



MSc in Business Administration

Digitalisation in consumer banking

How will digitalisation affect consumer banking
in 10 years?

December 2017

Name of student: Sigurlaugur Þorkelsson

Social Security Number: 011289 - 3049

Supervisor: Páll Melsted Ríkharðsson

Declaration of Research Work Integrity

This work has not previously been accepted in substance for any degree and is not concurrently submitted in the candidature of any degree. This thesis is the result of my own investigations, except where otherwise stated. Other sources are acknowledged by giving explicit references. A bibliography is appended.

By signing the present document, I confirm and agree that I have read RU's Ethics Code of Conduct and fully understand the consequences of violating these rules in regards of my thesis.

Date and Place

Social Security Number

Signature

Abstract

There are a lot of developments in the financial industry and new opportunities in digital developments seem to be endless and new entrants on the market will increase competition, even foreign competition. The results from this research are important for the banking industry because it can give an idea on what to expect in consumer banking, help banks realize how digitalisation can affect their business and how they can use the results to improve their strategy.

The purpose of this thesis is to answer the research question of how digitalisation will affect consumer banking in the next 10 years. The research method of choice is the Delphi method, where a group of hand-picked individuals with knowledge or experience in the financial industry, will take part in a research that will help answer the research question. The idea of the Delphi method is to try to achieve a consensus among participants on the given dilemma by asking a series of questionnaires. It took two rounds of questions to establish a consensus among those participants.

These results indicate that digitalisation will clearly have an impact on consumer banking in 10 years, it differs however where those impacts occur. The specialists confirm that technological developments will shape the future of the banking industry, but these changes need to be conducted carefully. The main findings from the research are that digital payments will be dominant in 10 years, there is however no consensus on whether there will be a need for personal bank account. Participants agree on that financial services through digital channels will be dominant in 10 years and that the need for human interaction will still be demanded. Rates and prices will be the most important factor in competition among banks in 10 years but having a good digital service platform will give a competitive advantage. There is consensus that banks need to be able to work with third parties and foreign competition will increase in the next 10 years. The legal environment will also be in favor for all those non-banks and other financial institutions and give them a competitive advantage.

Keywords: Digitalisation, Banking, Delphi, Digital solutions, Fourth Industrial Revolution.

Acknowledgements

I would like to thank all the Delphi participants who took the time to participate in this research, providing significant and reliable answers to the presented questions and statements. My supervisor, Páll Melsted Ríkharðsson, provided me with a lot of support and was an excellent supervisor throughout the process. My girlfriend, Jódís Dagný Vilhjálmsdóttir, kept me motivated and encouraged me through the research. I would also like to thank my dear family and especially my father, Þorkell Sigurlaugsson, for all the support. Without the assistance of all those people this research would not be the same.

Table of contents

1	Introduction.....	7
2	Literature Review	10
2.1	Industrial revolution	10
2.2	Digitalisation	13
2.3	Self-services	17
2.4	E-Banking	19
2.5	Payments	20
2.6	Future research	24
2.7	Technological developments.....	26
2.8	What is the situation today?	27
3	Research methodology.....	29
3.1	The Delphi Method	29
3.2	Participants	30
3.3	Questions.....	32
3.3.1	Round one	32
3.3.2	Round two.....	35
3.4	Data Analysis	38
3.5	Shortcomings.....	38
3.6	Timeframe	39
3.7	The process.....	40
4	Results.....	44
4.1	Results from first round	44
4.1.1	Chapter 1 – Payment methods	44
4.1.2	Chapter 2 – Bank Branch.....	46
4.1.3	Chapter 3 – Financial Services	46
4.1.4	Chapter 4 – Loan Application.....	47

4.1.5	Chapter 5 – Competition.....	48
4.1.6	Chapter 6 – Measurements	48
4.1.7	Chapter 7 – Legislation.....	48
4.2	Results from second round.....	49
4.2.1	Chapter 1 – Payment methods	49
4.2.2	Chapter 2 – Bank branch	50
4.2.3	Chapter 3 – Financial Services	50
4.2.4	Chapter 4 – Competition.....	50
4.2.5	Chapter 5 – Measures	51
4.2.6	Chapter 6 – Legislation.....	52
4.2.7	Chapter 7 – Open-ended question.....	52
5	Discussion.....	53
6	Conclusion and recommendations	62
7	Appendix 1 – Survey, Round 1.....	64
8	Appendix 2 – Survey, Round 2.....	82
9	List of references	88

1 Introduction

Automation has been affecting most industries all the way back to the first industrial revolution. With increased developments in information technology and artificial intelligence, new opportunities are rising relatively fast in the past years at an exponential rate rather than linear. The use of artificial intelligence in automation, self-services and digitalized processes in the financial sector has grown rapidly over the past years, especially in consumer banks.

A few years back most people went to their local bank branch to deposit money with the assistance of a cashier, apply for a loan or overdraft on the credit card with the acceptance from a financial consultant or even transfer money between accounts. Most of the applications for loans or other various services needed some discussion with loan officers, paperwork and the appropriate approvals. To apply for a loan at the local bank branch, the employee had to do some research on the customer's financial history and base its decision on that information combined with the word of mouth and sound judgement whether that customer was financially sound.

Today, most of these processes are performed electronically or through the banks official website with complex algorithms also known as E-banking or mobile banking. There are new customer preferences, IT opportunities and the landscape in regulations is changing. Just a few months ago, a local bank in Iceland even made the application process for a credit check possible in 3 minutes for individuals through the bank's mobile application. Before, that same process took the customer around 10 days to complete. With this process, the bank has eliminated all human contact and the customer can request for the application at any time. Most recent forecasts are estimating that around 30-40% of all current service-related processes will be replaced with a digitalized workforce (Chris Lamberton, 2016). The need for human interference is getting less vital and the use of automated processes, whether it's with artificial intelligence or other robotic automation, is taking over. These thoughts and many others are one of the main topics in this research.

It is inevitable to discuss AI and automation without digitalisation, as it could be considered as a product of automation. Gartner defines digitalization as the use of digital technologies to change the business model of a company and by doing so, providing new revenue and value producing opportunities (Gartner, 2017). There are many opportunities for the banking sector to go even further with digitalisation and it is the purpose of this study to answer what could happen and what IT can do for consumer banking in the next

10 years. According to Investopedia (2013), the definition of consumer banking is a bank that provides services to the public and small businesses. These services usually include savings and transactional accounts, personal loans, debit and credit cards and financial consultation. The focus in this research is within these main categories with respect to developments in information technology. Number of banking branches have been declining because of the increase in E-banking and following that there is less need for employees at the branches. Human resources are not the focus in this research, but it will be inevitable to discuss in the context of digitalisation and artificial intelligence. However, in 10 years there could be a lot of opportunities for branches and that will be researched further and discussed. There are some research methods that are fitting for this kind of research, however, one has been proven quite effective when it comes to forecasting the possibility of unknown future events. The research method of choice is the Delphi method, where a group of hand-picked individuals with knowledge or experience in the financial industry, will take part in a research that will help answer the following research question and explore possible outcomes:

How will digitalisation effect consumer banking in 10 years?

The results from this research are important for the banking industry because it can give an idea on what to expect in consumer banking, help banks realize how digitalisation can affect their business and how they can use the results to improve their strategy. This research could also prove to be useful for future Start-up companies (e.g. Financial technology companies) and other smaller players on the market who are starting their business in coming months and years. Another reason for this research importance is because of the research method, the Delphi method will provide different kind of approach to the literature than previous researches and hopefully shed a new light on consumer banking in the next 10 years. How will the concept of Consumer banking change due to increase in digitalisation? How are they going to deliver their services? What should be avoided? The purpose of the Delphi method is to get knowledgeable individuals on this topic and apply their knowledge and know-how to help solve those kind of problems or issues (Hsu & Sandford, 2007). A more detailed description on the research method is discussed in later chapters.

The research question in a qualitative research like this one, is somewhat different than in a quantitative research. In a quantitative research the question needs to be more specific, narrow questions or hypothesis based on a few variables (Creswell, 2013). In a

qualitative research there are broader questions, that explores a central phenomenon or concept in a study. In this study, the intent is to explore a set of factors surrounding the central phenomenon and present different perspective and ideas from the experts participating in the research (2013).

2 Literature Review

There has been a lot research done on digitalisation and automation, in connection to most industries, including banking. Some research exists on future possibilities in consumer banking based on the Delphi method but most of them are around the years 2000-2003, at the beginning of the E-banking phenomenon. This research will be based on the same principles but with the evolution in digitalisation as a focus. In this chapter, there is an overview of the current studies conducted in the field of automation, especially in connection to banking and how this research can fill in the gaps where needed.

2.1 Industrial revolution

Some industries experience greater impact from automation, for example the automobile industry has been involved in automation for many years and the first form of assembly line for car production developed by Ransom Old's in 1901, was a revolution. The company increased its output 500% in one year. This included lower prices and more simple assembly and therefore could produce cars in large quantities. Henry Ford then later developed this technique even further with the Model T production (Corday, 2014).

Throughout history there have been some amazing developments in connection to automation. Human beings have discovered various tools and processes to make life simpler with the objective to increase productivity. This all began with the first industrial revolution in the late 18th century in Great Britain and had to do with developments in mechanization, wind power and steam power. Cities were getting bigger as people moved from the country to work in factories. Among inventions at that time, Edmund Cartwright invented the water-powered loom, which is a machine to make it easier to weave clothing. Later the coal would replace water as the steam would power the mechanism in use to produce material and other products. Transportations developed as the production of goods increased, in 1804 the first steam powered locomotive ran on industrial rail line. Along with this evolution the need for workers increased and new industries were created. This lead to lower cost in transportation and eventually in lower priced goods. Working conditions for factory workers was lacking in every field, long working hours, no minimum wages and no job security. This increased productivity grew the middle class, as the need for bankers, doctors and governments officials grew. These conditions continued until around the middle of the 19th century (Spielvogel, 2004).

Around 1750, the use of paper money and commercial bills were common, but silver and gold were preferred in other major transactions. At that time, there were around 30 private banks in England and their numbers were growing. Their main customers were merchants and industrialists. There were also county banks, who operated only in a local area, at that time they were only twelve. Banks provided short term loans but were accused of holding back the industry by legislation on liability and joint-stock. In the US and Germany, banks were already providing long-term loans (Wilde, 2017).

Around 1850, the second industrial revolution was a period of steel production, petroleum and electricity that enabled mass production. This is where the muscle power was replaced mostly by machine power and a good example is when Henry Ford introduced the Ford Model T (The Ford Motor Company, 2012). Along with enormous expansion in railroads and telegraph, allowed for ideas and innovations to be more mobile, which cumulated in a certain globalization. Along with this industrialization, new systems were introduced, mostly telephones and electrical power. At that time, foreign investments were conducted heavily by the German banks, which drove the export market and permitted Germany to expand more than its rivals. In the US, around 1860, there was a problem with “*chaotic currency*”. At that time, the government provided only coins, but paper money was issued by just about every individual bank. There were about 1500 – 1600 banks at that time and each had its own denomination of notes. So, there were around eight to nine thousand types of different looking paper in use that stated the name of the bank and the amount the bank would promise to pay in coins if returned to the bank branch. It was especially costly to return a bank note to a bank that was maybe located in a different state (The US Banking System, 2012).

The third industrial revolution is at the time when brainpower takes over the machine power and is estimated to begin in the late 20th century, starting with a mainframe computer then a personalized computer and later in the nineties, introducing the internet and information technology to automate production. Around the year 2000, use of plastic cards as payment grew rapidly and are the preferred way to pay and according to Bank of America, commercial card use was up 30% in 2000. E-commerce and Online banking was getting more popular and Bank of America was already providing an online portal to customers’ accounts were they could receive and pay bills (Bank of America, 2001). The use of electronical devices has increased rapidly in the past 10 years and especially with all the possibilities of mobile devices. The number of connections, interactions and

transmission of information that is carried out using information technology is growing at an exponential rate and any physical barriers are vanishing (González-Páramo, 2017). Now, it can be quite hard to identify when the third revolution ended and the fourth started as it takes industrial revolutions years to play out. According to Klaus Schwab (Schwab, 2016), the founder and executive chairman at the World Economic Forum, the fourth industrial revolution is building on the third and what will separate them is the blurring of any physical lines, digital and biological spheres. It could be said that the third industrial revolution ended when artificial intelligence and robotics, as well as big data systems, search and storage capacity of data calculation and learning power replaced brainpower. The speed of current inventions and breakthroughs have no historic precedent, especially in the fields of artificial intelligence, robotics, autonomous driving, 3D printing, data collecting and processing and many other (2016).

To emphasize the disruptive developments happening with the fourth revolution a good example would be the voice recognition technology. The biggest US competitors, Amazon, Apple and Google are all competing on offering the best user-friendly interfaces. Amazon produced the intelligent personal assistant, *Amazon Echo*, which connects to the *Alexa* voice service to play music, provide information, news, sports, check the bank balance and much more. The software is constantly developing, updating itself through the internet and learning from previous versions and behavior of the customer (Amazon Echo - Alexa Voice Service - Amazon.co.uk, 2016). Similar products are *Siri* from Apple and *Ok Google*, from Google. This is a technology that is a typical example on how learning power can be applied to consumer goods. This technology is applied when the product or software uses cognitive thinking, also known as machine learning. Machine learning is one of the capabilities when defining artificial intelligence. In 1950, Alan Turing created a test that was supposed to identify if an answer from a standard question was generated from a human or a computer. The computer would pass the test if the interrogator would not be able to identify if the responses came from a computer or a human and thus be identified as artificial intelligent. Today this test is still relevant when determining artificial intelligent capabilities and these capabilities are; Natural language processing, meaning successful communicative skills, in any chosen language. The second capability is knowledge representation, to store what it knows or hears. Third capability is automated reasoning, answering questions based on gathered information and forming conclusions. The last capability to pass the test is machine learning, like the one mentioned above, to adapt to new circumstances and to detect and

extrapolate patterns (Russell, Norvig, & Davis, 2010). There was another version of the test, an extension of the Turing test, called the Total Turing Test. That simply added the physical interaction factor to the model and to pass the Total Turing test a computer or machine needed a computer vision, to perceive objects and robotic to manipulate objectives and move about (2010).

Artificial intelligence can play a big part in digitalisation and this is a technology that could be used in the banking sector, especially regarding financial services and information gathering. Bank branches could e.g. include a face and voice recognition software integrated to provide the most suitable solution for the customer. This will be investigated further regarding future of the bank branch and participants in this research will be able to provide input in the context of digital solutions.

2.2 Digitalisation

The words “*Digitation*” and “*digitalisation*” are sometimes used freely and interchangeably, there is however a difference between them. “*Digitation*” is the process by which other forms of representation are converted into a digital format, such as the process of signing in to a meeting through the employee in the reception into signing in with a help of a digital screen. “*Digitalisation*” is the transformation beyond that. A company or an organization seeking to become “*digital*” might focus on automating their processes to create efficiency. In that sense, a company focusing on digitalisation might aim at effective outcomes by improving customer engagement (Forest & Rose, 2015). According to a report by Deutsche Bank in 2015, the digitalisation is a trend which is driven by three major forces: Customer experience, technical push and the economic benefits. Customers are the drivers in this context, meaning that it is them who are pushing for newer and faster solutions. They expect a seamless multichannel experience and consistent, global service and the challenge for banks is therefore adopting their existing service models to changing customer expectations and cost-awareness. The technological push is all the possibilities in digital infrastructure, providing billions of customers with affordable broadband and low-cost devices and the immense possibilities of cloud computing with its vast information processing machinery. Digitalisation accelerates economic growth, creates jobs, allows companies to lower cost and generate revenues in new ways. Digitising information-intensive processes can even cut cost up to 90% and software can help business units collect data which could help them understand process

performance, cost drivers and risks. All this can eventually enable managers to proactively address problems. The author of the Deutsche Bank report suggested that to remain competitive, banks must commit to transforming themselves into fully-digitalized business (2015). According to McKinsey, there are seven traits that successful digital companies share (Olanrewaju et.al., 2014):

1. Be unreasonably aspirational

Make someone accountable at the board level and create a stretch vision that might seem unreasonable. Digital leaders need to measure digital value, not digital interactions.

