15$ indicating the sample distribution is approximately normal. The level of significance was chosen to be 0.05 and level of confidence 95%. The value of Z* Multiplier was calculated in excel with respect to the level of significance. The confidence interval was constructed around the proportion (p). We are 95% confident that the true percentage of people who agree to use an online grocery service in the whole population of Jyväskylä are in the ranges 19.61% – 40.66%. The calculations can be found under the Appendices 1.

RESULT 2

To determine how many times the population of Jyväskylä shops for groceries in the week a confidence interval around the sample mean value is calculated. The variable in interest is of numerical in nature answering the question such as how many. Sample size (n) consists of 73 successors who participated in the survey. $n > 30$ determines that the sampling distribution is approximated normal. t-distribution is almost identical to the standard normal distribution, the analysis is performed using a t*multiplier. The sample mean, sample standard deviation, degrees of freedom (n-1), variation and t*multiplier can be seen from the Appendices 2. An upper and lower tail confidence interval for the population mean is constructed. We are 95% confident that the true mean times for which population of Jyväskylä shops for groceries in a week is in the ranges 2.94–3.47 times.

RESULTS 3

To figure out how much the interested population is ready to pay for such service a confidence interval around the mean value is constructed. The variable of interest is numeric in nature, how much value is euro. Sample size (n) of 22 successors who wish to shop online is greater than 15 which shows a relatively symmetrical distribution. The Central limit theorem is applied here which states if the sample size is increased it follows an approximated normal distribution. t-distribution is almost similar to the standard normal distribution hence, we can perform the analysis using a t*multiplier. Sample mean, sample standard deviation, degrees of freedom (n-1), variation and t*multiplier are calculated in Appendices 3. An upper and lower tail confidence interval for the population mean was calculated. We are 95% confident that the true mean value of the money, the population willing to use the service in Jyväskylä is ready to pay are in the ranges €4.38 – €14.16. This calculated range is quite large, it is because the sample size consists of only 22 successors who wish to use an online grocery service. If the sample size is increased in the future, the sampling distribution will truly form an approximated normal distribution resulting in narrowing down the ranges.

CHI-SQUARE TEST

The specific test considered for the rest of analysis is called chi-square test and is appropriate when the outcome is discrete (dichotomous, ordinal or categorical). The chi-square test of independence uses sample data and statistically tests the significant relationship between two or more categorical variables to draw conclusions to a specific population. It is right skewed and relies on degrees of freedom for calculation. Data is organized in a contingency table, and degrees of freedom are calculated by (number of rows – 1)*(number of columns – 1). For analysis of two or more independent comparison groups the null hypothesis H0 considers all the involved categorical variables are equal, ($\pi = \pi_1 = \pi_2 = \ldots = \pi_n$). The alternative hypothesis H1, is opposite of H0 ($\pi \neq \pi_1 \neq \pi_2 \neq \ldots \neq \pi_n$). (Chi-Square Test of Independence 2016.)

RESULT 4

Hypothesis testing method is used to find the age group of people which are interested the most in shopping online for groceries. The null hypothesis H0 is defined which states that proportions of consumers who favor the online grocery service for each age group are equal. The alternative hypothesis H1 states the proportion is not equal. If H1, is true further calculations can be made to figure out the age group which prefers shopping online more than the rest. The level of significance is 0.05. Chi-square distribution is used as the relation between more than two categorical variables is tested. Contingency tables for observed, expected and Chi-square statistics are constructed. The rows consist of age groups in question, and the column defines the characteristic of each categorical variable. Sample size consists of 71 successors after data cleaning. Sample proportion for YES and NO characteristic, Degrees of freedom (df), critical value and chi-square statistic value are calculated in Appendices 4. If the chi-square statistic value is greater than critical value the null hypothesis is rejected, otherwise do not reject H0. However, this does not prove that the hypothesis H0 is true, as it is a reflection of the sample statistic. We can 95% conclude that there is not enough evidence for a difference in the proportion of the consumers who favor the online grocery service for each age group. The null hypothesis is not rejected. If the sample size is increased and coverage error is minimized, the test statistic might show a different result.

RESULT 5

To find if females' dominant the idea of online grocery shopping in Jyväskylä, the null hypothesis H0 is defined which states that proportions of females and males who wish to use the online grocery service are equal. The alternative hypothesis H1 states the proportions are not equal. A contingency table for these categorical variables is constructed with groups on the rows and characteristics of the groups in the columns. Sample size consists of 68 successors after data cleaning. The same steps as the previous hypothesis testing are followed. Review Appendices 5 for calculations. The chi-squared value is less than the calculated critical value indicating for not rejecting the H0. However, this does not prove that the hypothesis H0 is true, as it is a reflection of the sample statistic. We 95% conclude that there is not significant evidence for the proportion of females who wish to shop online for groceries more than

males. If the sample size in the future is increased and coverage error is minimized, the test statistic might show a different result.

RESULT 6

To find which areas in the city of Jyväskylä show the highest demand for an online grocery service, the null hypothesis H0 is defined which states that proportion for all zip code groups in the region is equal. The alternative hypothesis H1 states the proportion is not equal. Contingency tables for these categorical variables are constructed with zip code groups on the rows and characteristics of the groups in columns. There are only five zip code groups in questions taken from the sample size consisting of 61 successors after data cleaning. Review Appendices 6 for calculations. The chi-squared value is less than the calculated critical value indicating for not rejecting the H0. However, this does not prove that the hypothesis H0 is true, as it is a reflection of the sample statistic. We 95% conclude that there is not sufficient evidence for a difference in the proportion of consumers who favor the online grocery service for each zip code group. If the sample size is increased and coverage error is minimized, the test statistic might show a different result.