An example: Before Netflix started with the streaming business, they were a successful DVD rental business but the management at Netflix however, saw a different vision. They saw how fast broadband technology was evolving and that the future was in video streaming, not physical media. At that time, this vision was unreasonable aspiration.

2. Acquire capabilities

Attracting new talent to the organization is essential when developing digital transformations. Those new talents require digital skills and those are sometimes best acquired from outside the company. So, don't focus too much on savings in labor cost in this context.

An example: For Tesco, a UK retailer, to grow they made three significant acquisitions over a two-year span, in music and video streaming and E-books.

3. Ring fence and cultivate talent

Companies need to hold on to the talent and not to save any expense in the digital development. Ring fence the digital development department and don't execute any short-term solutions.

An example: Walmart have always protected their booming physical retail business and in 2010 their online business was lagging. The company decided to implement its own digital labs department as a part of growing its E-commerce division. The company's online revenues grew 30% and outpaced Amazon in rate of growth.

4. Challenge everything

Leaders and managers need to be constantly challenging themselves and questioning the status quo. The competition, e.g. startup companies are doing the

same thing and that has often given them the advantage to think in a disruptive manner.

An example: Hertz, a car rental company, decided to implement a self-service kiosk like the ones airlines have for the check-in process. Four years later, they overtook airlines with a dual-kiosk, one with rental options and one with a live video of a service agent from the company.

5. Be quick and data driven

In a dynamic digital environment, decisions need to be made rapidly.

Continually improving products and services also need a process for quickly responding to information and data.

An example: P&G needed to speed up the decision process and improve the over-all data processing. They implemented a system which provided all 50.000 employees globally with up-to-date information which lets teams be more agile and quick with the decision process, identify issues and take the next steps.

6. Follow the money

Companies need to evaluate if there is an opportunity to reduce costs of doing business. Investing in digital solutions should not be done randomly, experimenting and testing is critical, but the company needs to find where the investments create the most value.

7. Be obsessed with the customer

This is the age of the customer. Rising the experience of customers involves pushing all channels of the company to succeed. Customers are expecting services and products to be at the same level throughout the whole company, online or at retail. The foundation of any digital transformation is a healthy obsession with improving the customer experience.

An example: Zappos, the online retailer, makes sure that if they are out of stock on a product, they will help find a new item from a competitor. They go beyond expectations even if they are not able to provide the services.

Based on above list, companies need to listen to the customer and evaluate their needs based on data analysis. In this Delphi research the participants are asked to discuss competition in consumer banking as well as the measurements used to evaluate success factors.

Even though going digital seems to be the way to go, almost regardless in which industry being implemented, the question remains as to 'why'? We know how this will evolve in 10 years but why should financial institutions digitalize? What is the driving factor? Kofax, a technology leader in software solutions, took together four reasons for the drivers of digitalisation in the banking sector known as the four C's (2017); Customers, Competition, Cost and Compliance. Customers today are expecting premium services and seamless experiences across all platforms. The comparison is no longer just prices and quality, but the user experience as e.g. Apple and Amazon have shaped over the years. As of today, customers are increasingly using digital channels and digital usage is most of banking interactions in most countries (Gerard du Toit & Burns, 2015). Research show that internet usage is the most favored channel and one-third of banking is via mobile and millennials and small business customers are more likely to use good digital platforms (Capgemini, 2016). Also, customers of small to medium sized banks are 4.5 times more likely to do business with a bank with a good digital platform than one with a branch nearby (Dietz et al., 2015). Analysts expect customers to migrate to those digital platforms increasingly in the coming years which makes it important for banks to meet those expectations. The competitive environment is changing as mentioned before, e.g. Fintech companies coming with new solutions and a more agile approach for the customers preferences while lowering prices and intuitive and compelling experiences. Conventional paper-based processes and outdated legacy systems are too slow to compete and banks are feeling the pressure to digitalize (Latimore, 2017). Lowering cost is a primary driver in bank's business models and simplifying processes. ROI can be realized quickly when implementing digital processes as it takes more time and money to perform processes manually (2017). As of today, existing processes require much manpower and large back offices to perform customers' requests, although that might be changing (Dias et al., 2012). The cost of setting up and maintaining an account in a bank in the US costs up to \$325 per year, those are manual and paper based processes during a typical on-boarding customer process and this is nearly 20-times more expensive than a computer assisted, electronic process (Edgington, 2013). Compliance can be difficult for banks today, legacy systems were not designed to evolve as fast as the regulations demand today. It is typical for banks to hire more people in order to work on these compliances in regard to new regulations. Automated and digital platforms make it easier for the banks to comply with developments in the legal environment and be more agile. From these four C discussed above combined with the pillars on which consumer banking is based

on, is the guideline for the questions in this research. In consumer banking the most relevant is to discuss the competition and the customer, while cost and compliance are less important in this context.

2.3 Self-services

A survey conducted by the Consumer and Community Development Research Section of the Federal Reserve Board's Division of Consumer and Community affairs (DCCA) found out that in 2015 43% of mobile owners with a bank account used mobile banking compared to 33% in 2013 (Board of Governors of the Federal Reserve System, 2016). This shows a significant increase in 3 years and these actions were usually simple transactions or checking account balance. Another research conducted by Goldman Sachs suggest that individuals in the ages between 25 – 34 (also known as the Millennial generation) are more likely to spend their budget on online shopping. Also with that same research, results show that the information gathering among consumers is getting greater (Goldman Sachs, 2015). This might suggest that most of the actions are performed with mobile phones or other devices connected to the internet. In this Delphi research, different age of participants will not affect the results of the study. This development might affect the need for personal interaction in some industries. An ideal example on how a company automated its process in a way that there is no need for a human interference is the *Amazon Go* retail store, with the elimination of a checkout process. It's a store that has no traditional checkout process and therefore no checkout lines, all you need is an Amazon account and a smartphone with the Amazon app. They implemented complex algorithms to digitalize the process that in return substituted the role of a cashier and there is no need to scan any barcode, the customer can basically walk out with the product. (Amazon, 2016). More examples exist where the "check-out" process is made more automated and another one is IKEA. At IKEA, a customer does not even need an account or a specific company card to pay for the goods, a typical payment card is sufficient. But somewhat different from Amazon GO, the customer must scan the barcode on the product himself and that way replacing the role of the employee. This is all relevant in any retail business, self-service kiosks and other automated processes towards the customer. The banking industry has implemented the ATM (Automated Teller Machine) machine, the first one in 1969 in New York (History.com, 2009) but is there really a need for a bank branch when there is no physical product in place, only service? Already today the typical

ATM can replace most of the tasks that were performed by cashiers and there is already a sign of the Icelandic banks making a significant change to their branches, e.g. Arion Banki is temporarily closing its branch in a local shopping mall called Kringlan with a statement that the branch is being renovated and being transformed to a more digitalized outlook (Arion Banki, 2017).

It seems to be the trend that organizations are offering their services at the most convenient, efficient and effort-less way possible for the customer. In the banking sector, there is no different approach. Local banks in Iceland are competing in providing the best services with solutions that meet demands of the consumer. At least two of the Icelandic banks use a mobile application that the customer can solve most of his financial needs, transferring money between accounts, create a savings account, check the balance and other standardized tasks. Similar approach to what Arion Banki is doing with its branch in Kringlan another Icelandic bank, Íslandsbanki, changed its infrastructure and put more emphasis on the retail banking in the form of digitalized services (“Íslandsbanki breytir skipulagi,” 2017). It seems that at least two of the Icelandic banks have changed their banking outlets, cashiers have become a rare sight and the ATM’s are covering most of the typical tasks that a cashier or a clerk performs. Some thoughts are even afloat that the usage of debit and credit cards is diminishing with the popularity of mobile phone solutions. That is one part of this research which will be done in connection to banking services. There is one obvious result of this development and that is the lack of need for a human workforce and in the recent organizational changes for Íslandsbanki there were 20 people who lost their jobs (2017). Generally, it would be concluded that the increased usage of automated processes would lower the cost for a company, but an interesting study conducted at the Harvard Business school showed the opposite. Dennis and Frances (2010) concluded that with customers using online self-service, the retention rate increased but costs increased mainly due to increased calls to a call center which increased the labor cost. People needed the extra help because they were executing more online actions than before. Their study is relevant and interesting because the technical know-how of customers will be discussed as a part of developments in consumer banking and participants will be asked to evaluate that dilemma. It is important to analyze and realize if the digital solutions exceed the competence of the customer.

To highlight this evolution in providing services in the most convenient way possible, other industries have taken an unusual approach to this evolution the past years. Uber, an

American technology company, mainly specializing in transporting individuals via car. They develop, market and operate a mobile app that allows people to travel between places with a touch of a button. The interesting fact is that they don't own a single car, at least not in the purpose of transporting customers. The concept is that anyone can sign up to be a Uber driver, using his own car (Uber, 2017). With the arguments that technology is enabling customers to access goods and services more easily and even with self-service processes, the question is why should a bank be any different. In this research, participants are to discuss these issues and provide arguments on how this increased automation can affect the banking industry.

2.4 E-Banking

Some academic studies have been published on this topic and one research conducted in 2008 by Kamakodi, N. and Khan, M. Basheer Ahmed concluded that E-banking services exceeded customer expectations but however were below expectations on a branch level in India. It was their conclusion that banks could not differentiate enough with the use of information technology and not be able to get the competitive advantage. IT intertwined with a human touch will be necessary to retain existing clients and attract new ones was the conclusion of the research (Kamakodi & Khan, 2008). This study was conducted nearly 10 years ago, and would be interesting to see if the same conclusion applies today with the use of a Delphi study. Banks need to differentiate themselves and especially in the digital world and that is among the components which will help answer the research question. Participants in this research will be asked to provide comments on competition within the banking sector and how it will develop in the next 10 years.

With the increased usage of mobile devices, service providers and manufacturers can better track its customers, with data. Today, this phenomenon is also recognized as the "Internet of things" and a good example on how a company capitalized on this was with General Electric. GE was on the brink of losing most of its top customers to nontraditional competitors, such as IBM, SAP and some other Big data start-ups, when in 2011 they invested billions of dollars in digital sensors to their machines and connecting them to the internet. This transformed their business model and increased their revenues by \$1.5 billion in 2013 (Iansiti & Lakhani, 2014). PWC expect that by the year 2020, 50 billion devices will be connected to the internet, third of them are phones, computers and tables but the remaining two-thirds will be "sensors", newly invented intelligent devices that

help control, monitor and analyze our digital need. Today, manufacturers, services providers and other companies monitor their customers in many ways. The makeup manufacturer, L'Oréal developed an app that can virtually test makeup and it has been downloaded more than 14 million times. With all these users, L'Oréal can monitor what the customer wants and in turn push specific products out to the right customer (Edelman Marc, 2015). Domino's pizza is also tracking its customers with their mobile app and gathering valuable data, using similar approach as L'Oréal (Iansiti & Lakhani, 2014). The banking industry is no exception, banking and financial services are usually the first industry to embrace technological advances, an example would be the ATM machine. Compared to the results from the DCCA earlier, with 43% mobile usage in the US in 2015, in Europe there were 59% by 2016 (Eurostat, 2016). It's not the purpose of this research to measure the usage of mobile banking, but to investigate what the possible effects digitalisation will have on consumer banking in 10 years, whether it involves mobile banking or digitalized branches. These statistics are however interesting and give a good example on the evolution of E-banking in the past years. So, will banks monitor and analyze their customers to provide good and relevant services? Participants will be able to provide feedback on this issue in this research.

2.5 Payments

In January 2018, there will be implemented a new legislation called the PSD2, *Payment Services Directive 2* in Europe. The PSD2 is a directive which seeks to improve the existing European rules for electronic payments (2016). This enables third party financial institutions to access some of the core banking systems, providing payments services to customers without the interaction of a bank. ("Payment services (PSD 2) - Directive (EU) 2015/2366," 2016). Today, some of these third parties are known as Fintech's or Financial technology which refers to a technology-enabled financial solution. Fintech has become increasingly competitive. Reasons for this increased competition is the drive of technological developments, increase in data driven analysis and growth in data volume and the pressure of regulatory scrutiny make this industry highly investible. In the fourth quarter 2014, the investments in all 1.027 Fintech companies reached \$3.1 billion USD and in the UK this industry is estimated to be worth \$20 billion USD in revenue to the economy and potentially grow to \$300 billion by 2020. Meanwhile, traditional banks are struggling to capitalize on those digital offerings and few of them are early adopters of

new technology. 22% of Fintech's are focusing on disrupting the payment sector in the consumer segment, which is 40% of retail and wholesale banking revenue pools worldwide. 12% are focused on consumer lending and financing, which is about 15% of the banks revenues (Frédéric et.al, 2016).

According to a 2015 report from Deutsche Bank, one solutions for banks to tackle this competition might be to move the banks to the cloud (cloud based hosting solutions). Cost could be reduced, infrastructure improved along with providing more freedom for investments in development. However, it could be challenging to implements the old legacy systems to a cloud solutions and migrate all the data, apart from the risk of choosing a potentially risky solution for data security (Forest & Rose, 2015). A study in the Journal of Business Management, there was a research aimed at Fintech companies and banks in the digital transformation, with the aim to investigate, evaluate and compare the interaction between Fintech and commercial banks and the development trend in commercial banking, taking into consideration the influence of Fintech companies on traditional business model (Vasiljeva & Lukanova, 2016). Their conclusion is that banks are interested in investing more in the improvement of process efficiency and that digitalisation, process automation and improving strength through process levels are important. Banks are willing to be the secure centralized communication platform, that would fit new market demands. Banks have a strong market position, and that more customers prefer to do business with banks due to security reasons and trust. This is still a challenge for Fintech's, building trust and prove their reliability compared to banks. Also, banks are subject to regulations, where Fintech's are not. That might however change when a virtual money becomes real and easy to transfer. They conclude that there should be a combination of traditional banking and Fintech to deliver the best solution for customers. Vasiljeva and Lukanova recommendations are fourfold; **Firstly**, that banks must invest primarily in digitalized solutions, such as automation of services, new payment infrastructure and analyzing big data. Furthermore, banks should implement their own digital labs and look for interesting ideas e.g. on startup forums. These are some of the same recommendations as McKinsey recommend in their seven traits for successful digital transformations (see page 14-15). **Second**, banks should analyze and use the information they currently own about their customers and their transactions. The use of such information could prove useful for understanding customer's needs, behavioral patterns and drive operational efficiency and effectiveness. **Thirdly**, banks should implement new business processes into customer services online, e.g. conformational

agreements online or through the mobile app. This could however, conflict the Icelandic consumer protection regulation. The **fourth** recommendation is that Fintech's need to advertise more due to the popularization of their services and attract new customers. Also, to establish public trust (2016). These recommendations will be compared to this Delphi research and participants will be asked to discuss their opinions on Fintech companies and the potential competitive impact on the banking sector.

An example of a Fintech company on the Icelandic market would be Kass, Aur and Meniga. The first two enable individuals to transfer money between accounts without the assistance of a bank, it is however essential that these individuals have a personal account at a bank to transfer money. The third one, Meniga, gives its customers an overview of their financial status and classifies how the customer is spending their money. Meniga is the largest company in Iceland in its category and is growing fast worldwide. We will see more developments of these companies when the new legislation takes place in January 2018. These companies pose a great threat to the traditional banking system as well as bring new opportunities (Arner, Barberis, & Buckley, 2015). In a research conducted by Deutsche Bank in 2014, the conclusion is that the traditional banks need to implement their own *Fintech* solutions without compromising the security of customer data in a collaboration with innovation leaders in the industry. They encourage banks to form a better relationship with their customers and provide assistance on all money-related matters using value-generated and web-based technologies. Furthermore, they recommend that banks try to win back customers with data security. Security in transactions is the basis for a good relationship between a bank and its customers and will provide a competitive edge from the Fintech firms (Dapp, Slomka, AG, & Hoffmann, 2014). The research conducted by Deutsche Bank is 4 years old and it should be taken into consideration that a lot has happened since then. Competition in this technical environment is an important part of this research and will be studied and discussed further. New legislations clearly impact the financial industry in many ways and especially in financial services and payment methods, so it is important to take that into consideration in this research. Recently, Georg Ludviksson the CEO of Meniga, spoke about the opportunities laying in this new legislation. He mentioned that there will be many new entrants to the financial market and that mobile solutions from the banks will probably develop into a trusted personal financial advisor. Furthermore, Ludviksson talked about that banks will probably hold its ground, as long as they keep on developing its digital solutions, like the online banking applications (Georg Lúðvíksson, 2017). In this research

his statements will be challenged and participants are asked to give opinions on these new legislations and how they might affect the banking sector in 10 years.

One important issue in the context of consumer banking is how the development of cash will evolve. Cash can influence how banks operate, if the usage of cash decreases something else will replace that payment instrument and if it will increase, how would that affect consumer banking? Cash as a point-of-sale differs among countries and in Germany, Austria, Canada, France and Australia cash is still used extensively, particularly in low-value transactions (Bagnall et al., 2014). In the United states the Diary of Consumer Payment Choice concluded in 2012 that cash was the most frequently used payments instrument and that cash usage was prevalent across all demographic groups. In 2015, that same team concluded that cash was still the most frequently used consumer payment instrument and dominates all small-value transactions (Wendy Matheny, Shaun O'Brien, & Claire Wang, 2016). In Iceland the usage of cash is the lowest compared to other neighbor countries, although cash usage increased a little after the financial crash in 2008. It is the will of the Icelandic government to lower the usage of cash, to lower cost and limit the black economy. Those actions are not easy and the usage of cash has its advantages; it's simple to use and untraceable. The government put together a team of individuals who were supposed to come up with ideas on how to limit cash usage even further and one of the ideas was to eliminate the usage of the largest note ISK 10.000 (approx. USD 80) and later ISK 5.000 notes (Ministry of Finance, 2017). These actions and the future of cash might affect the banking industry to a great extent. How will the PSD2 directive impact banks, will there even be a need for personal bank accounts in the future?

In 2018 there are at least two legislations that will be implemented in Europe. One of them is the Payments System Directive 2 (PSD2) which was discussed above. The second one is the General Data Protection Regulation (GDPR), which is to be implemented in May 2018. The GDPR is a regulation that lays down rules relating to the protection of personal information regarding the processing of personal data and persons right to a protection of personal data. This regulation is extensive and there are some factors that might be of concern to consumer banking. One of them is the individual's right to access its own data. This means that individuals have the right to demand from the data controller (e.g. the bank) confirmation as to if personal data concerning them is being processed, where and for what purpose. Also, the bank shall provide a copy of the personal data in

an electrical format. Individuals will also have the right to be forgotten, meaning that a customer has the right to request the bank (the data controller) to erase any personal data concerning the customer, cease further dissemination of the data and have third parties halt the processing of that data. Data portability is another act included in the legislation and has the potential to effect banking by making it easier for the customer to switch banks. Data portability gives the individual the right to receive the personal data concerning them, which they have previously provided and transmit that data to another bank (The European Parliament, 2016). These regulations will clearly affect the business model of the typical consumer bank and the competition environment will certainly change. It is not the intent to research these legal factors in detail, however, participants will be given the opportunity to discuss them and provide appropriate arguments if applicable.

2.6 Future research

A Delphi study conducted in 2002 by Laura and Kate concluded that the use of internet banking and digital solutions would turn out to be a leading factor in gaining competitive advantage and a major distribution channel in the future. It appears that these expert opinions have become a reality, at least with the distribution channel. All the Icelandic banks have online banks where customers can handle most of their financial needs. The possibilities of internet-banking play a big part of digitalisation within consumer banking and part of this research is to see the expert's opinions in those matters and how it will evolve, especially with the current developments in artificial intelligence (Laura Bradley & Kate Stewart, 2002). The question is if it's true that mobile-banking or other digital solutions can provide competitive advantage? This research will analyze the possibility of a competitive advantage in Fintech's and other non-banks against consumer banking and participants will be able to provide arguments on that topic.

Price Waterhouse Coopers conducted a report in 2014 on the evolution of consumer banking by the year 2020. PWC give some thoughts on what to expect along with recommendations on how the banking industry should react and prepare for the next years (2014). Firstly, they discussed how the bank branches will change since most banking will be conducted online and with decrease in the use of cash, these branches will no longer be necessary. They recommend that branches should be more productive and much less costly. Branches will most likely take on different forms, from being a flagship of

information, advisory and engagement hubs to smart kiosks. Digital capabilities will provide a wide range of opportunities in service offerings, the human touch will still be available, just through a more digitalized channel. PWC also estimate that in heavily banked market like the US, there will be an 20% decrease in bank branches. The smartphone device will grow in importance and mobile payments will increase, however, PWC estimate that card-usage will remain popular since they are quick, effective and won't run out of battery (Sullivan et al., 2014). These findings are important for the progress of this research and part of this research is to see if the opinions from the Icelandic experts will be similar. Bank branches are among the factors that are investigated and especially if the typical bank branch will change dramatically.

In that same report, PWC (2014) talk about competition and differentiation among banks. Their conclusion is that branding and marketing will be more important than ever before, banks target market will be defined by technology, regulatory boundaries and marketing budget. This conclusion also rhymes with the results from the study from Laura and Kate in 2002 where they estimated that online banking will provide a competitive edge (2002). Customers are also getting more informed and aware due to the vast amount of information available. PWC expect that banks will organize themselves around customers, instead of products and channels and earning customer trust will be more important and making the customer feel that they are acting in their best interest. That can be achieved with customer education intertwined in the sales process (2014). Recently, Meniga developed a product in collaboration with Íslandsbanki, called Fríða. This is a solution that is available in the mobile app provided by Íslandsbanki. The purpose is similar to the description from PWC, focused on the customer and providing them with offers and information about products that fit the customer, based on their buying behavior (Georg Lúðvíksson, 2017). This solution works well for all parties; Meniga gets paid for the development on the solution, Íslandsbanki can provide good services with the needs of the customer in priority and gaining trust from the customer and lastly, the customer gets a product or service at a good price that fits their needs.

Boonyarat Samphanwattanachai (2007) did a research on adoption of internet banking in Thailand in 2007 with the Delphi method. He asked experts from the banking industry and university lecturers about their opinions on how the E-banking would evolve in the next five and 10 years. To date, that would be in the year 2012 and 2017. The results were that in five years the retail branch, ATM's, Telephone and the internet would be the main

distribution channels for banks. Specialists thought that internet banking would not replace traditional consumer banking channels. In ten years the results were that bank branches, ATM's, internet, telephone and mobile applications would be to main distribution channels (Samphanwattanachai, 2007). These finding are of course for the market of Thailand and can hardly be compared to the Scandinavian or the US market, since that market has been viewed as a late adapter of internet banking (2007), but the methodology is the same. That research will be viewed as a guideline for this research of digitalisation in the banking sector.

2.7 Technological developments

A lot of new technology has been surfacing the past years and continue to increase at an exponential rate in coming years. One technology has received much attention and is called Blockchain. Typically, there are contracts and transactions that define our structures in the economic, legal and political system. They protect our assets, record our financial history and set organizational boundaries. However, this form of bureaucracy has not been keeping up with the digital transformation of the recent years (Iansiti & Lakhani, 2017). This is where a Blockchain technology can be useful. Blockchain is a trusted platform where information can be stored and or transferred between individuals or institutions. In the context of currency e.g., it's a distributed ledger that can record transactions between two parties effectively and in a verifiable and permanent way. Each party can access the database and its complete history but, they can't control the data nor the information (2017). This technology enables every transaction and its associated value to be visible to anyone with access to the system. Once a transaction is made the platform makes sure that the records are not altered.

Blockchain is mostly known in connection to electronic currencies, like Bitcoin, but there are immense possibilities for this technology to develop further, e.g. in the banking industry and even in other non-financial industries. Just recently the CEO of Credit-Info, an Icelandic company specializing in financial consulting, credit scoring both in domestic and foreign markets, spoke about the potential of adopting the Blockchain technology into the business model of the company. They have the potential to transfer credit score between its 28 locations worldwide (Stefano M. Stoppani, 2017). Larger institutions have already been experimenting with this technology, such as VISA, Mastercard, NASDAQ, who are investing heavily in Blockchain-related business models.

The concept of Blockchain has not been researched much over the years and the first academic research on this technology was conducted in 2014. This technology is still in its early stages and there are some issues that need to be cleared in the context of human society (Zhao, Fan, & Yan, 2016). One academic paper envisioned that this technology would go through slow adoption due to the risks associated and that most of the start-up companies would fail with only a few winners (Michael Crosby, et.al. 2016). The potential of further developments and adoption of the Blockchain technology in consumer banking will be investigated in this research. Participants in this Delphi study will apply their thoughts on this phenomenon and evaluate how and if this technology will affect consumer banking in the next 10 years.

2.8 What is the situation today?

This chapter will show statistically how the development of digitalization is in the worldwide economy today, not just in the banking sector. These statistics are to show what to expect in the future compared to how the situation is currently in the world. In this research there are no statistical analysis of data, but these can be useful to compare with the future predictions from participants regarding the banking sector. Internet and communication technologies (ICT) is generally accepted meaning to all technologies that allow people and organizations to connect in the digital economy. Those technologies are e.g. cloud computing, transactions, data, internet access etc. (UNCTAD, 2017).

In a report conducted by the United Nations (2017), the most likely disruptive technologies that will happen along with the evolving digital economy are discussed. Those sectors that might affect banking are e.g. retailing sector with disruption in mobile and e-commerce platforms, internet of things, cloud technology and big data analytics. In the business process outsourcing, there is cloud computing, software automation and knowledge process outsourcing. Employment in the ICT sector is growing and new job opportunities are rising, production of 3D printers, software development, AI etc. There is however a downside of digitalisation, around 85% of retail workers in Indonesia and the Philippines are at high risk of disappearing due to automation (UNCTAD, 2017). ICT manufacturing worldwide is estimated to be responsible for 6,5% of global GDP. Around 100 million are employed in the ICT service sector and the share of women occupation remain very low, especially in developing countries. The digital economy is affecting international trade and in 2013, e-commerce was \$16 trillion and in 2015 it is estimated

around \$25 trillion. The sales of robots and 3D printers have never been higher, and the volume of internet traffic is 66 times higher than it was in 2005. Despite all that, 50% of the total population remain offline, meaning that those might not have access to the internet or other ICT products or services.

As for the banking sector, McKinsey estimated that in the next few years machines will perform up to 10-25% of work across bank functions, increasing capacity and freeing the employees who did those tasks before to do higher-value tasks (Dietz et al., 2015). Further, McKinsey analysis which extends to about 46 countries worldwide shows that 80% of the global workforce can be automated and it varies between countries. Currently the finance sector employs about 55,2 million people and they estimated that the potential for automation is 44%, meaning that 24,4 million people could be replaced. The country that has the highest potential for automation in the financial sector is China, with 45%. For the Scandinavian countries, Sweden has 40% and Norway is 37% (McKinsey Global Institute, 2017). There is no data for the automation potential for Iceland.

3 Research methodology

This chapter will cover the process of the research, information on the criteria for participation, the method for data collection and a discussion of the research question and why this method is appropriate to answer the addressed problems.

3.1 The Delphi Method

The purpose of this thesis is to answer the research question of how digitalisation will affect consumer banking in the next 10 years. The method of choice will be the Delphi method designed mainly by Dalkey and Helmer in 1950 (Hsu & Sandford, 2007). The method is designed to help the researcher to predict the potential effects of one phenomenon on the future relying on the knowledge or expertise from others. Delphi is designed as a group communication process that aims at conducting detailed examination and discussion of a specific issue for goal setting, policy investigations, or predicting the occurrence of a future events. The idea of the Delphi method is to try to achieve a consensus among participants on the given dilemma by asking a series of questionnaires. It can depend on the scope of the research on how many rounds these questionnaires are conducted but in most cases, it takes three rounds to reach a consensus (2007).

According to the literature, the first round in the process typically begins with open-ended questions to establish a frame and soliciting information about a content area from the participants (Custer, Scarcella, & Stewart, 1999). Then the researcher will collect the information and convert into a structured questionnaire, this questionnaire is then used in the second round of data collection. In the second-round participants are provided with the questionnaire modified from the first answers, also participants are asked to review the items summarized from the first round. In this round, participants can be asked to provide rationale if they agree or disagree with the statement from round one. Usually in round two consensus starts to form, depending on the scope. In third round participants are presented with the items summarized from the previous rounds and are asked to revise his/her judgements or argue why the reason for remaining outside the consensus. At this stage, only a slight increase in the degree of consensus can be expected (1999). Based on the data from previous Delphi researches, the possibility of a consensus at round two is considerable in this research, due to the scope of the research and participants.

The Delphi model can theoretically be continuously iterated until consensus is determined to have been achieved. The number of iterations however depends largely on the degree of consensus sought by the researcher. At the final round, whether it's at round two, three or even four, items are summarized, their ratings, minority opinions and items achieving consensus distributed among participants. They are then given the final chance to give comment or revise their judgements.

There is nothing in the Delphi rulebook that discusses the timeframe of the future scenario and the reason for a 10-year timeframe is because it is considered most relevant to this research. In 5 years, there will probably be a lot of developments and innovative ideas in banking but, that timeframe might be too short, e.g. regarding the legal developments in 2018 and the Blockchain technology, it might take more time for those factors to be well established. Everything above 10 years would probably be impossible to image, especially when the last 5 years included more technical breakthroughs than the last 20 years. Also, the results from the research might not be significant and even the participants might not be able to evaluate those kinds of future predictions. Therefore, it was concluded that a 10-year timeframe was believed to be appropriate.

3.2 Participants

Choosing the right individuals for the study is the most important step in the process because it is directly related to the quality of the results, so it is essential that the researcher can rely on the expertise of those individuals. The Delphi subjects need to be highly trained and competent within the specialized area of knowledge related to the topic. There is no exact criterion when selecting subjects for the study, but among scholars there are some guidelines that are proven useful. Ludwig (1994), states that it is recommended that the subjects should be well-known and respected individuals within the target groups of experts. Generally the pool of individuals appropriate for the research are primary stakeholders with various interests related to the topic or those who have first-hand relationship with the particular topic (Custer et al., 1999).

The number of subjects has not yet reached a consensus within the literature, however Delbecq, Van de Van and Gustafson (1975) suggested that ten to fifteen is sufficient if the background of the Delphi subjects is homogenous. The intent in this thesis is to have a homogenous group of subjects, therefore the number of participants will be fifteen. If

the number of subjects is too small the results might not be considered to provide significant results and on the other hand if the pool is too large it might take a long time to process the response or even low response rate (Hsu & Sandford, 2007).

Participants were chosen based on their competence and knowledge in finance, banking and other fields in the financial sectors and were handpicked through personal and professional connections. Before the research was conducted some of the participants were contacted through email and others in a face to face confrontation and asked to participate in an online survey. In the first E-mail, the main principles of the Delphi research methodology were explained and the importance of participating all the way through the research to keep the results significant. Invitation was sent to 15 proposed Delphi participants, 13 agreed to participate in the research. When the research is done and results are completed, each participant will receive a copy of the results.