RESULT 7

To find if Finns or foreigners dominate the idea of online grocery shopping, the null hypothesis H0 is defined which states that proportion of Finns and foreigners who favor online grocery service is equal. The alternative hypothesis H1 states the proportion is not equal. A contingency table for these categorical variables is constructed with groups on the rows and characteristics of the groups in columns. Sample size consists of 68 successors after data cleaning. Review Appendices 7 for calculations. The chi-squared value is less than the calculated critical value indicating for not rejecting the H0. However, this does not prove that the hypothesis H0 is true, as it is a reflection of the sample statistic. We 95% conclude that there is not a significant difference in the proportion of Finnish and foreign nationals who favor the online grocery service. If the sample size is increased and coverage error is minimized, the test statistic might show a different result.

RESULT 8

To find which grocery giants, customers prefer shopping from S-group, K-group or Lidl, the null hypothesis H0 is defined which states that proportion of preference for all grocery giants among the population is equal. The alternative hypothesis H1 states the proportion is not equal. A contingency table for these categorical variables is constructed with grocery giants on the rows and characteristics of the groups in columns. Sample size consists of 71 successors after data cleaning. Appendices 8 shows the calculations. The chi-squared value is less than the calculated critical value indicating for not rejecting the H0. However, this does not prove that the hypothesis H0 is true, as it is a reflection of the sample statistic. We 95% conclude that there is not significant evidence in the proportion of preference for a single grocery giant among the population. If the sample size is increased and coverage error is minimized, the test statistic might show a different result.

7   Reliability and Ethical Issues

A literature review was written based on online publications such as articles, journals, and eBooks, as well as books borrowed from the JAMK library. Most of the source material was written by professionals in the field of e-commerce and transportation. All the cited sources can be found in the references and are considered as valid sources, several authors with a background in logistics and transportation are cited. The sources have aged very well with the time. However, some articles and publications lack the view of using latest technologies which are available in 2016.

When conducting, the survey successors were made aware of the research which they participated. All successors were given the opportunity to answer the questionnaire according to their liking. The successors provided their consent that their answers could be used for analysis. They were assured that their personal information will not be handed over under any given circumstances and kept private. When conducting the survey no successors were purposely selected, one concern that arises is off coverage error. Coverage error occurs if particular groups or individuals are purposely excluded from the frame. Due to the circumstances, the questionnaire was not conducted in each zip code area of Jyväskylä, the data was collected in the center

of Jyväskylä creating possible coverage errors which can affect the integrity of the study.

To eliminate a non-response error when collecting the data sample, a questionnaire was designed in both English and Finnish language so all the random successors could respond. For an error-free analysis, all the findings are presented with their respective sample size and chosen level of significance. To ensure there was no measurement error in the research questionnaire constructed was free of any questions that guide responses in the direction which author was expecting. However, some successors willfully provided false information which was eliminated before data analysis.

After creating the research methodology to conduct analyses Chi-squared hypothesis testing method and confidence interval estimation for mean and proportion were used. The sample collected is assumed approximately normally distributed, this can, however, change if the sample size is increased thus changing the methods applied creating a concern for the ethics of research.

This research is subjected to data snooping. It refers to statistical inference that the researcher decides after collecting the data, compared with pre-planned inference where the researcher plans before collecting data. Data snooping for the research is unintentional, the author was not familiar with the research methodology and had no knowledge of the steps in the data preparation stage of editing, coding, and transcribing, until after the data was collected. It resulted in the questionnaire representing of both open and closed ended questions as it was designed before the research methodology was developed. The author did not consider the sample size that needs to be gathered before analysis for better results. However, the analysis is done by using the correct distribution statistics for each variable in question. All the sample distributions follow an approximated normal distribution, but the sample is subjected to coverage error. The results for analysis might change if the sample size is increased.

Sample data also went through a cleaning process. The process of data cleansing raises a major ethical question. Should the author ever remove a value from a study? The answer is a qualified yes. The values had to be disregarded as some of the answers in the questionnaire were left blank by the respondents. The author is left with no choice to conduct analysis as the successors decided to quit the survey before it was completed.

When reporting the findings of this research, the author documents both good and bad results. Hypothesis tests that show statistical significance and those for which there is insufficient evidence were both reported of the findings. It is clearly mentioned for instances where there is insufficient evidence to reject H0. The author makes it clear that this does not prove that the null hypothesis is true. What the result indicates is that with the sample size used, there is not enough information to reject the null hypothesis.

8 Conclusions

To plot the demand structure for an online grocery service in the region of Jyväskylä a survey was conducted which gathered a sample for analyses. Research questions were answered by applying statistical inference to the sample data. Level of significance 0.05 was chosen to reach conclusions with 95% confidence for all the research questions.

The first research question was directed towards finding the demand for an online grocery service in the region. After analysis, it is found that the true demand for an online grocery service in the region of Jyväskylä lays in the ranges 19.6% and 40.66% with 95% confidence. This percentage value depicts the amount of people interested in the service from the population. Considering the total target population of 79,657 residents in the city, this, results in a possible lowest target market of 15,612 residents wishing to use the service. It is concluded simply by multiplying the lowest range percentage with the number of total interested residents. Review Appendices 12 for target population calculation.