One of the characteristics of a Delphi study is that it can be time consuming especially if there are large numbers of statements, then subject will need more time to respond. Delbecq et.al (1975) recommend that a minimum of 45 days of administration work is appropriate for a Delphi study and a period of 2 weeks for respondents to respond to each round. In this research, that timeframe will be used as a guideline and the respondents will participate in the survey through an electronic platform to speed up the process. However, in this research the timeframe for participant to provide their answers is 10 days. Throughout the process, participants are in a closed dialog via email and are therefore able to ask questions if there are some uncertainties.

The 13 approved participants in the research are all people with extensive experience from the financial sector and all fit the recommended Delphi criteria. In online surveys, there is always the question of whether it should be anonymous or not. This research is anonymous and therefore no names or personal profiles will be published. The reason for having an anonymous research is firstly because a few of the participants requested to be nameless and it happens to be that those individuals have substantial knowledge in banking and secondly to get honest answers from participants without having them afraid of tracing answers back to them in the future. However, to argue their participation; two of the participants are former board members at a domestic bank, three are financial specialist in an investment bank, five are working at top level management in a large financial institution in Iceland, two are working on digital developments in financial services and one of them is a specialist in information security and finance at a large

consulting company located in Iceland. With all the experience from the participants, they hold over 200 years of experience in the banking sector and the gender ratio is 3 women and 10 men.

3.3 Questions

Here is a detailed description of the applied questions in the Delphi research. First there is a description of the first round and then the second round, since it took only two rounds to reach an acceptable consensus. The results from the research are presented in chapter 4 and will not be discussed any further in this chapter. The first round contains only open-ended questions and the second round included 14 Likert-scale statements on the scale of 1 to 5 and the last question is an open-ended question.

3.3.1 Round one

The first round includes 10 questions and the structure is that these questions are divided into specific chapters, depending on the content of the question. There are 7 chapters, some with parts A), B) and C). The reason for this structure, in the first round, is that it is based on the definition of consumer banking and it will help separating the questions for participants. All the questions in the first round are open-ended questions where participants are encouraged to provide proper arguments for their answers. According to the Delphi method, the reason for these open-ended questions is that the researcher wants to gain as much knowledge from these specialists as possible early in the research process (Hsu & Sandford, 2007). The rest of the research is in most part based on the results from the first round, so it is important for the sake of the results to encourage participants to discuss and argue their answers. The complexity of developing questions in a Delphi research is that the questions cannot be too leading, meaning that these questions might be too open and giving the participants the possibility for a wide inaccurate answer.

The first chapter is divided into questions A), B) and C). This chapter is called “Payments methods” as it refers to possibilities in paying for goods and services and how that connects to consumer banking. The questions are as follows:

Question A): “In 10 years, do you believe that an individual will be bound to have an account at a local bank in order to pay for goods or services? Why/Why not.”

Question B), “In 10 years, do you believe that the existence of banknotes (Cash) will change? If so, how?”.

Question C): “In 10 years, how could the Blockchain technology effect consumer banking services?”

These questions are to see if participants believe that the typical deposit account is needed to pay for goods or services and how the development of cash will change. As discussed in the literature, the possibilities of new legislation can alter the way we pay for things, so here is an opportunity for the participants to express their opinion. The last question is however optional, as some of the participants might not be familiar with this technology and therefore are not able to express their knowledge or thoughts. The Blockchain technology has a lot of potential to affect the way we do business, handle transaction and among other things, as mentioned in the literature, so this question is considered necessary.

Chapter two in first round is called “Bank Branch” and only with question A).

Question A): “How will the typical bank branch develop in the next 10 years?”

This question is designed to discover how the already changing bank branch will develop in the next 10 years. This question is quite extensive and the participants can express their knowledge in any angle, since there is no breakdown of the bank branch. This question may include e.g. the purpose of a cashier, ATM, financial consultancy etc. within the branch. Here the participants can also discuss their thought on digital solutions and how the branch might transform in that context.

Chapter three is called “Financial Services”, with questions A) and B).

Question A): “How will developments in information technology affect financial consulting in the next 10 years?”

Question B): “How will the technical know-how of customers affect the delivery of financial services to customers in the next 10 years?”

These questions are designed to explore the possibilities with developing new interfaces (e.g. digital solutions) in financial services and to see if the technical know-how might be a preventing factor. Customers can have different technical knowledge and banks need to be aware of when that line might be crossed. As discussed in the literature from Deutsche Bank report in 2015, one of the seven traits of effective digital enterprises is that the

customer expects all services in any channel to be acceptable and if the know-how of a customer is not sufficient for the provided service, they might switch service providers (Forest & Rose, 2015).

Chapter four is called “Loan Applications” and includes question A).

Question A): “What will be the major defining factors in loan applications (housing loans, car loans etc.) in the context of consumer banking in the next 10 years?”

This question is designed to examine how the application process for a loan might change, if that process will become more automated and if the need for a human interference will be necessary. This question is relevant because there are already so much developments in the automated process of credit rating application, e.g. the Arion Bank case where they implemented a process of a 3-minute process which took 10 days before.

Chapter five is called “Competition” and includes question A).

Question A): “What will define the competition in consumer banking over the next 10 years?”.

Competition might be a crucial factor in digitalisation. A well thought-out digitized process could provide a competitive advantage for banks and here the participants can discuss their thoughts. This question opens the possibilities of the discussion of other players on the market, e.g. Fintech companies. Also, the seven traits suggested from McKinsey are ideal to be compared for this question.

Chapter six is called “Measurements” and includes question A).

Question A): “How will the KPI’s (Key performance indicators) in use in consumer banks change over the next 10 years?”

KPI’s are important for every company and can help keep track of the performance and evaluate if goals are met. Here the question is if the banks might be putting emphasis on measuring any of its automated processes, e.g. if processes that used to be performed manually are delivering increased performance or at least increased value to the customer. Without asking a leading question, the researcher is observing if there are more important measurement than financial measurements.

The last chapter of questions in the first round is called “Legislation” and includes an optional question A).

Question A): “How will developments in the legal environment effect the business model of a consumer bank for the next 10 years?”

This question is optional because some of the participants might not be familiar or knowledgeable with any legal developments in the financial industry and therefor are not qualified to provide a significant answer. The purpose for this question is to see if participants foresee any developments in the current business model for banks, in some of the coming legislations, e.g. the PSD2 and GDPR. This question is also designed to discuss if there are any opportunities or threats coming from third parties, such as Fintech.

3.3.2 Round two

The second round is based on the results from the first round with a similar structure, divided into six chapters with 14 statements where the participants are asked to evaluate their level of agreement. The statements are designed to narrow the research towards a result, if the first round offers that option. The use of a Likert scale and median score as a statistical measure will be conducted as suggested by the literature for later rounds in a Delphi study (Hsu & Sandford, 2007). 5-point scale statements will be conducted in the second round supported by the answers from the first round. Definition of the 5-point scale is as following:

1	2	3	4	5
Highly Disagree	Disagree	Neutral	Agree	Highly Agree

To determine the level of consensus in the scale statements, around 70-80% of participants falling within two categories, that is without option number 3, is considered as a significant consensus to the statements. A detailed description on the data analysis will be discussed in chapter 3.4.

The first chapter is called “Payment Methods” and consists of three statements.

1. “Digital payments will be a dominant payment method in 10 years.”
2. “Personal bank accounts will still be needed in 10 years.”
3. “The Blockchain technology will not have a dramatic effect on consumer banking in 10 years.”

These statements are directly related to the first chapter in the first round and are to provide a more narrow approach to the outcomes of payment methods. It was necessary to ask about these issues in more detail, as will be discussed in the result chapter.

The second chapter is called “Bank Branch” and consists of one statement.

1. “In 10 years, bank branches will mostly consist of digital services.”

This question comes directly from the answers in round one and is an attempt to narrow the answers even further. At the same time when the second round was closed for submitting answers, Arion Bank opened a new branch in Kringlan (local shopping mall), which had been under construction for some time. The branch opened 21st of September and the survey was closed for participation on the 20th of September. As it turns out, the branch was modified to a much more digitalized outlook and more self-service oriented processes, with very few employees. There are no cashiers but there are private rooms where the customer can talk to a financial advisor through a screen and the advisor is stationed at the Bank's headquarters.

The third chapter is called “Financial Services” with two statements.

1. “Financial services through digital channels will be dominant.”
2. “There will always be the need for some human interaction in financial services.”

These two questions are in some way opposites, the first one is stating if digital interphases or channels are going to be dominant and the latter is recommending that a need for human interaction will always be needed. Firstly, these statements come from the results from the first round and secondly the report from PWC. PWC suggested that human interaction will still be needed in the year 2020, but mostly through digital channels.

The fourth chapter is called “Competition” with four statements

1. “Rates and prices will be the most important factor in competition among banks in 10 years.”
2. “Bank’s ability to work with third parties will be important in 10 years.”
3. “Having a good digital service platform will give a competitive advantage in 10 years.”
4. “Foreign competition will increase in 10 years.”

These questions might not be directly related to automated processes, however, there is some connection, e.g. if a digitalized platform will provide competitive advantage. This chapter is concerned with the PDS2 legislation and how that might affect consumer banking, e.g. working with third parties and threat of foreign competitors. The statement for rates and prices comes from the first round, where the participants would evaluate if competitive advantage might e.g. come from automated processes.

The fifth chapter is called “Measures” and includes three statements.

1. “Measuring through digitalized channels will be necessary in 10 years.”
2. “Financial measurements will be the most important KPI for banks in 10 years.”
3. “With increased automation, customer related measures will become more important.”

Measurements are important and can be a good indicator on what the banks might be focusing on, whether its increased ROI, profit or customer related measures. The recommendations from McKinsey discuss the importance of knowing the customer and therefor asking about measurements is essential.

The sixth chapter is called “Legislation” and includes one statement.

1. ” Developments in the legal environment will give non-banks and other financial institutions (Fintech’s, start-ups etc.) a competitive advantage in financial services.”

This question is designed to explore opportunities that may emerge with developments in the legal environment. These developments may impact the traditional consumer banking system. New entrants might provide more mobile and digital solutions for customers and that can become costly for banks, e.g. losing customers and get left behind in the transformation in the coming years. This question is aimed at the discussion about Fintech’s in the literature and how they might disrupt the traditional banking sector.

The last part in the second round is not a statement, but an open-ended question.

1. “In 10 years, what might disrupt the traditional banking sector?”

This is an attempt to gain the last ideas from participants on what might disrupt the banking sector, what technological changes could change everything, what developments in the legal, economic or financial environment might turn this sector around. This

question gives the participants a wide range of possibilities to pour out any knowledge or thoughts that they might have on the subject.

3.4 Data Analysis

When defining and determining consensus in a Delphi study the data analysis criteria is subject to the interpretation. The general rule according to Miller (2006) is that a consensus can be determined if a certain percentage of votes fall within a prescribed range. Another criterion is that it is recommended that consensus is achieved by having 70-80% of the subjects votes fall within two categories on the 5-point Likert scale (Ulschak, 1983). The data analysis in this research will include qualitative data due to the usage of the classic Delphi method with open-ended questionnaire in the first round to solicit subjects' opinion. To answer the research question, primary data is collected with the Delphi study with the support of some secondary data from previous research and reports.

3.5 Shortcomings

Like other research methods the Delphi method has its pros and cons. Because of the multiple feedback processes the response rate can be low. That was however not the case in this research, response rate was good. It can be challenging to provide the proper quality feedback to participants after each round of questions, so it is important to motivate subjects on continuing with the study. In the timeframe of the study it must be assumed that the responses from subject may get delayed. In some instances, if respondents are not answering the questionnaire, an instructor or researcher must enforce the participant to answer. The Delphi method, compared to other research methods, is time consuming and laborious, so the timeframe needs to be strict but also flexible for unexpected circumstances. There is also the risk of molding or influencing the opinions of the subjects by providing objective feedback which can damage the quality of the subject's responses and overall results. Another risk of molding opinions of participants is with biased questions, the challenging part for the researcher is to motivate participants to answer questions based totally on their knowledge and opinions (Hsu & Sandford, 2007). In this research there is a strict timeframe and having the pressure to launch the survey on time might results in an inconsistent literature.

According to the Delphi method (2007), gathering data can be conducted in various ways; via email, phone call, interview etc. In this research it was the opinion of the researcher to use the email a primary source of data gathering. The downside from using an email is that it can give participants the opportunity to ignore the research and not participate in the survey. To prevent that from happening, emails were sent out to all participants again, as a reminder, if the number of answers did not match the number of participants.

Lastly, it cannot be assumed that the Delphi participants are equal in knowledge and experience. Some participants might have more in-depth knowledge on related topic compared to others with more in-depth knowledge concerning the target issue (2007). In this research, most of the participants are at top-level positions in their companies and it needs to be considered that their time is valuable and limited. So, questions need to be clear and precise and not too long or complicated.

3.6 Timeframe

According to the literature, the time it takes to implement a Delphi study is at least 45 days, depending on the amount of iterations. The completion of data gathering from the survey was completed before October 15th, so the first round will be implemented at least 45 days before that time. The time provided for subjects to answer each round will be of maximum 10 days. After the first round, researcher will collect the data and compile for the feedback before round two. It is estimated that a consensus will be reached after two iterations therefore a timeframe is established around that, but with the possibility of taking more than two rounds. A timetable of the process is as follows:

Time	Task
Day 1	Finishing confirmation on participation.
Day 15	Deploy first round of the questionnaire. Open ended questions.
Day 23	Remind participants to submit answers.
Day 25	Close first round. Data gathering and compiling from 1 st round.
Day 35	Send out feedback from the 1 st round and launch the 2 nd round.
Day 43	Remind participants to submit answers.
Day 45	Close second round. Data gathering and compiling from 2 nd round.
Day 55	Gathering of empirical data completed.

The timeframe of a Delphi research is not a hands-on process. The number of iterations is not known until the research is well on its way so there will be at least one and a half month between the launch of the second questionnaire and the completion of empirical data gathering. It is crucial that the subjects in the study answer all the questions, otherwise the results and the consensus might not be significant.

3.7 The process

The first communication with participants was an E-mail that requested a confirmation. In that E-mail the methodology was explained and how the process would evolve. Participants were also provided with a link to a more detailed explanation of the Delphi method since it is important that participant understand the process and the purpose of the method.

This is the first E-mail that was sent to participants with the purpose of getting an acceptance and educating the potential participants on how the process works:

My name is Sigurlaugur and I am a Master-student at Reykjavik University. I am writing my thesis in Business Administration where the emphasis is on information technology.

This research is about digitalisation in consumer banks in the next 10 years. My supervisor is Páll Melsted Ríkharðsson.

I would like to know if you are willing to participate in a research regarding this matter. The research is based on the Delphi methodology which relies entirely on the expertise of handpicked individuals who are knowledgeable and have skills in the field of finance.

Short overview of the method:

The method is characterized by rounds of questions which are sent out to participants with the goal of reaching a consensus among participants and in that way reaching future predictions. Considering that the results are depending entirely on responses from participants, it can be hard to predict how many rounds it will take to reach a consensus. It is expected to be three rounds. In the first round there are open-ended questions but in later rounds the questions will get narrower. Participants will receive more information after each round. The research is anonymous.

For further information: <http://jite.org/documents/Vol6/JITEv6p001-021Skulmoski212.pdf>

Process:

The process is that I will send you an online survey where you are asked to answer questions and provide arguments for your answers. After the first round, answers will be processed and sent back to participants for reading.

If there is consensus in the answers after first round, the research is finished. If not, the next round will be sent out with new questions and so on and so forth. I repeat, the first round is not a “yes or no” questions, but really open-ended questions. The timeframe to answer the questions is 10 days.