The second research question is aimed at figuring out how many times a resident shops for groceries in a week in Jyväskylä. Author is 95% confident that the true times for which the population shops for groceries in a week are in the ranges 2.94 and 3.47 times. Answering this research question plays a vital role in expanding the market analysis. Further, by exploiting only the lowest ranges from analyses, it is derived that 19.6% interested population shops 45,901 times a week. These can be considered as potential amount of orders an e-grocer can aim for when entering the market in the very least.

Third research question helped to draw a market share for the region. It is concentrated on plotting the amount of money interested consumers are ready to pay for each delivery, which is found with 95% confidence to be in the ranges €4.38 and €14.16. By using simple mathematics and the lower ranges derived from previous research answers. The author calculates that the potential market share for such service lies in the ranges €201,049 and €649,966 per week in Jyväskylä, at the minimum. This is simply an estimate, due to the nature of variables. It is possible if/when consumers switch their practices to online shopping they might not purchase groceries 2.94 times a week, for example.

Research question four to eight were designed to plot the characteristics of the market in question. Chi-squared distribution was used to test significant differences among many interested population groups. Questions aimed at finding if an age, area, gender or nationality group shows a higher proportion of interest than others for an online grocery service in the region. Answers from these questions could help targeting a specific group if the service is to be launched. Question eight refers to finding a preference for a grocery giant from S-group, K-Group and Lidl among consumers. The answer from this question can help determine products from which grocery giant should be shelved, when targeting the demand. However, research analyses conclude with 95% confidence that there is not significant evidence in the proportion of preference for any tested market segment. Sadly, there is simply not enough evidence to conclude the results for the preferences of the consumers in the city.

9 Discussion

The aim of this research was to predict the demand for an online grocery service in the region of Jyväskylä and study which business model should be implemented when targeting that demand. Based on the market study conducted by the author and insights collected from scientific articles the objectives of this research were met, and conclusions became evident.

In the body of the research basic understanding of existing e-grocery business models was established, potential success and failure factors were discussed. It is significant that an e-grocer when entering a new market must evaluate its strategies regarding the business model it follows. Bricks and Clicks, Pure-Play and Infomediary, are three business models an EGS operator can choose from when developing its core operating strategy.

The author emphasizes that a Bricks and Clicks model was the safest bet for grocers entering e-commerce with existing Bricks and Mortar stores. A retailer can gain a competitive advantage by simply utilizing and maximizing its store networks by providing consumers with the ease and flexibility of online grocery shopping. It can retain its original customers and gain new ones by tapping the online market segment. It is relatively easy to implement this model. However, some major downsides cannot be neglected such as investments in computerized picking, packing and ordering solutions. Also maintaining a website which catalogs the exact amount of products available through the store. Another drawback is the lack of space for the storage of goods for online customers which can lead to poor inventory management. This model tends to be labor intensive, inefficient for delivery of groceries with a hectic route optimization. Bricks and Clicks method is only limited to existing grocery operators, a new entrant cannot follow this business model until and unless it decides to open brick and mortar stores.

The best bet for fresh e-grocers is to integrate a Pure-Play or an Infomediary model in their strategy when exploiting the market. Pure-Play provides the flexibility of designing an operating model completely from scratch. Infrastructure and e-commerce investments are only two of the many major costs related to this model. Compared

with a Bricks and Clicks it is not subjected to expenditures of running a retail location but is still vulnerable to costs related to acquisition and maintenance of several warehouses and a delivery fleet. A state of the art e-commerce solution can prove useful for tracking customer purchases for better consumer response management. Following this model can result in higher inventory turnover, lower inventory holding costs, less spoilage of products, which is a key in selling perishable items. However, due to the expenses related to this model, it is only useful to implement if a retailer is targeting a huge market worth investing. Most retailers closed shops because of liquidity issues after adopting a Pure-Play business model.

The third approach of Infomediary is most suited for small and medium sized online grocery retailers. An Infomediary manages the link between a retailer and the customer. This business model can lead to immediate benefits and advantages by exploiting strategic alliances with other firms. An online grocer could be the third party which is contracted for providing e-commerce and logistics solutions. Website services, consumer response management, moving, ordering and delivery of goods are respectively done by Infomediary. A retailer simply receives, picks, and packs the orders for delivery. This model is the most beneficial as it requires the least amount of capital to gain the most benefit, however, the biggest concern for business to form alliances with Infomediary is for the reasons of trust. Respect of information privacy and promoting trust in online transactions are the two greatest challenges faced by this business model.

Another important theoretical aspect discussed in this thesis was of success and failure factors e-grocers should consider for gaining a competitive edge. Forming strategic alliances help businesses to grow together with sharing profits and risks. Developing the right website, service level and exploiting a specific niche are vital success factors for an e-grocer. Access to liquidity as discussed in the body of the research is the reason why most grocers went out of business. It is important to limit investments to the core strategy of the business. Being the first mover in a market certainly helps with free publicity. It also results in gaining economies of scale much faster than future competitors. Proper measures should be considered regarding the security of consumer's information, as a failure to do so can lead to a drastic image failure. Warehousing and logistics structure should operate flawlessly as poor supply

and delivery will result in poor demand. Integrating information systems and technology can make the difference for an e-grocer, providing an edge over competitors resulting in better service and consumer management.

The latter part of the research discusses the analysis performed on the market to predict the demand of an online grocery service in Jyväskylä. After collecting data through a questionnaire, statistical inference methods were used to perform the analysis. Research questions were constructed to plot the market and to figure out where the demand lies in the market.