The plan is to send out the first in the middle of August and participant receive a 10-day timeframe.

Your participation matters a lot to this research and I hope you can take the time to participate.

Even if you are not willing to participate, an answer to this post would be appreciated.

Looking forward to hearing from you.

All the best

Sigurlaugur Porkelsson (Personal communication, July 26, 2017)

This email was sent on the 26th of July to 15 participants and 13 approved to participate. On the 15th of August another E-mail was sent to those who accepted to participate in the study and officially start the first round:

Hello

Now it's time for the first round.

To recap: This research s about digitalisation in consumer banking over the next 10 years.

Following is a link to the online survey: <https://goo.gl/forms/uFFws3o97CSqUpbn1>

I remind you that these questions are open-ended and arguments are expected. Estimated word count is 200 words for each question, that might of course vary between participants based on knowledge and expertise. Timeframe is 10 days to answer.

Soon after the first round, answers will be compiled and sent back to participants. If there is no consensus, a new round will be sent out, with narrower questions.

Do not hesitate to contact me if there are any questions.

Best regards,

Sigurlaugur Porkelsson (Personal communication, August 15, 2017)

This E-mail was sent out 15th of August and after eight days only 7 participants had answered the survey, so another post was sent to follow up on the rest of the answers. The follow up post was sent the 23rd of August:

Hello,

This round will close on Friday at midnight. If you have not posted your answers, please do so before the close date.

Now there have 7 of 13 participants submitted their answers. There are still some left and that is why I am sending this E-mail.

Hoping for good responses.

Best,

Sigurlaugur Porkelsson (Personal communication, August 23, 2017)

The first round was closed at midnight on the 25th of August. 16 days later another E-mail was sent to participants with a summary of their answers in an attached PDF file, which they were supposed to read over before the next round:

Hello

I have now summarized the first round. I ask you to open the attached PDF file and read it.

The answers were good and interesting. Generally, participants seem to agree on the issues.

I ask you to participate in the next round. The next round is quicker to answer and the structure of that round is a set of statements and one open-ended question.

Website of the survey: <https://goo.gl/forms/Ip5bUq2yh509qrBJ3>

Please contact me if there are questions

Again, I appreciate your participation.

Sigurlaugur Porkelsson (Personal communication, September 10, 2017)

After the survey had been open for 9 days, participants got another E-mail to let them know about the deadline:

Hello,

Now the second round is ending, on Wednesday 20th at midnight.

If you have already posted your answers, I thank you for the participation.

If not, I encourage you to submit your answers.

Website: <https://goo.gl/forms/Ip5bUq2yh509qrBJ3>

Best,

Sigurlaugur Porkelsson (Personal communication, September 19, 2017)

On October 7th the participants received another E-mail with an update on the situation:

Hello

Status update:

I am now compiling the answers. It is not likely that another round will be sent out, the answers indicate a consensus after the second round.

Soon I will send you a summary, for both round one and two.

Best

Sigurlaugur Porkelsson (Personal communication, October 7, 2017)

At the end of this research, results are sent to participants and participants given the chance to revise their answers if necessary. When the study is complete, a copy of the thesis is sent to them as well.

4 Results

This chapter covers the results from the research, both from round one and two. It took two rounds to be able to establish a consensus from the participants answers. At the beginning of a Delphi research it is hard to imagine the number of rounds to reach a consensus. However, two rounds could be estimated since the Delphi subjects were considerably homogeneous. Over-all the answers were good, and it shows that the participants are knowledgeable about the issue. To begin with, 13 participants accepted to participate in the research and confirmed via email, at the end there were 11 answers. Two participants did not in the end participate in the research, but the answers are still significant. All the answers are available in appendix 1 and 2.

4.1 Results from first round

The answers were good and meaningful for the research. However, some participants clearly are more knowledgeable than others or gave the answers a more detailed consideration, which could be expected. Answers vary in length and some provided considerably more arguments than other participants.

4.1.1 Chapter 1 – Payment methods

Question A: *In 10 years, do you believe that an individual will be bound to have an account at a local bank in order to pay for goods or services? Why/Why not.*

Results from part A) in “Payments Methods” indicate no consensus among participants and there is some amount of different opinions. Seven participants believe that individuals will not be bound with a bank account and four suggest that individuals need a bank account.

Arguments for having a bank account:

Among arguments is that the timeframe is too short for these kinds of drastic measures and that a 10-year time frame might not be long enough even though legislation like the PSD2 is being implemented next year. One suggested that deposit insurance will be the main reason for having a bank account. One made the righteous comment that individuals can get by without a bank account today because banknotes (cash) are a legally accepted payment in Iceland, however that might not be the case in 10 years. That same participant

also stated that if payments are to be made in ISK, it would be hard to image other system eventually than the Icelandic banking system as it is impossible to store electric ISK elsewhere.

Arguments for not having a bank account:

The most common argument for not having a bank account is that participants believe that new technology and developments will enable other solutions. There are however no further arguments in that context. One of the arguments is that that even though individuals might not be forced to have an account to pay for goods/services, they would still decide to do so. Reason being that the trust factor is too significant, at least within the 10-year timeframe. Also, an argument was made that the PSD2 might open new possibilities in storing money, e.g. fintech's providing such services to tie customers to the company and getting as much from the value chain as possible.

Conclusion: No consensus in answers. Roughly 60% agree that bank accounts will be needed, which is not enough to determine a consensus. Around 40% agree that bank account will not be needed.

Question B: In 10 years, do you believe that the existence of banknotes (Cash) will change? If so, how?

Results indicate a consensus in the answers. All participants believe that the usage of bank notes or cash will change and decline in usage. However, most of the participants agreed that cash will not completely vanish within 10 years. One of the reason that this development might take longer, in the opinion of three participants, is because of the black economy. One argument is that people are conservative in nature and that old people still mostly use cash. That same individual argued that legislation is hindering this evolution, e.g. service providers cannot reject cash payments. Some argued that with increased developments in digital payments, cash will most likely decrease as a form of payment for goods and services.

Conclusion: The consensus from this part is that cash will decrease in usage in 10 years.

Question C: In 10 years, how could the Blockchain technology effect consumer banking services?

This is an optional question and there were total of seven answers and one of them is invalid. Three of those answers suggest that the Blockchain will continue to develop but

that it probably will not have a major effect on consumer banking. Two argue that there are a lot of opportunities in Blockchain technology, e.g. that it opens the payments system and invites new competition and that cryptocurrencies will increase in usage. One argument is that the technology has already affected the banking industry, but only as a technology. It will probably not affect customers in terms of service but rather the infrastructure of a bank.

Conclusion: No consensus.

4.1.2 Chapter 2 – Bank Branch

Question: *How will the typical bank branch develop in the next 10 years?*

The answers clearly indicate that bank branches will change in the next 10 years and mostly due to automated processes. However, different opinions seem to be on how these changes will occur. Seven of the answers included arguments that branches will decrease in numbers and some of the arguments are that the most common tasks will be performed digitally, as they already are today. Five of the answers indicate arguments that branches will still exist because of the need for financial consultation, e.g. for older people who might not be knowledgeable about technology, for larger transactions (mortgage loans) and if there might be something seriously wrong, financially. All the answers include suggestions that digitalisation will be a dominant factor in 10 years in bank branches. One interesting argument was that customers who are reluctant to adapt to the changing financial environment in coming years, will be deemed as bad customers to the bank. Therefore, banks will make branches fewer and willingly inconvenient in order not to overserve this group of customers.

Conclusion: There is a consensus that branches will change and digitalisation will be a dominant factor.

4.1.3 Chapter 3 – Financial Services

Question A: *How will developments in information technology affect financial consulting in the next 10 years?*

Eight of the answers include suggestions that automatised services will be dominant in financial services, one of them however argues that the need for human interference will be

necessary but the simplest service or consultancy for individuals that can be automated will be automated. Rest of the answers suggest either online solutions and/or more digital interfaces. One participant estimated that financial consulting will not be affected by information technology in the coming years as it has merely slowly developed in the last 20 years.

Conclusion B: There is a consensus that automatisation will be dominant in financial consulting in the next 10 years.

Question: *How will the technical know-how of customers affect the delivery of financial services to customers in the next 10 years?*

Answers suggests that the technical know-how of customers will not be an obstacle for the banking industry. Reason being that e.g. software developments and digital interphases are going to be so easy to use. One argument was that customers might develop faster than the current bank development and therefore put pressure on banks for efficient IT solutions. Some answers included the discussion on the difference between generations but that should not be a barrier for banks. The generation that is not used to digital interfaces is diminishing and the general know-how will increase.

Conclusion: There is a consensus that technical know-how of customers will not be an obstacle.

4.1.4 Chapter 4 – Loan Application

Question: *What will be the major defining factors in loan applications (housing loans, car loans etc.) in the context of consumer banking in the next 10 years?*

Two participants did not understand the question, so their response is invalid. Other participants agreed that the loaning system will depend more on credit scoring of individuals and monitoring of data. Banks will start to monitor their customers more digitally and evaluate with the help of AI. First, this will help the bank to analyze the risk on a digitalized platform and to make the process more automated for the customer. Four of the answers indicate that the process of loan application will become more automated.

Conclusion: There is a consensus that loan application will be based more on personal data analytics.

4.1.5 Chapter 5 – Competition

Question: *What will define the competition in consumer banking over the next 10 years?*

All participant suggest that rates and prices are the most important factor in competition in consumer banking for the next 10 years, except one. Five of those also suggest that trust is important. There seems to be a debate on whether digital solutions and services provide competitive advantage, two suggest that digital deliveries and interfaces do not benefit the banks and two suggest otherwise.

Conclusion: There is a consensus that rates and prices will define competition.

4.1.6 Chapter 6 – Measurements

Question: *How will the KPI's (Key performance indicators) in use in consumer banks change over the next 10 years?*

There are a lot of different opinions in the answers. Two participants do not have an opinion. Four suggest that financial measurements will be most important. Two of those who are in favor of financial measures also suggest that digital measurements are important, e.g. the usage (volume) of automated processes instead of manual labor. One interesting argument is that much more will be looked at the profile of the customer in combination with other factors like cash flow, outstanding loans in comparison with possibility to pay back.

Conclusion: No consensus in answers.

4.1.7 Chapter 7 – Legislation

Question: *How will developments in the legal environment effect the business model of a consumer bank for the next 10 years?*

This question is optional and seven participants provided an answer. Six answers suggest that legal developments will probably slow down the evolution of banking or at least make them more rigid. These developments will however provide more opportunities for smaller players on the market to team up with the banks, e.g. Fintech's. One participant discussed that with new technology there is going to be heavy regulation on all that has to do with banking service technology and companies will probably explore ways to have

as much financial services as possible under unregulated entities. Further, in the answer he discusses the possibility that an advisory in the form of a robot (*robo-advisor*) will simply be banned unless the customer explicitly agrees to receive advice from such technology.

Conclusion: No consensus in answers.

4.2 Results from second round

The second round was based on and took notice of the results in the first round. The answers that needed more consensus were presented in the form of statements in a 5-point scale (1-Highly Disagree, 3-Neutral, 5-Highly Agree). The results indicated a consensus among the 11 participants and therefore the research was closed. In the final chapter, participants were provided with an optional open-ended question and nine participants answered that question.

4.2.1 Chapter 1 – Payment methods

Statement A: *Digital payments will be a dominant payment method in 10 years.*

There is a consensus in the answers, all participants agree that digital payments will be dominant in 10 years.

Statement B: *Personal bank accounts will still be needed in 10 years.*

The results are the same as in the first round, no consensus. Participants can't seem to agree on whether bank accounts will be necessary in 10 years. 63% of participants agree that the need for bank account will still be in 10 years. 2 participants were neutral and 2 disagreed. The majority is however convinced that the need for bank account is still necessary in 10 years, but the ratio does not reach within the limits according to the Delphi standard.

Statement C: *The Blockchain technology will not have a dramatic effect on consumer banking in 10 years.*

The results rhyme with part one in the research. In first round there was no consensus but some discussed that this technology will continue to develop but it cannot be confirmed that it will have a significant effect. Five participants are neutral and four agree that

Blockchain will not have a dramatic effect. Two have the opinion that Blockchain will have dramatic effect on consumer banking. These results show that no clear consensus is in the answers regarding the effects of Blockchain technology in consumer banking.

4.2.2 Chapter 2 – Bank branch

Statement: *In 10 years, bank branches will mostly consist of digital services.*

63,7% of participants believe that bank branches will mostly consist of digital services. That's not enough to determine a consensus by the Delphi standard. In the first round there are different opinions on how these changes will occur which might indicate that there is not a consensus about digital services in the second round.

4.2.3 Chapter 3 – Financial Services

Statement A: *Financial services through digital channels will be dominant.*

There is consensus, 36,4% agree on the assumption and 63,6% highly agree. These results are interesting compared to the results in chapter 2, where there is not a consensus on digital services in bank branches which indicates that digital solution will be dominant on other platforms than on a branch level, e.g. online and mobile.

Statement B: *There will always be the need for some human interaction in financial services.*

There is consensus, 45,5% agree and 45,5% of participants highly agree with the statement.

To conclude the answers from chapter 3, there is clearly a consensus that financial services through digital channels will be dominant but that there will always be a need for human interaction which is also what was suggested from the participants in the first round.

4.2.4 Chapter 4 – Competition

Statement A: *Rates and prices will be the most important factor in competition among banks in 10 years.*

There is a consensus, 63,6% agree, 18,2 highly agree and only one participant disagrees with the statement. In the first round, all answers indicated that rates and prices will be the most important factor in competition.

Statement B: *Bank's ability to work with third parties will be important in 10 years.*

There is a consensus, 63,6% highly agree and 18,2% agree with the statement.

Statement C: *Having a good digital service platform will give a competitive advantage in 10 years.*

There is a consensus, 72,7% highly agree and 18,2% agree with the statement.

Statement D: *Foreign competition will increase in 10 years.*

There is a consensus, 45,5% highly agree, 36,4% agree and 18,2% disagree with the statement.

This chapter gives a clear indication on how the competitive environment might look like in 10 years, with a consensus from all the statements.

4.2.5 Chapter 5 – Measures

Statement A: *Measuring through digitalized channels will be necessary in 10 years.*

There is a consensus, 63,6% highly agree and 36,4% agree with the statement.

Statement B: *Financial measurements will be the most important KPI for banks in 10 years.*

There is not a consensus with this statement. 45,5% of the answers are neutral and 45,5% agree with the statement. However, none of the participants disagree with the statement.

Statement C: *With increased automation, customer related measures will become more important.*

There is a consensus, 54,5% agree and 36,4% highly agree with the statement.

The results from the first round regarding measures seemed to vary between participants and in second round (part B) 45,5% are neutral to the statement on financial measures. But the conclusion here is that measuring through digitalized channels will be necessary

in 10 years, which could be expected with the consensus in chapter 3 that financial services through digital channels will be dominant in 10 years as well.

4.2.6 Chapter 6 – Legislation

Statement: *Developments in the legal environment will give non-banks and other financial institutions (Fintech's, start-ups etc.) a competitive advantage in financial services.*

There is a consensus, 63,6% agree with the statement and 9,1% highly agree. From the first round, there was no consensus in the answers but some suggested that the legal environment would slow down the traditional banking environment. There was also the suggestion that legal developments would provide opportunities for start-ups and Fintech's. The conclusion here is that these non-banks will gain competitive advantage due to legal developments in the next 10 years. The conclusion here also gives more value to the consensus from chapter 4 (part b), bank's ability to work with third parties.