For an e-grocer attempting to exploit EGS in Jyväskylä following an Infomediary model is the best strategy. The existing demand can be targeted by forming strategic alliances with local food producers as well as even the large brick and mortar stores. The potential market can be addressed by simply creating a chain between the retailer and the customer, Infomediary can offer e-commerce and logistics solutions.

Even though e-commerce is developing the same way in Finland as other countries, it is observed that the growth in the online grocery market has been quite slow. Considering the calculated statistics, which show a promising demand for an online grocery operation in Jyväskylä. Many new entrants have stopped their services after a few months of operations, Mukava ruoka being a great example. A reasonable explanation can be the higher prices for services and shopping habits of consumers in Finland.

 In an interview with the local news, Atte Kortman, a customer says, "Online grocery stores aren't sensible. I can just as easily go to Siwa grocery store or some other shop." Another consumer Kim Jaakola, agrees with Kortman saying, "I agree. I live next to an Alepa grocery store, so I don't need to shop online." Some other customers were cited complaining they do not want someone else making their food selections. "I buy my food from grocery stores because I want to make sure that the products I purchase are fresh." says Jaana Kojo. Research conducted suggests demand for e-grocers exist in the region. However, researchers argue that they do not see a robust growth in online food sales but predict larger volumes in the near future. (Finns Haven't Acquired a Taste for Online Grocery Shopping 2012.)

SUGGESTIONS FOR FURTHER RESEARCH

Further research could be conducted answering questions related to targeting a specific market segment. This research falls short on defining the type of market that exists in Jyväskylä. A larger sample size can be taken in the future to properly predict the demand structure with a revised questionnaire which focuses mainly on differentiating the interested customers from the rest of the population.

Areas showing the highest demand in the region could be calculated, in the case if an online grocer wishes to enter the market it can focus on areas which show the highest demand first and then move on to cover the whole population of Jyväskylä afterwards. Another study could be conducted on how to implement an Infomediary model successfully when entering the niche. Further research, can answer questions such as how to set up an e-commerce business? How to plan logistics and services for the market?

References

Chadwick, F. E., Doherty, N. F., & Anastasakis, L. 2007. E-strategy in the UK Retail Grocery Sector: A Resource-based Analysis. *Managing Service Quality: An International Journal,* 17(6), 702–727.

Chi-Square Test of Independence. N.d. Page on PennState Eberly College of Science's website. Accessed on 25 March 2016. Retrieved from https://onlinecourses.science.psu.edu/stat200/node/73

Confidence Intervals. N.d. Page on PennState Eberly College of Science's website. Accessed on 25 March 2016. Retrieved from https://onlinecourses.science.psu.edu/stat200/node/46

Elintarvikelaki [The food Act]. N.d. Page on Finlex's website. Accessed 15 March 2016. Retrieved from http://www.finlex.fi/fi/laki/ajantasa/2006/20060023

Finns Haven't Acquired a Taste for Online Grocery Shopping. 2012. Page on Yle's website. Accessed on 15 March 2016. Retrieved from http://yle.fi/uutiset/finns_havent_acquired_a_taste_for_online_grocery_shopping/5498018

Galante, L., Lopez, G. E., & Monroe, S. 2013. The future of online grocery in Europe. *Perspectives on retail and consumer goods, 1*, 22–31.

Hays, T., Keskinocak, P., & Lopez, V. M. 2004. Strategies and challenges of internet grocery retailing logistics. *Applications of supply chain management and E-commerce research in industry,* 1–35.

Huang, Y., Xia, X., & Zhu, H. 2010. The Principal-Agent Problem of Consumer Logistics in E-Grocery Shopping. *In 2010 International Conference on Logistics Systems and Intelligent Management, 3,* 1541–1544.

Jyväskylän kaupungin väestöarvio [Jyväskylä City Population Estimate]. 2016. Page on Jyvaskyla's website. Accessed on 2 May 2016. Retrieved from http://www.jyvaskyla.fi/info/tietoja_jyvaskylasta/vaestotilastoja

Keh, H. T., & Shieh, E. 2001. Online Grocery Retailing: Success Factors and Potential Pitfalls. *Business Horizons,* 44(4), 73–83.

Kivimäki, A. 2014. Ostokset suoraan ovelle – "Ei tarvitse lukea kassajonossa lööppejä" [*Groceries straight to the door – "No need to read headline placards*]. Keskisuoma- lainen, 7 December 2014, 10.

Kuljetus ja varastointi [Transport and Storage]. 2010. Page on Evira's website. Ac- cessed on 19 April 2016. Retrieved from http://www.evira.fi/portal/fi/tietoa+evirasta/asiakokonaisuudet/omavalvonta/elintarvikkeet/kuljetus+ja+varastointi/

Levine, D. M., Berenson, M. L., & Krehbiel, T. C. 2008. *Statistics for Managers Using Microsoft Excel*, 5th. ed., Prentice Hall.

M-Kauppias toteuttaa asiakkaitten toiveita [M-Kotiväylä fulfills customers wishes]. 2013. Page on Palokkalehti's website. Accessed on 15 March 2016. Retrieved from http://www.palokkalehti.fi/wordpress/?p=2662

Mukava Ruokakauppa kotonasi [Mukava Ruoka at your home]. 2016. Page on Mukava Ruoka's website. Accessed on 15th March 2016. Retrieved from www.mukava.fi/

Murphy, A. J. 2007. Grounding the Virtual: The Material Effects of Electronic Grocery Shopping. *Geoforum, Pro-Poor Water? The Privatisation and Global Poverty Debate,* 38(5), 941–953.