4.2.7 Chapter 7 – Open-ended question

Question: *In 10 years, what might disrupt the traditional banking sector?*

There were nine answers provided in this question and there is a consensus in the answers. Seven suggest that technological changes will shape the future of banking. However, there are different opinions on how the technology will disrupt the banking sector. Two of the answers suggested that Blockchain will disrupt the industry. One argues that Digitalization and artificial intelligence will shape the industry, legislation will however be the same for all, legislation might come a bit later and give new players competitive advantage but in the long run the current industry will adapt at the same time.

Outside the consensus, one suggested that traditional banking will only slowly change, despite technological advances. Another argument is that the disruption will have something to do with who provides the services and who has the trust of the consumers to perform the services, but disruption will not be because of technology.

Conclusion: Consensus that technological changes will disrupt the traditional banking sector.

5 Discussion

This chapter is a discussion on how the results from the research relate to the theory presented in the literature review and what knowledge can be drawn from the answers provided by the Delphi participants.

When comparing the results from this research to the literature and previous research there are some interesting results. From the literature review, a study conducted by Laura and Kate in 2002 concluded that the use of internet banking and digital solutions would turn out to give a competitive advantage and that online banking would be a major distribution channel for services in the future (Laura Bradley & Kate Stewart, 2002). The answers from the first round in this research however suggest, that there is no consensus on whether digital solutions will provide competitive advantage among consumer banks in the next 10 years. In the second round of the research there was a statement in chapter 4, Competition, that having a good digital service platform will give a competitive advantage. There is consensus in that statement and participants agree that a good digital platform provides competitive advantage. Those results match the results from the study conducted by Laura and Kate in 2002. In the 2002 study, they also concluded that online banking would be a major distribution channel for services in the future. In chapter 3, Financial services in the second round, concluded that financial services through digital channels will be dominant. In both researches, a Delphi method was conducted to produce results but there are 15 years between the conduction of the research. The results from the 2002 research can e.g. be confirmed by Eurostat (2016), where they estimate that 59% of individuals in Europe use mobile banking in 2016. The results from this current Delphi research will have to be confirmed and verified in 10 years.

Price Waterhouse Coopers conducted a report in 2014 on how consumer banking would evolve in the year 2020. Their recommendations are that branches should be more productive and much less costly. Branches will most likely take on different forms, from being a flagship of information, advisory and engagements hubs to smart kiosks. Digital capabilities will provide a range of opportunities in service offerings, the human touch will still be available, just through a more digitalized channel (Sullivan et al., 2014). Their conclusion reaches to the year 2020 and this one to 2027 but results indicate the same direction for consumer banks. The results from this current Delphi research have a similar conclusion, participants in the first round agree that the branches will change and the most common tasks will be performed digitally. Five of the answers indicate arguments that

branches will still exist because of the need for financial consultation, e.g. for older people who might not be knowledgeable about technology, for larger transactions (mortgage loans) and if there might be something seriously wrong, financially. All the answers include suggestions that automatisisation will be a dominant factor in 10 years in bank branches which rhymes with the conclusion from PWC. In the second round of the research, results indicate the same conclusion as PWC; human interaction will still be needed and most participants agree that the branches will mostly consist of digital services but there was no consensus in that context.

In the same report as mentioned above from PWC also discussed how banks will organize themselves around customers, instead of products and channels. Earning the trust from a customer will be more important and making the customer feel that they are acting in their best interest. In the chapter about competition there is the question on what might define competition in 10 years and the most common answers was prices and rates and in chapter 6, there was no consensus on KPI's. However, five participants suggest that trust will be important factor in competition. Gaining the trust of a customer can be related to the consensus in chapter three in the second round, the need for human interference and that technology might be an obstacle when gaining trust. Therefore, it will be important to measure through digital channels (Chapter 5, second round), so that customers can be monitored and evaluate their satisfaction. From both these researches, trust is an important factor and banks need to understand that when it comes to developing digital solutions and providing more automated processes for the customer that the trust factor is meaningful.

There was an optional open-ended question regarding the Blockchain technology and how that might affect the consumer banking services. There were 6 valid answers in the research indicating that this technology will continue to develop but the effects in the context of consumer banking are unknown. In the literature an academic paper concluded that the Blockchain technology would go through slow adoption due to risks (Michael Crosby et al., 2016). This might confirm the responses from this research, that this technology will develop further but the risk factors might prevent it from spread. To get more consensus from this topic, a more precise question was asked in round two regarding the effects Blockchain could have and the results were similar, no consensus and majority of participants voted "neutral". Reasons for these responses are unknown but a theory might be that either these individuals are not familiar enough with the technology and its

potential impact on the typical status quo, or that they simply don't have a strong opinion on the matter. There can be different reasons why this technology receives such limited attention among these specialists and it's not the intent to research that any further.

The research from Kamakodi and Khan in 2008 concluded that banks could not differentiate enough with the use of information technology and not gain competitive advantage that way. The usage of IT and human touch will be necessary to retain existing clients and attract new ones (Kamakodi & Khan, 2008). The results from Kamakodi and Khan are in contradiction compared to what Laura and Kate conclude from their research. They concluded that the use of internet banking and digital solutions would turn out to give a competitive advantage and that online banking would be a major distribution channel for services in the future (2002). The reason for those different conclusions could be because of the time the studies are conducted, there are six years between them. The first round of this current Delphi research concluded that banks will mostly compete on rates and prices and the second round confirmed that statement, that rates and prices will be the most important competing factor. The second round concluded also that good digital interfaces would provide competitive advantage. Kamakodi and Khan also suggest that human touch will be necessary, that conclusion is in a consensus to this Delphi research concludes in the second round. Human touch will be necessary when providing financial services.

In the literature, it is discussed how companies like L'Oréal (2015) and Dominos (2014) monitor their customers, e.g. through mobile usage and digital channels. The first round did not cover this topic, however, the hope was that participants would discuss these matters in chapters five and six (competition and measurements). Unfortunately, the answers did not include any significant discussion on monitoring customers. Only two participants suggest that digital measurements are important, e.g. the usage (volume) of automated processes instead of manual labor. These factors can be important for consumer banks in the context of digitalisation and this was investigated further in part two. In the second-round participants agreed that measuring through digital channels will be important in 10 years. These measurements are however already in practice, as discussed in the L'Oréal case, so it might be that the participants agree that these measurements will continue to be important even though these measurements have already started to be mainstream years ago.

In a research conducted by Deutsche Bank, the conclusion was that the traditional banks need to implement their own *Fintech* solutions without compromising the security of customer data in a collaboration with innovation leaders in the industry. They encourage banks to form a better relationship with their customers and provide assistance on all money-related matters using value-generated and web-based technologies (Dapp et al., 2014). This is an important topic in this research, whether banking should implement their own Fintech-solutions or even actively form a strong relationship with Fintech leaders on the market. According to results from the first round, legal development might slow down development in the banking industry, but will that give Fintech's a competitive advantage? That question and the importance of connecting banks and Fintech's together was examined further in round two. The results match the recommendations from Deutsche Bank regarding forming a relationship with third parties, 81,8 agreeing that a bank's ability to work with third parties will be important.

Dennis and Frances (2010) concluded that with customers using online self-service, the retention rate increased but costs increased mainly due to increased calls to a call center which increased the labor cost. People needed the extra help because they were performing more online actions than before. In the first round of this Delphi research, participants are asked if the know-how of customers would affect the developments in automation. The results were that technical know-how will not be an obstacle. In the second round, participants were asked if there will always be a need for human interaction in financial services. Consensus in the results indicate that 91% agree that the need for human interaction will be needed in financial services. It can however not be estimated if calls to call centers are going to increase.

This research answered questions that can help evaluate how the future of consumer banking could be. Specialists have confirmed their answers through this Delphi research and now those answers have been compared to the literature. Some of the results reach the same conclusion as studies conducted in 2002, e.g. by Kate and Laura with ways to earn competitive advantage. With 15 years between studies, the results are the same which might highlight the importance of having well established digital solutions. However, one could question why some of these findings, who are conducted some years earlier, have the similar conclusion. Is it not safe to say that the future of banking will go through some major disruptive changes in the next 10 years? Could it be that the future is simply too unclear given the speed of the exponential developments in the technical environment,

that participants are predicting what would be the safest to say? When discussing the Blockchain technology, most of the participants seemed to have no clear opinions on that matter. Why is that? Recently there have been a lot of open discussions on social media and public debates on the possibilities of implementing this technology in various industries. Just recently, a software specialist at Nyherji, an Icelandic IT company, has been holding lectures and discussing the immense possibilities of implementing Blockchain (Kristinn Steinar Kristinsson, 2017). He estimates that within 5 years this technology will be implemented into the daily corporate environment. People will be able to transfer credit-score between countries without the interaction of a third party, selling your house and even establishing citizenship. The results from this Delphi study however indicates no such drastic changes, what might be the reason for that? Could the blockchain technology not replace most of the typical tasks conducted by a bank? It could be that the participants, whom most are from the banking industry in Iceland, simply do not have the vision to reach a consensus regarding such disruptive changes in an industry that is so highly regulated. The banking industry needs to be bulletproof and participants might be concerned that the economic effect of shaking the pillar of banks would be too great. These thoughts are however merely a hypothesis.

The seven traits from McKinsey mentioned on page 14-15 indicate that companies can differentiate by their knowledge and intelligence on the customer. The seventh on the list, *be obsessed with the customer*, indicates rising the experience of customers which involves pushing all channels of the company to succeed. Customers are expecting services and products to be at the same quality, distribution and accessibility level throughout the whole company, online or at retail. The foundation of any digital transformation is a healthy obsession with improving the customer experience. From this research the participants suggest that customer-related measures are going to be important and measuring through digitalized channels is also important. By doing so, banks can be more focused on what the customer values the most.

The research from Lukanova and Vasiljeva (2016), from the journal of Business Management, concluded that banks are very interested in investing in improvements in process efficiency and most concerned about digitalisation. Also, banks are more trustworthy and attract more customers due to security reasons. Banks are also subject to regulations, which Fintech's are not. Annika Falkengren (2015), the CEO of Skandinaviska Enskilda Banken said about the Fintech companies, "They look like banks,

they talk like banks, but are not regulated like banks". They had some recommendations, that banks need to invest more in digitalisation, use the information about the customer more, transfer new businesses into the digital solutions and that Fintech's need to earn more public trust should introduce and advertise more their service. This research only applies to the Baltic countries and does not reflect how the situation is in Iceland, but some of the results from this Delphi study suggest the same. In chapter 5, from the first round, five participants suggested that trust would be important in the competitive environment, but there was not a consensus in that context. Regarding the trend of digitalisation, there was a consensus that having a good digitalized platform will provide competitive advantage but also that banks need to be able to work well with third parties such as Fintech's. It could be a win-win situation for both Fintech's and the domestic banks in Iceland to establish a well-grounded cooperation with loyal Fintech firms in the future. The banks might attract new customers through a popular third-party firm and the third party would gain trust and credit from the customer due to the cooperation with a trusted bank.

The report from Kofax discussing the four C's; Customer, Cost, Compliance and Competition. The main focus in this research was on the customer and the competition. Millennials and small business customers are more likely to do business with a bank with good digital platform. The results from the Delphi study indicate that having a good digital service platform will provide a competitive advantage. Further, the research also suggests that financial services through digital channels will be dominant in 10 years, so it would naturally provide advantage in the future to have a well-developed platform. There is one interesting point in the Kofax report, saying that millennials will choose a good digital platform over the possibility of a branch nearby, but in the Delphi study participants suggest that digitalisation will be dominant and branches will change in the future but there will always be the need for human assistance. None of the participants are from the millennial generation, it is likely that there are different visions. In the Kofax report it is stated that investing in a good digital platform is also an investment in loyalty, meaning that customers are less likely to switch to a competitor and more likely to use the products. In the first three years 74% of customers will add a savings account, 48% will add a credit card and 20% will add a mortgage. Those statistics match that results from the Delphi study, that good digital platform will provide an advantage.

Generally, the selected group for this study seem to be on the conservative side. Some participants of course have more drastic ideas on what to expect but most of them are holding back in the answers. That could be why there is a consensus in the chapter about financial services, that human interaction will be necessary in 10 years. Are the participants not counting on disruptive technological developments like artificial intelligence to replace the human interference? Also in the chapter about bank branches, there is no consensus on whether bank branches will mainly consist of digital services. Could that be because the participants are themselves convinced that the human interference is vital? On the other side, this could be exactly how the banking sector will evolve.

In general, there was great density in the answers, they were meaningful and well thought out. The group was homogeneous and all participants had an opinion on most topics but some had clearly deeper understanding than others, which was expected. The nature of a Delphi study is that the core of the research is based entirely on the knowledge of the participants. The results depend on how participants answers, how knowledgeable they are and their ability to predict possible future events and provide arguments. Selecting the Delphi subjects is one of the most important phases of the research process. It is not easy to gather individuals who are specialized and knowledgeable in the banking industry and are willing to take the time of their busy schedule to participate in the research. It's a lot to ask, preparing meaningful answers and submitting can be a time-consuming process. According to the literature, the process of conducting a proper Delphi study is estimated to be at least 45 working days; gathering data, compiling data, submit the survey etc. but that depends entirely on the amount of consensus sought by the researcher. Therefore, no promises can be made to participants in the beginning of the process regarding the time which will be required from them. As most participants are in top-managements positions, much is asked of them to participate in a study that might take a long time. It is challenging and some of the proposed individuals for the research had to decline because of the required time. Another obstacle in the process of gathering participants was the timing of the first round, for most individuals in Iceland, the summer-vacation is during July and August. The first confirmation E-mail was sent 26th of July and most people on vacation and answering a student might not be a priority. This however worked out fine and most could answer and managed to submit answers regardless of summer-vacation.

Having the survey anonymous was decided because some of the participants requested to be anonymous. Those participants who requested the anonymity are too valuable to deny them of their wishes and their contribution was too significant that it would not be worth debating over. However, that excludes some opportunities of a further discussion among participants. It would be a major value-added round to have an open discussion in a workshop-like atmosphere. Getting people to talk and discuss ideas is different from submitting answers through an online survey. People would be more open to a discussion and able to provide further arguments and comments on other participants' answers. Having a meeting with participants and presenting the results would give them another opportunity to evaluate their thoughts and opinions. The timeframe would then be even more strict and that might increase the risk of running out of time. Also, gathering those individuals together would require more time from their busy schedule. To have the discussions significant to the results, all participants who answered the previous rounds would be required to show up and participate in the discussion.

It was important to formulate the questions in a way that fits a Delphi study. For the first round, the questions are open-ended and the reason for that is to give the participants the opportunity to form an answer without any biased motivation. If the researcher is too objective in the questions, the answers might lean towards a specific direction automatically. That can damage the results and the study might not be significant. It was clear that one of the questions could be interpreted in different ways; the question on what will be the major defining factors in loan applications (housing loans, car loans etc.) in the context of consumer banking in the next 10 years. There were two participants that did not completely understand the question but luckily there was established a consensus amongst others. There is always the risk of having too open questions, that participants either go off track or simply don't understand what is expected of them. None of the participants needed to ask the researcher further about any particular question even though it would be recommended to ask if in doubt. One participant however, replied via email that it was not in his/her nature to answer such questions that depended on non-researched topics and that it was hard to speculate on the topic of future events. Another risk associated with open-questions is that it gives participants too much power to formulate the research. There is a certain frame that needs to be investigated, set up by the researcher with various articles and reports from the literature that have relevance to the research itself. Since the essence of a Delphi study is basing the knowledge from participants they can lead the study to a new direction, which might not have been the

plan to begin with. So, the key is to develop the study as it goes but hold on to the core of the research question and provide enough data and arguments to answer it properly.

This research could be useful for the financial industry and especially consumer banking. The results here give an indication on what developments and changes can be expected in 10 years and how the banks will evolve. Managers and leaders in the Icelandic banks can use this research as a guideline for their future decisions in any digital development projects. Besides banking, all those start-up companies who plan to capitalize on the PDS2 legislation and enter the financial sector can use this research as valuable information when entering the market. This research gives valuable information for banks and shows what opportunities should be capitalized on and what threats to avoid. This can also be informative for individuals who are looking for future employment in the banking industry, what positions could be interesting to enter and what might not be worth looking at due to the risk of jobs being obsolete due to technological developments. For those who are using the Delphi method as a research tool in the future, there is information on what to expect and what pitfalls to avoid based on experience. This also gives a guideline regarding the timeframe and what could be expected in that regard. This research took two rounds and the group of Delphi participants was homogeneous and that still took 55 days to process the whole study. If the topic would be more extensive, the participants less homogeneous and the sought consensus narrower the timeframe would naturally have to be longer.

6 Conclusion and recommendations

After two rounds of questions and statements it was estimated that a consensus was established and considered enough to end the research. These findings are significant and with the results it can be determined to some extent how digitalisation will affect consumer banking in 10 years. Consumer banking entails savings and transactional accounts, personal loans, debit and credit cards and financial consultation. The direction of those channels and where they are heading in the next 10 years is answered by participants in this research. Going back to the research questions:

How will digitalisation effect consumer banking in 10 years?

The main findings from the research are that digital payments will be dominant in 10 years, there is however no consensus on whether there will be a need for personal bank account. Blockchain technology will continue to develop but it cannot be confirmed that it will have a dramatic effect on consumer banking. Participants cannot agree on whether bank branches will mostly consist of digital services, but they however agree on that financial services through digital channels will be dominant in 10 years and that there will still be a need for human interaction. Rates and prices will be the most important factor in competition among banks in 10 years but having a good digital service platform will give a competitive advantage. There is consensus that banks need to be able to work with third parties and foreign competition will increase in the next 10 years. The legal environment will also be in favor for all those non-banks and other financial institutions (Fintech's, start-ups etc.) and give them a competitive advantage. With increased supply of digital solutions, banks will need to measure through those digitalized channels as well as implementing more customer related measures.

These results indicate that digitalisation will clearly have an impact on consumer banking in 10 years, it differs however where those impacts occur. The specialists confirm that technological developments will shape the future of the banking industry, but these changes need to be conducted carefully. It could be the reason that some of the answers are on the conservative side because with a highly regulated industry like the banking industry is, every step must be taken carefully and rushing things off might not be the best solution. The old saying from Abraham Lincoln is relevant in this context, walking slow but never walking backwards. Disrupting the traditional consumer banking can be a slow process but it's an ongoing process.

Some aspect of this research could be investigated further. The Blockchain technology is an extensive phenomenon which could be implemented to any industry. Discussing Blockchain as a main topic in the context of banking would be interesting and using this research as a baseline could be helpful. Legislation is another topic that could be studied further. The PSD2 and the GDPR regulations were not the focus of this research, but it was inevitable to discuss them in the context of consumer banking. The payment directive has direct effect on the banking industry and conducting further research on that topic could be valuable. GDPR is a regulation which is to be implemented in May 2018 and is concerned with strengthening and unify data protection for all individuals in Europe (The European Parliament, 2016). That might have immense effect on the banking industry, in a slightly different angle but should be interesting for further research. Regarding those legal issues, the timeframe could be shorter. Those regulations begin to affect the banking industry in 2018, so it could be interesting to see how these changes would be e.g. in five years and compare those results to the results from this Delphi study. As for the Icelandic banks and further studies on digitalisation, e.g. successful implementation would be interesting for the Icelandic banks and how they might handle the increased foreign competition. This research shows how digitalisation will affect the banking sector in the next 10 years and researching any of those effects could be valuable, e.g. developments in measuring through digital channels.

Digitisation in the back office is an important topic in context of digitalisation in the financial sector. More than 31% of executives rate their front-end services as “Advanced”, while less than 15% of them rate the back-office “advanced”. While most of the focus goes to the front-end, the one facing the customers, the back-office seems to be forgotten in the digitisation process. Those are missed opportunities to enhance to overall experience of the customer. In one European bank, 70% of the account applications were paper-based, and of those, 30-40% contained errors. This could be an ideal research material for the domestic banks in Iceland. To evaluate how well established the digitalisation is within the whole bank, both for front, middle and back-office. At least Arion Bank seems to be digitizing their front-end services, but what about the back-end? Further research might include, how are banks digitizing? Getting from manual to fully digital is extensive process and needs to be conducted carefully. Digitizing the process from end to end is a research topic that would be interesting to add on to this research.

7 Appendix 1 – Survey, Round 1

The appendix includes answers from participants in the first round. Answers are taken directly, without any modification, from the website where the online survey was conducted. Only errors in language was corrected.

Question 1 – Payment Methods

Part A) In 10 years, do you believe that an individual will be bound to have an account at a local bank in order to pay for goods or services? Why/Why not.

1. I think he will not be bound to have an account. He will probably be able to have account in a different company like Central bank or some other kind of company in e.g. another country, not necessary in a local bank
2. No. No one will be bound, but bank institutions will be operating and offering the services.
3. Yes. This has been so for a very long time and changes take time. All/most automatic paying processes now require bank accounts.
4. I define here local bank and a domestic bank. Yes, I do believe that people will continue to have such an account. While other types of services will be more dominant, the current 25+ people will not change their ways of banking so rapidly that they will sacrifice the bank account. While traditional spread banking will diminish in the coming years, the system will not completely go away in this regard. I do, for example, not see that mortgage payment systems will change in this manner within that time frame.
5. Yes. The reason is deposit insurance, which is limited to deposit taking institutions, i.e. commercial banks and savings banks. Hence, money is safer in a bank than somewhere else. However, recent changes in e.g. European legislation through Second Payments Services Directive (PSD2) mean that new types of institutions will both be able to access information about bank accounts and initiate payments (in both cases with the account holder's consent). This will open up this field for all kinds of payment institutions (in some instances called fintech), which will undoubtedly be much more innovative in their service offerings than the banks have been.
6. No because it will be possible to pay through new digital sources. It is likely though that there needs to be a possibility to store monetary values safely.

7. I believe that most individuals will decide to have an account with a local bank although they might be able to pay for goods and services in another way (like is possible today). Part of that is the trust issue, banks are regulated heavily, people are used to have a bank account and those that have had one for some years will not change into something else quickly. 10 years is not a long time. The new payment services directive (PSD2) that will come into place beginning of next year in Europe will open up new possibilities. Then specialized service providers – and or those that are selling goods and services will be able to offer new service for individuals with their acceptance. These providers will be able to connect with their bank accounts through application programming interface (API) to withdraw their accounts to get the payment. Larger stronger companies might set up a simple bank- to get as much as possible of the value chain in this context and to connect or tie the individuals to the company. The demanding and increasing regulatory requirements from financial supervisory authorities set on those that handle with money, for example in the fight against terrorism and money laundering, is costly and will reduce the feasibility for new players to come into this market – unless they can give individuals value added services. Constant pressure for efficient payment services will not leave much on the table for new intermediaries and therefore the pressure will be on increased efficiency in the operation of the banks. Banks are in general aware of that need and will invest to meet new times.
8. Bound can mean two things. Forced to on behalf of laws and regulation or required to by the merchant. I do not believe that federal authorities will force the general public or businesses to use a bank account. I however believe that business may require their customers to pay via electronic means. Relating to that the question is the statement of a bank account. We already see development in that a bank account is not necessarily required, but rather electronic payment via a payment service that doesn't have to be through a bank. This is why the answer to this question is a straight "No".
9. No. Alternative methods such as Pay Pal and alike will be sufficient to keep and transfer money.
10. Today an individual can use other methods than local bank accounts to pay for goods and services, cash being the most obvious and everyone are legally bound to accept cash in domestic currency as payment for goods and services. If the

question is whether one can get by completely without a bank account I see that as highly unlikely in 10 years. That being said using cash completely is inconvenient, risky and has some costs to it. I do think additional payment methods will mostly be based on conventional bank accounts or some kind of credit provisions (loans, e.g. credit cards). If payments are to be made in ISK for example it is hard to imagine some other system eventually than the Icelandic banking system as it is impossible to store electronic ISK elsewhere. 10 years is also a really short timeframe regarding drastic changes in something like bank accounts. It is only 10 years since the year was 2007.

11. Not necessarily. I believe that in 10 years' time there will be new solution that will not really require bank accounts. Today you can already pay with e.g. mobile phone where you don't need a bank account, you can use a credit card, but credit cards to though today require you to a bank account to eventually pay. But in 10 years' time there might be some new solutions.

Part B) In 10 years, do you believe that the existence of banknotes (Cash) will change? If so, how?

1. Cash will still be used but much less then today. It will be used in small amount in special locations and businesses where use of cards or electronic payments are difficult. Larger currencies will not be allowed to use.
2. Yes, A form of international currency like Bitcoin will exist as a exchange transaction method.
3. Yes. First you have to create way to identify persons in a secure way - everywhere in the world. The new GDPR gives people right to bee unidentified and "forgotten".
4. In Iceland, the use of cash is mostly limited to certain transactions. The world is gradually following Iceland in this manner. Debit and credit cards and transactions via the Internet are simply taking a larger share of the exchange of goods.
5. Cash will still exist ten years from now. The main reason is the black economy. In developed countries the white economy will be mostly or even entirely cashless. People will still use traditional payment cards (debit, credit, pre-loaded) and e-wallets (or some other app-solutions in phones, tablets, wearables), which will use the payment card infrastructure (like Apple Pay), transfers between bank

accounts (like MobilePay in Demark) or transfers between accounts within services like PayPal. Some central banks will be experimenting with cryptocurrency but it will take longer than ten years for it to become mainstream, if it ever will get there.

6. The importance of bank notes will continue to diminish. Payments will be mostly digital though your mobile phone or other digitally connected devices.
7. In Iceland we do not use much cash compared with most other nations. There are though lot of opportunities to reduce it further - and run the payment and the tax systems in a more effective way. People are conservative in nature and that is one reason some people (especially the older ones) use cash. There are also lot of resistance in the system and for example the politicians and the Central bank are not so eager to convince the general public that it is a way forward – to reduce it further or eliminate it fully. One of the arguments the Central bank has come up with is that it is a security issue in case some kind of disaster would hit the country. Legislation today is hindering service providers to reject cash and based on recent discussions it is unlikely that it will change in near future. There will be continued development of more and more convenient way to pay for goods and services reducing the need for cash. 10 years are not long time and therefore we will see some trend towards less use of cash but it will still exist after that time.
8. Yes. I believe we will see more and more companies requiring their customers to pay via electronic means. This goes hand in hand with better services and lower fees to customers that use those means. There will always be a part of society that has anti-trust in both gov't and larger corporations such as banks that will want to keep the cash lifestyle. With better mobile payments services, paying with cash or even with a card shall become slowly but gradually obsolete. Not fully of course, but to a large extent.
9. Technically bank notes are already unnecessary, however there are interests in various places that lobby for keeping them alive. Transparency and ease of transactions are strong arguments for eliminating cash. The arguments against are mainly those of privacy, but those can surely be addressed by encrypting methods. The main reasons for using cash (apart from habit which might exist with the elderly generation) is for hiding something, be it paying your housekeeper that is actually an illegal immigrant, paying a contractor for fixing

you house, illegal substance handling or similar activity, or keeping information from your spouse...for whatever reason. Eliminating cash will decrease opportunities for actions that are to be kept from daylight, although some might argue that other methods (even worse) might emerge. I for one hope that cash will be eliminated in 10 years' time, but am rather skeptic that it will actually happen due to the factors mentioned above.

10. I do believe that cash will still be used in a pretty similar manner as it is today. Cash is widely used, often for the purpose of transaction being untraceable. This is both done for legal transactions where a person simply does not want logging of their consumer behavior in general or hiding of some legal transactions like shopping in ÁTVR. Cash is also widely used to transact in the market for untaxed labor or market for illegal goods, e.g. drugs. This will continue, and it will be a battle not worth fighting for politicians to eliminate cash as it will always be there based on protection of identity of the citizens and that the citizens should be able to transact without the transaction being documented by authorities or financial institutions. Cryptocurrencies do document transactions and will not replace cash in the foreseeable future in this respect.
11. Yes, I do so. We are already seeing cash being less used as a payment form. In Iceland cash is though increasing, but that is most likely due to the great increase in tourists coming to Iceland. I am a strong believer in that cash in use will decrease. With increase in payments with mobile devices I believe it will be further reduced.

Part C) Optional question. In 10 years, how could the Blockchain technology effect consumer banking services? This question is optional because some participants might not be familiar enough about the Blockchain technology.

1. Blockchain will grow, I just don't know how fast. This development is threat to the traditional banking system and I expect organizations that profits from current banking system will fight for their system to stay in power. The blockchain process has already started. Young people know this, older people perhaps not. This development is also subject to development in law and regulation for example on financial supervision.
2. I do not know anything about Blockchain.

3. I don't think that Blockchain is going to have much effect on consumer banking services over the next ten years. There will of course be some experimenting and perhaps Blockchain will have found its way into specific areas within banking (like paperless issuance of securities and securities trading) but it will not yet be mainstream.
4. Blockchain technology opens up the payments systems to new competition. What has been a monopoly of the banking / financial industry may open up to the likes of Google, Apple and others. The importance of crypto currencies is also likely to increase and could replace money increasingly.
5. Ten years is a lifetime. The blockchain technology has every possibility to affect consumer banking. Until we see true and valid applications for financial services in the blockchain, it will be a status quo.
6. Blockchain still has a lot to prove. I am not sure that in 10 years blockchain based currencies will be around. For consumer banking I can't see a lot of business opportunities there for commercial banks. I don't think these currencies will be part of banking services in 10 years. One fundamental question not answered well yet is WHY there should be a use of scarce resources like electricity, land, housing and CPU capabilities to make currency units? Why? Currencies are a way to store value and transact, do they need to be "made" out of scarce resources?
7. How will the market with Bitcoin react if they see a really rapid and large depreciation of Bitcoin against the dollar today? What if it goes back to \$1000 levels or below. How much of Bitcoin appreciation is due to pure speculation on unsound economical grounds?
8. Blockchain has started to affect the banking industry, but mainly as a technology. I don't think it will really affect customers as such in terms of service provided at that time. I believe it will rather affect the infrastructure of the banks.

Question 2 – Bank Branch

Part A) How will the typical bank branch develop in the next 10 years?

1. The bank branch will mostly have agents, consultants, but not cash or cashiers.
2. They will be self-service. A very limited manpower needed in the branches
3. It will get smaller in the long run. Online and e-business decreases need for bank offices and service people in banks. I don't know how fast this development will

be, but the traditional banks will get smaller as a branch in the near future. This is bound to happen because the banks charge too much, their service is too expensive for many people and businesses, and people don't want to be forced to pay for bank service that have proved to be unreliable (bank crash 2008).

4. It will be more service oriented, as branches were in Iceland prior to the 1990s. Despite the immense changes happening in the banking industry, people are generally clueless about elementary aspects of banking. Case in point is the index loans in Iceland. Very few people truly understand the pros and cons of index loans despite them being the major loan most people take during their lifetime. Financial consultation will hence be the main service of bank branches within a few years. Relaying such information via phone or Internet simply does not cut it. This process has already started, with customer representatives being more visible in branches while tellers are almost becoming a thing of the past. Icelandic customer reps are also taking courses now more than ever to update their knowledge in financial matters. This shows clearly the focus among the banks.
5. All transactions will be more or less handled by machines (super ATMs). Any advisory functions will either be handled by people at headquarters/back office through interactive monitors/screens or they will be handled by AI-computers. Most, if not all, branches will be unmanned.
6. It will be mostly taken over by chatbots. Who will need to go to a branch in 10years time? Will the human face to face meeting in banking disappear? Possibly.
7. In Iceland we have seen a lot of changes over the last 10 years in number of branches and what service is provided there and the development will continue. Transactions services, teller services and simpler operation etc., is fading out or disappearing and more and more focus is on value added services and sale of products. Systematically services that can be digitalized will be digitalized and people will be able to do most things them selves on their phones/computers. We will have fewer branches and they will be more like a dental clinic/or insurance service outlet. People will go there if something is seriously wrong or to have things checked on – and then perhaps every 18 months or so when the bank will call on you/invite you to see if something can be done to improve on the services, products or cost for the client. Individuals that have difficulties with technology will be able to get services through the branch or call in center.