Nearly 60% of EU internet users shop online. 2013. PDF document on Eurostat's website. Accessed on 9 December 2015. Retrieved from http://ec.europa.eu/eurostat/en/web/products-press-releases/-/4-15102013-AP

Neely, B., Smith, B., & Winemiller, S. 2000. Webvan: Groceries on the internet. Accessed 15 March 2016. Retrieved from http://www.studymode.com/essays/Webvan-Case-Study-1-617591.html

Perustietoa Jyväskylästä [Basic Information of Jyväskylä]. N.d. Page on Jyvaskyla's website. Accessed on 2 May 2016. Retrieved from http://www.jyvaskyla.fi/info/pahkinankuoressa

Punakivi, M., & Saranen, J. 2001. Identifying the success factors in e-grocery home delivery. *International journal on retail & distribution management,* 29(4), 156-163.

Statistics on Jyväskylä. N.d. Page on Jyvaskyla's website. Accessed on 28 March 2016. Retrieved from http://www.jyvaskyla.fi/international/facts/statistics

Tavakoli, H. 2012. *A dictionary of research methodology and statistics in applied linguistics.* Rahnama press.

Trosset, M. W. 2001. *Introduction to Statistical Inference and Data Analysis.* Digital Library Bookzz.

Voiko ruokaakin ostaa netistä? [Can you also buy food from the internet?]. N.d. Page on Mättömestari's website. Accessed on 15 March 2016. Retrieved from http://www.xn--mttmestari-q5a2t.fi/ostokset/ruokaa-netista-vertailu/

Appendices

Appendice 1. Confidence interval estimation for demand.

	A	B	C
1	Let Xi = 1, if randomly selected successor agrees to use an online grocery service.		
2	Let Xi = 0, if randomly selected successor does not agree to use an online grocery service.		
3	Data:		
4			
5	Number Of Successes (Xi = 1)	22	=COUNTIF(D3:D75,1) Successors who prefer to shop online for groceries.
6	Level Of Significance (Alpha α)	0.05	
7	Sample Size	73	Total number of questionnaire attendees.
8			
9	Intermediate Calculations:		
10	Sample Proportion (p^)	0.301369863	=B5/B7
11	Standard Error (Variation)	0.053704681	=SQRT(B10*(1-B10)/B7)
12			
13	Confidence Interval Calculation:		Forming Confidence Interval for proportion
14	Z* Multiplier	1.959963985	=-NORM.S.INV(B6/2)
15	Confidence Interval (Lower Value)	19.61%	=B10-B14*B11
16	Confidence Interval (Upper Value)	40.66%	=B10+B14*B11
17			
18	Distribution Of Sample:		
19	n*p^	22	(n*π & n*(1-π) > 15. the sampling distribution of p is approximately normal.
20	p^*(1-p^)	51	
21			
22	**Conclusion:**		
23	We are 95% confident that the true percentage of people who agree to use online grocery in the whole population of Jyväskylä is		
24	between the ranges 19.61% - 40.66%.		
25			

Appendice 2. Confidence interval estimation amount of shopping times.

	A	B	C
1		t-Interval for a Mean	
2			
3	Data:		
4			
5	Level Of Significance (Alpha α)	0.05	
6	Sample Size	73	n > 30 approximated normally distributed.
7	Degrees Of Freedom (df)	72	=B6-1
8			
9	Intermediate Calculations:		
10	Sample Mean (X̄)	3.205479452	=AVERAGE(D2:D74)
11	Sample std. (S)	1.129883279	=STDEV.S(D2:D74)
12	Standard Error (Variation)	0.132242835	=B11/SQRT(B6)
13			
14	Confidence Interval Calculations:		Forming a two tailed confidence interval for one mean.
15	t* Multiplier	1.993463567	=T.INV.2T(B5,B7)
16	Confidence Interval (Lower Value)	2.941858178	=B10-B12*B15
17	Confidence Interval (Upper Value)	3.469100726	=B10+B12*B15
18			
19	Conclusion:		
20	We are 95% confident the true times for which population shops for groceries in a week in the city of		
21	Jyvaskyla is between the range 2.94 to 3.47 times.		
22			

Appendice 3.   Confidence interval estimation for service price.

	A	B	C
1			t-Interval for a Mean
2			
3	Data:		
4			
5	Level Of Significance (Alpha α)	0.05	
6	Sample Size	22	n > 15 fairly semmetrical.
7	Degrees Of Freedom (df)	21	=B6-1
8			
9	Intermediate Calculations:		
10	Sample Mean (X̄)	9.27272727	=AVERAGE(D2:D23)
11	Sample std. (S)	11.0245692	=STDEV.S(D2:D23)
12	Standard Error (Variation)	2.35044605	=B11/SQRT(B6)
13			
14	Confidence Interval Calculations:		Forming a two tailed confidence interval for one mean.
15	t* Multiplier	2.07961384	=T.INV.2T(B5,B7)
16	Confidence Interval (Lower Value)	4.38 €	=B10-B12*B15
17	Confidence Interval (Upper Value)	14.16 €	=B10+B12*B15
18			
19	**Conclusion:**		
20	We are 95% confident that the true mean of money the population willing to use the service in Jyvaskyla,		
21	wish to pay is between the range €4.38 - €14.16.		
22			

Appendice 4.   Hypothesis testing for proportions of age group.

	A	B	C	D	E
1	H0 = Proportions of consumer who favors the online grocery service for each age group are equal.				
2	H1 ≠ Proportions are not equal				
3	Data:				
4	Null Hypothesis π=	π1 = π2 = π3			
5	Level Of Significance (Alpha α)	0.05			
6	Sample Size	71 =COUNT(M2:M72)			
7	Degrees Of Freedom (df)	2 =(3-1)*(2-1)			
8					
9	Observed	YES	NO	Total	
10	0-30	17	31	48	
11	31-46	4	10	14	
12	47+	1	8	9	
13	Total	22	49	71	
14					
15	Intermediate Calculations:				
16	Sample 'YES' Proportion	0.309859155 =B13/D13			
17	Sample 'NO' Proportion	0.690140845 =C13/D13			
18					
19	Expected	YES	NO	Total	
20	0-30	14.87323944	33.12676056	48	
21	31-46	4.338028169	9.661971831	14	
22	47+	2.788732394	6.211267606	9	
23	Total	22	49	71	
24					
25	Chi^2 STAT Calculations:				
26	Critical Value	5.991464547 =CHISQ.INV.RT(B5,B7)			
27	Chi^2 STAT	2.141256773 =D33			
28					
29	Chi^2 STAT	YES	NO	Total	
30	0-30	0.304110649	0.136539475	0.440650124	
31	31-46	0.026339857	0.011826058	0.038165916	
32	47+	1.147318253	0.515122481	1.662440734	
33	Total	1.477768759	0.663488014	2.141256773	
34					
35	"Do not Reject H0"	If B27 > B26 Reject H0, otherwise do not reject H0.			
36					
37	Conclusion:				
38	We can 95% conclude that there is not enough evidence for a difference in the proportion				
39	of consumer who favor the online grocery service for each age group.				
40					
41					

Appendice 5.   Hypothesis testing for proportions of gender groups.

	A	B	C	D	E
1	H0: Proportion of females and males who wish to use the online grocery service is equal.				
2	H1 ≠ Proportions are not equal				
3	Data:				
4	Null Hypothesis π=	π1 = π2			
5	Level Of Significance (Alpha α)	0.05			
6	Sample Size	68	Number of successors		
7	Degrees Of Freedom (df)	1	=(2-1)*(2-1)		
8					
9	Observed	YES	NO	Total	
10	Male	9	18	27	
11	Female	12	29	41	
12	Total	21	47	68	
13					
14	Intermediate Calculations:				
15	Sample 'YES' Proportion	0.308823529	=B12/D12		
16	Sample 'NO' Proportion	0.691176471	=C12/D12		
17					
18	Expected	YES	NO	Total	
19	Male	8.338235294	18.66176471	27	
20	Female	12.66176471	28.33823529	41	
21	Total	21	47	68	
22					
23	Chi^2 STAT Calculations:				
24	Critical Value	3.841458821	=CHISQ.INV.RT(B5,B7)		
25	Chi^2 STAT	0.126028616	=D30		
26					
27	Chi^2 STAT	YES	NO	Total	
28	0-30	0.052521008	0.023466834	0.075987842	
29	31-46	0.034587006	0.015453768	0.050040774	
30	Total	0.087108014	0.038920602	0.126028616	
31					
32	"Do not Reject H0"	If B25 > B24 Reject H0, otherwise do not reject H0.			
33					
34	Conclusion:				
35	We can 95% conclude that there is not significant evidence for the proportion of females				
36	who wish to shop online for groceries more than males.				
37					
38					

Appendice 6.　　　　　Hypothesis testing for proportions of Zip code groups.

	A	B	C	D	E
1	H0 = Proportion of demand for all Zipcode groups are equal.				
2	H1 ≠ Proportions are not equal				
3	Data:				
4	Null Hypothesis　　　π=	$\pi 1 = \pi 2 = \pi 3 = \pi 4 = \pi 5$			
5	Level Of Significance (Alpha α)	0.05			
6	Sample Size	61	Number of Successors		
7	Degrees Of Freedom (df)	4	=(5-1)*(2-1)		
8					
9	Observed	YES	NO	Total	
10	Group 1	2	5	7	
11	Group 2	4	7	11	
12	Group 3	4	5	9	
13	Group 4	6	11	17	
14	Group 5	5	12	17	
15	Total	21	40	61	
16					
17	Intermediate Calculations:				
18	Sample 'YES' Proportion	0.352941176	=B13/D13		
19	Sample 'NO' Proportion	0.647058824	=C13/D13		
20					
21	Expected	YES	NO	Total	
22	Group 1	2.470588235	4.529411765	7	
23	Group 2	3.882352941	7.117647059	11	
24	Group 3	3.176470588	5.823529412	9	
25	Group 4	6	11	17	
26	Group 5	6	11	17	
27	Total	21.52941176	39.47058824	61	
28					
29	Chi^2 STAT Calculations:				
30	Critical Value	9.487729037	=CHISQ.INV.RT(B5,B7)		
31	Chi^2 STAT	0.731579868	=D39		
32					
33	Chi^2 STAT	YES	NO	Total	
34	Group 1	0.089635854	0.048892284	0.139	
35	Group 2	0.003565062	0.001944579	0.006	
36	Group 3	0.213507625	0.116458705	0.33	
37	Group 4	0	0	0	
38	Group 5	0.166666667	0.090909091	0.258	
39	Total	0.473375209	0.258204659	0.732	
40					
41	"Do not Reject H0"	If B31 > B30 Reject H0, otherwise do not reject H0.			
42					
43	Conclusion:				
44	We can 95% conclude that there is not enough evidence for a difference in the				
45	proportion of consumer who favor the online grocery service for each Zipcode group.				
46					
47					

Appendice 7.   Hypothesis testing for proportions of Finns/Foreigners.

	A	B	C	D	E
1	H0: Proportion of Finns and Foreigners who favor online grocery service is equal.				
2		H1 ≠ Proportions are not equal			
3	Data:				
4	Null Hypothesis π=	π1 = π2			
5	Level Of Significance (Alpha α)	0.05			
6	Sample Size	68	Number of Successors		
7	Degrees Of Freedom (df)	1	=(2-1)*(2-1)		
8					
9	Observed	YES	NO	Total	
10	Finnish	19	43	62	
11	Foreigners	3	3	6	
12	Total	22	46	68	
13					
14	Intermediate Calculations:				
15	Sample 'YES' Proportion	0.323529412	=B12/D12		
16	Sample 'NO' Proportion	0.676470588	=C12/D12		
17					
18	Expected	YES	NO	Total	
19	Finnish	20.05882353	41.94117647	62	
20	Foreigners	1.941176471	4.058823529	6	
21	Total	22	46	68	
22					
23	Chi^2 STAT Calculations:				
24	Critical Value	3.841458821	=CHISQ.INV.RT(B5,B7)		
25	Chi^2 STAT	0.936376387	=D30		
26					
27	Chi^2 STAT	YES	NO	Total	
28	Finnsh	0.055890978	0.026730468	0.082621446	
29	Foreigners	0.577540107	0.276214834	0.853754941	
30	Total	0.633431085	0.302945302	0.936376387	
31					
32	Do not Reject H0'	If B25 > B24 Reject H0, otherwise do not reject H0.			
33					
34	**Conclusion:**				
35	We can 95% conclude that there is not significant difference in the proportion of				
36	Finnish and Foreigners who favor the online grocery service.				
37					
38					

Appendice 8.   Hypothesis tested for proportions of grocery giants.

	A	B	C	D	E
1	H0 = Proportion of preference for all grocery giants among population is equal.				
2	H1 ≠ Proportions are not equal				
3	Data:				
4	Null Hypothesis π=	π1 = π2 = π3			
5	Level Of Significance (Alpha α)	0.05			
6	Sample Size	71	Number of Successors		
7	Degrees Of Freedom (df)	2	=(3-1)*(2-1)		
8					
9	Observed	YES	NO	Total	
10	K-Group	4	18	22	
11	S-Group	15	27	42	
12	Lidl	3	4	7	
13	Total	22	49	71	
14					
15	Intermediate Calculations:				
16	Sample 'YES' Proportion	0.309859155	=B13/D13		
17	Sample 'NO' Proportion	0.690140845	=C13/D13		
18					
19	Expected	YES	NO	Total	
20	K-Group	6.816901408	15.18309859	22	
21	S-Group	13.01408451	28.98591549	42	
22	Lidl	2.169014085	4.830985915	7	
23	Total	22	49	71	
24					
25	Chi^2 STAT Calculations:				
26	Critical Value	5.991464547	=CHISQ.INV.RT(B5,B7)		
27	Chi^2 STAT	2.587035877	=D33		
28					
29	Chi^2 STAT	YES	NO	Total	
30	K-Group	1.164008846	0.522616217	1.686625063	
31	S-Group	0.303045546	0.136061266	0.439106812	
32	Lidl	0.318364734	0.142939268	0.461304002	
33	Total	1.785419126	0.801616751	2.587035877	
34					
35	Do not Reject H0'	If B27 > B26 Reject H0, otherwise do not reject H0.			
36					
37	Conclusion:				
38	We can 95% conclude that there is not significant evidence in the proportion of				
39	preference for a single grocery giant among the population.				
40					

Appendice 9. EU28 online purchases for food & groceries 2008–2012.

Online purchases by internet users

| | % of internet users having used internet in the previous 12 months for purchasing: | | | | | | | | |
| | Total | clothes & sports goods | | travel & holiday accommodation | | books/magazines/ e-learning material | | food & groceries | |
	2012	2008	2012	2008	2012	2008	2012	2008	2012
EU28	**59**	**21**	**32**	**21**	**32**	**19**	**23**	**6**	**9**
Belgium	55	7	20	11	28	6	15	1	5
Bulgaria	17	2	11	1	5	2	4	1	2
Czech Republic	43	14	13	5	6	9	5	1	1
Denmark	79	28	40	35	56	20	28	6	9
Germany	77	33	49	29	39	35	41	7	11
Estonia	29	4	12	4	12	3	7	u	3
Ireland	57	11	26	32	43	14	21	3	6
Greece	36	4	15	6	15	5	7	1	(2)
Spain	43	6	14	20	28	7	11	3	6
France	69	27	38	25	39	19	23	6	8
Croatia	36	5	12	2	9	4	12	1	(2)
Italy	29	6	8	9	14	7	8	1	2
Cyprus	35	6	18	7	20	6	8	1	(1)
Latvia	37	9	14	4	11	2	4	0	1
Lithuania	30	1	12	3	6	2	5	1	3
Luxembourg	73	18	32	33	52	35	47	3	10
Hungary	35	5	14	5	13	10	15	1	3
Malta	63	13	36	8	21	13	20	0	u
Netherlands	69	25	37	30	42	24	30	5	9
Austria	60	20	34	15	33	22	29	4	7
Poland	47	15	25	3	8	10	14	6	10
Portugal	35	6	13	9	17	8	10	4	7
Romania	11	2	6	2	4	7	4	0	1
Slovenia	49	9	22	8	20	8	13	4	9
Slovakia	56	13	31	6	15	7	17	1	4
Finland	72	32	41	37	50	24	28	2	4
Sweden	79	20	43	31	60	21	38	3	7
United Kingdom	82	30	51	35	51	27	36	14	21
Iceland	56	14	26	41	40	23	28	3	5
Norway	80	25	36	49	58	25	31	3	(5)

( ) Data with reduced reliability due to small number of respondents.
u Data not reliable due to small number of respondents.

(Nearly 60% of EU internet users shop online 2013.)

Appendice 10.   Questionnaire in Finnish.

jamk.fi

Kysyntäkartoitus internetin kautta tehtäville ruokaostoksille, kotiintoimituksella, Jyväskylässä

1. Perustiedot analyysiä varten *

Kaikki tässä kyselyssä kerätty tieto käytetään palvelusta kiinnostuneiden asiakasryhmien analysointiin, (ikäryhmä, sukupuoli ja kansalaisuus) . Postinumero auttaa selvittämään ne alueet, joilla on eniten kysyntää Jyväskylän alueella. Antakaa sähköpostiosoitteenne, jotta voimme tarjota alennuksia kiitokseksi osallistumisestanne kyselyyn, kun nämä palvelut aukeavat julkiseen käyttöön. Vain sähköpostiosoitteenne tallentuu järjestelmään analyysin jälkeen jatkoyhteydenpitoa varten.

Postinumero _____

Sähköposti _____

Kansallisuus _____

Ikä   ☐ 0-30   ☐ 31-46   ☐ 47+

Sukupuoli   ☐ nainen   ☐ mies

2. Kuinka monta kertaa käytte viikossa ruokaostoksilla? *

Vastatkaa numerolla (kertojen määrä) parempaa analyysiä varten.

_____

3. Mitä lähikauppaa käytätte yleensä, kun käytte ruokaostoksilla? *

Nimetkää kauppa sekä paikka kaupalle. Esimerkiksi Lidl, Prisma, K-Market Keljo. Voitte myös vastata vain kaupan nimellä kuten S-Market tai vastatkaa vain "Lähin" niin me selvitämme kaupan nimen postiosoitteenne avulla.

_____

4. Käyttäisitkö internetin kautta ruokaostoksia tarjoavia palveluja Jyväskylässä? *

Vastatkaa KYLLÄ tai EI.

○ Kyllä ○ Ei

5. Jos vastasit KYLLÄ, niin kuinka paljon olisit valmis maksamaan ovelle tuotavista palveluista (ruokaostoksista)? *

Vastatkaa kertaostokselle sopiva hinta (numero).

_____

6. Mihin aikaan haluaisitte ostostenne kuljetettavan kotiinne? *

Esimerkiksi kello 17:00 joka päivä. Tämä ei ole sitova vastaus; se auttaa meitä löytämään kuljetuksille sopivan ajankohdann.

_____

Appendice 11.   Questionnaire in English.

jamk.fi

Demand for online grocery service in Jyväskylä

1. Basic information for analysis *

The information gathered here is used for analysis such as figuring out the age group, gender and nationalities of people that are interested in the service. Zip code helps to figure out the target area with the most demand in Jyväskylä region. Please inform us with your email address for discount offering as a thank you for participating in the survey when the service goes online. Only your email address is saved in the system after analysis for further contact.

Zipcode   _____

Email   _____

Nationality   _____

Age   ☐ 0-30   ☐ 31-46   ☐ 47+

Gender   ☐ Female   ☐ Male

2. How many times a week you shop for groceries? *

Please answer in numeric values for better analysis.

_____

3. Which local markets you prefer when shopping for groceries? *

Name the retailer and location of the shops for example Lidl, Prisma, K-Market in Keljo or just mention the retailer name for example S-Market. Or just answer as Nearest and we can figure out the markets in your Zipcode ourself.

_____

4. Would you use an online grocery service in Jyväskylä? *

Please provide answer in a YES or NO manner.

○ Yes ○ No

5. If YES how much are you ready to pay for the door delivery service? *

Please answer in Numeric values.

_____

6. Provide us with a ball park time when you would want your groceries to be delivered? *

For example 17:00 every day. You are not bound by this answer, it helps us figuring out the ball park peak times for grocery deliveries.

_____

Appendice 12.   Calculations for predicting target population.

	A	B	C
1			
2			
3	Target Age Group	22+	
4			
5	Total Residents	137365	
6			
7	Age	2014 Population Estimate	
8	16-64	90076	
9	65-74	11744	
10	75-84	6322	
11	85+	2437	
12	Total	110579	=SUM(B8:B11)
13			
14	Employed	67420	
15	Unemployed	11772	
16			
17	High School	3000	
18	Vocational School	8950	
19	Polytechnic	7200	
20	Total	19150	=SUM(B17:B19)
21			
22	Target Population	79657	=B12-(B15+B20)
23			

The target age set for survey was adults 22 years old and over. In 2014, the recorded population of Jyväskylä was a total of 137,365 residents. 110,579 people were estimated to be in the ages of 16–85+, out of which 19,150 are students. 11,772 residents are found to be unemployed. By subtracting the amount of students and unemployed persons from the adults population a target population of 79,657 people is derived. This number is just an estimate and not error free. It can be argued that the adults' population used for calculation is from the ages of 16 and not 22 for which the data was collected. Also these estimates are subjected to change as they depict statistics as of 2014. (Jyväskylän kaupungin väestöarvio [Jyväskylä City Population Estimate] 2016; Perustietoa Jyväskylästä [Basic Information of Jyväskylä] 2016.)