8. We will see fewer branches for sure. Physical branches have and will become less important due to better digital financial services. We have already seen this development here in Iceland. Along with better customer adoption of technology and using second generation ATMs, customers need less and less teller services but financial advisory and general advisory will have more importance. Adoption of electronic IDs here in Iceland has made people sign documents, apply for and register for financial products, fueling this development.
9. We have seen substantial development in the past 10 years. Fewer branches, new design aimed at providing services rather than transactions. I believe we will see even further decrease in number of branches. Take for instance the development of the Icelandair ticket sales, less than two decades ago the majority of their sales were conducted through service branches (in person or via telephone), today they have a single sales branch in Iceland. There are substantial societal factors slowing down the disappearance of branches, consumer behavior is one of the (people preferring to go to/call branches as opposed to alternative methods) but this is a rapidly declining factor as more people discover the benefit of newer methods. A substantially larger factor is the loss of jobs and other political factors related to branch closing. Furthermore, there are still a number of actions that require prescience at the bank (I experienced one just last week), which can easily be solved by improving the functionality of the bank's digital customer interface. Overall however I see no reason why a bank could not operate but with a single branch in 10 years' time.
10. The need for a branch is going to change significantly. People will not go to branches to buy tourist FX, pay bills, initiate accounts, withdraw funds and perform other basic tasks. These will be done online or at ATM like machines. The human part will still be there for larger transactions, e.g. mortgage loans and businesses as this will always require some service and advisory level. ATM machines will play a larger role. Banks will begin to advertise and try and sell directly through ATM's services like fund management.
11. with it comes increased surveillance from authorities and a new generation of financial crime.
12. Customers who will be reluctant to adapt to changes will in a few years become a group of people who many are not deemed really good customers by banks.

Therefore, banks will continue to make their branches fewer and even willingly more inconvenient, in order to not overserve this group.

13. I would expect that at that time they should hardly exist. The future role of branched will be as a center for advisory service, but they will really not perform any transactions. All transactions and most services will be done in a digital way.

Question 3 – Financial Services

Part A) How will developments in information technology affect financial consulting in the next 10 years?

1. There will be much more automation and financial consulting will be much more around personal consulting from younger age. More planning for the future and taking into account work, currencies, savings etc.
2. A tremendous development will take place in the next decade. Fintech will affect all banking environment. There will be more direct self-service, you fill in required information and if you fulfill, the service will be available
3. More online consulting service, but new GDPR requires proof of consent when it comes to making a financial decision. We still have to find out how this can best be solved.
4. Financial consulting will not be affected by information technology in the coming years just as it has merely slowly developed in the last 20 years. The financial yardsticks remain similar regardless of technological changes.
5. More or less all financial consulting will be done by computers relying on AI. Most of commercial banking is rather simple and hence humans can be easily replaced by more and more "intelligent" computers. This goes for advice on savings, lending and payments, including opening and closing a bank account, applying for and being granted a loan and advice on and execution of payments.
6. The fintech industry will be instrumental in totally changing the present face of banking.
7. Most financial services for individuals will be made available via smart technology/computers. For example, people will be able to get housing mortgages by using self-service features. People will be able to see comparison/best offers easily on the screen. All more sophisticated financial service providers will use big data algorithms and internal systems to learn from clients past behavior to predict what is likely to happen in future – or buy

information from others – to assess the risk involved and price accordingly or reject the service. That is especially important in lending activities, to maintain healthy assets, be profitable and at the same time be able to offer competitive products and prices (prices may not be too high nor too low) – all needed to run sustainable business in the long run.

8. The services will most likely become more intelligent and personalized. A bank should know its customers almost better than the customer him/herself. We will probably see robo-advisors with a personal touch that enable customers to interact with the bank based on his consumer behavior.
9. More "customized" off the shelf solutions can be provided. More communication will go through digital interfaces that are particularly structured for financial consulting (not through emails or public chat lines).
10. A lot of financial advisory for individuals today is performed by people who have specific but limited training and can give beneficial advice to novice individuals. This work can be automated somewhat as the advice they give is extremely predictable (simply by their training). That being said, e.g. an old couple selling their home for 100 m. ISK to go on and renting a security apartment in an elderly complex, need to invest those 100 m. ISK. They would probably prefer to get basic advice from a person than the same advice from some kind of robo-advisor.
11. Investments for individuals are pretty simple and the products highly regulated. However, the advice from a person will give consumers some sense of trust and confidence that someone with more knowledge than they have is advising them.
12. However, banks today are charging individuals pretty high fees for asset management. If more knowledge on the long-term cost of asset management fee rises, there may be opportunities for lower service level AM firms to gain traction with the general public.
13. It will affect it very much. With increase in AI and BI a lot of consulting can be done digitally in few years' time.

Part B) How will the technical know-how of customers affect the delivery of financial services to customers in the next 10 years?

1. We will see similar development as in e.g. airline business and travel industry where persons will not be much involved in booking tickets, room etc.

2. Know how is essential for the development of fin technology. The generation that is not used to electronic usage is diminishing so in general the know how will increase. Thus, the environment for financial services will change to direct contact between customer and service provider,
3. It helps having a technical knowhow if you are a customer - but in reality, not everybody has or will have such knowhow. These people have rights too - to be informed in a way is suited for them. The more software application is used and processes are made automatic - the more the threat of hacking and security breaches will increase. The vulnerability of these new systems will be great and we will need new risk analysis methodologies.
4. It will be in some sort of google-ized form, or even 1984-ish vein. A customer provides a bank access to its daily habits for example. The customer begins applying for loans via the Internet. Now the bank can see the customer's daily habits via the cell phone, seeing for example that the customer goes to work at 8, picks up kids at 4.30, goes to grocery store and is a home at 5. The bank determines from this data to an extent how stable this customer is and norms. It can thus tailor make its services to such a customer, who interacts with the bank in a fashion of its technological know-how, which will generally increase but not very much beyond daily usage of money.
5. Delivery of financial services will be more or less done by computers and not humans. The AI in the computers will be able to make a judgement about the know-how of customers and adapt its "performance" accordingly (asking simpler questions, offering simpler products, etc.). The rapidly increasing penetration of smartphones, tablets, wearables, smart TVs, smart household appliances, smart cars etc. means that the general population is becoming more and more used to smart gadgets will make it easier for banks to introduce more and more "machine-banking".
6. All the customers that grow up playing computer games and learning on the iPads will feel at ease without going to a branch. The customers IT know-how will bring demands for efficient IT solutions.
7. The current trend will continue – those that adapt well to new technology are in favor for digitalization and self-service. At the same time service providers are constantly offering more and more on that front. Individuals will be able to do

almost all transactions on screen (except perhaps more complex securities and derivatives transactions).

8. It goes without saying that if the services are not pragmatic and intuitive, consumers will not use the technology. Over time, of course, people will become better equipped, mentally and psychologically, to use the services of financial institution. This is however dependent upon that fact that consumers will still trust their financial institution. Trust is the single most important factor on any contact and interaction between a bank and its clients.
9. Digital interfaces are becoming really easy to use. It's not really about technical know-how as opposed to creating new habits of communication and consumption. As more service providers take their services to a digital inter phase customers will demand efficient solutions. Banks are somewhat lagging behind in their interface development. Take Airbnb, super easy to use interfase, all communication between service provider (host) and customer (guest) are conducted through the system, all things are logged and easily traceable. Al tough communication between banks and customers is increasingly logged, information is scattered and unorganized. In short customer know-how will most likely develop faster than the current bank development.
10. Younger customers will like to use their smart devices to take care of most of their financial services. However, the larger decisions will require some human touch. Maybe there will be facetime-like conversations with these advisors for example but nothing really compares to meeting someone in person for big decisions.
11. I will change it a lot. Young people today do have a very different needs/expectation than older people. So, it will clearly effect it a lot.

Question 4 – Loan Applications

Part A) What will be the major defining factors in loan applications (housing loans, car loans etc.) in the context of consumer banking in the next 10 years?

1. Much more will be looked at the person involve and its education, health, age e.t.c. rather than mortgage/covenant possibilities.

2. Open information to your financial status i.e. Some system of confirming your status, equity, income, salary etc. Those info's will be encrypted and available with your consent
3. You only loan people/organization you trust and you believe will be able to pay the loan back. So, the issue here is to validate information and confirm that it is right, identify risk, evaluate risk and find ways to mitigate risk.
4. See question 3 B in this case. Customer applies for a loan on the Internet, if the bank has access to the data, it can analyze the risk in a matter of seconds and provide yes/no answers regarding applications.
5. Sorry, do not understand the question. The likelihood that a customer will repay a loan will always be the most important factor in any loan decision.
6. Credit scoring will become more sophisticated with the help of AI. The processing of a loan application should become very fast and seemingly automatic to the customers.
7. More or less the same criteria as in the past. However, instead of employees will process the application it will be digitalized and processed instantly. This will be offered as self-service feature and be cheaper that way. Big data algorithms will be used to analyze the borrower and the collateral and the risk of the loan. Some credit institutions will operate with simpler approach when assessing risk, however, those will likely have to maintain higher equity ratio in the business (which is costly).
8. The customer financial behavior and financial responsibility until the application. Banks are already automatically exchanging information between e.g. tax authorities on tax statements, assets owned, etc. Banks also can automatically get access to salary slips and see the cash flow of their applicants. Most likely, this process, which is now 100% automated at Arion Bank in Iceland, will develop in a similar direction as Arion has set up, globally.
9. I don't understand the question
10. There will be an advanced credit scoring system in Iceland in the next 10 years. The banks will really soon figure out how data mining and AI can increase predictability of borrower credit quality. The data is out there and the banks already have access to tax data on customers. They will use social media behavior and other factors as predictors. The biggest shift will be when banks start to offer better rates to high credit scorers. This will be somewhat politically difficult but

sooner or people will realize that if we are all paying the same interest rate, some people with good credit are paying too much while bad credit is paying too little and defaulting more. In other words, good borrowers are bearing the cost of bad borrowers through a system where all pay the same interest rate.

11. When one bank starts giving better rates to higher credit scorers the other will follow really quickly, probably in a matter of days. Otherwise the first one will start to attract their best customers and leave the bad ones.
12. I would expect it to be similar as today. But we might see other things start to matter, such as behavior etc. that can be monitored electronically.

Question 5 – Competition

Part A) What will define the competition in consumer banking over the next 10 years?

1. Interest rates, trustworthiness of the financing institution as such and the behavior and education/professionalism of the persons doing service.
2. Dependability, economy of services and customer friendly applications.
3. I don't know. Perhaps balance between trust and modest cost charging for service. Those who have money will always seek ways to save and/or invest their money with some interest - or as high interest as possible with minimum risk for them.
4. Simply put, services and rates are what matter, the bottom line. What people look into first and foremost are the rates and then how easy it is to use such services. Technology among banks is difficult to give an edge, sort of like airline kiosks, every bank imitates each good idea quickly. It is possible that the competition will increase with other companies such as Apple, Wal-Mart and Google entering the field, but I think that people in general underestimate the complexities of banking once it reaches a huge scale, both risk wise and legislative wise. A company like Google is not too big to be allowed to fail, but a bank, a much smaller one, may not be allowed to fail due to economic consequences. My guess is that some sort of shadow bank will collapse in the coming years and the screws on other existing ones will be tightened. Hence, the landscape of the competition will not change a great deal.
5. The defining factors will be fees (the lower the better), interest rates on loans, performance of savings products (mutual funds rather than deposits) and ease and speed of service. Location of branches and their look and feel will not have major

competitive effects. I also think that banks will need to offer products (apps) that are easy to use and help customers do their financial planning and warn them when their decisions seem irrational.

6. Cost efficiency, product development and the ability to hold and increase market share.
7. Price, access wherever and all the time, convenience, speed, trust. Those that offer sophisticated digitalized service, low prices, are customer centric and trustworthy will win in the competition.
8. (1) Consumer trust, (2) Banks' ability to work with third parties in co-opetition (competition & cooperation), (3) Legislation and (4) paradigm shift (if presented to market).
9. Ease of use and accessibility, price, professionalism and level of trust (in this order, and the last one declining relative to the others)
10. Consumer banking in Iceland is an oligopoly and will continue to be so in the next 10 years. Arion banki has taken a lead in offering better quality services with new technology to customers. The risk of that is that they are introducing technology that will be soon obsolete instead of waiting to see what works. However, if they continue to be a leader in this space for the next 10 years that may attract more and better customers in the long run. For the short run I don't think it's going to change much on the revenue side for them.
11. To be able to offer competitive price will always be key, as well as providing good service. But digitalization will be what banks really need to focus on in the coming years - being able to offer the best solutions in terms of digital solutions.

Question 6 – Measurements

Part A) How will the KPI's (Key performance indicators) in use in consumer banks change over the next 10 years?

1. Much more will be looked at the profile of the customer in combination with other factors like cash flow, outstanding loans in comparison with possibility to pay the banks loans. the bank will have software that allows organizations to enter their data into one specially designed system, or connect external services for faster and more accurate data collection. This type of software allows businesses to visualize and comprehend data from a number of KPIs that represent different areas of a business, all in one place.

2. You will see the usage of app services increase and the branches will vanish. Cost income ratio will decrease tremendously. Requirements will be made by the authorities of a minimum equity etc. Those accepting deposits will have stronger requirements than those not.
3. Not sure.
4. Really not sure about this one. If everything goes well, it will be ROE mainly, if not, then risk measurements and stability.
5. All the traditional KPIs will still apply. However, I think that ease and speed of service will become much more important than today.
6. P/L Income side: Interest rate differentials and fees will continue to be the deciding income parameters. Cost side: The most expensive part of running a bank is the staff, followed by IT. Cost efficiency will become more important than now. The critical part though is keeping loan losses to a minimum through increasingly automated processes. Various types of benchmarking will be important. Quality of services and reputation of the institutions and their key players will be very important. Use of balanced scorecards may be of limited use though.
7. Most banks have lot of sophisticated KPIs in place. However, the ones that will be more of a focus is how full use of digitalization is developing and paying off, like % of total transactions that are made by clients or automated and % of “straight through processing” compared with manual processing. Effective managing of risk and pricing is and will be essential and therefore more and more use of “Risk adjusted return on risk adjusted capital” will be used. Such KPIs will be more used, down to each client, business units and how well employees perform (sell and look after their clients).
8. We will always have the standard KPIs related to financial performance. Banks are already using KPIs such as NPS (net promoter score) which tells the banks if its customers would recommend its services. I don't actually think the KPIs will change so much unless with gradual adjustments.
9. I'm not sure they will to a great extent. The way you achieve them will however be substantially different.
10. Banks are in the business of making a profit as every other company is, that's the KPI's that matter to them at the end of the day. Any other KPI's are a derivative

of this. New KPI's will probably be introduced by consultants and IT service providers but they probably want change too much.

11. The same as today will still apply, since it takes the industry long to change. But KPIs measuring success in digitalization will play a bigger role.

Question 7 – Legislation, Optional

Part A) How will developments in the legal environment effect the business model of a consumer bank for the next 10 years? This question is optional because some participants might not be familiar enough on legal developments.

1. There will be much more open possibilities for organizations to act as banks but personal safety issues and personal privacy will be of much more concern. Legal system will be much more complicated and legal system might be slower than needed for the banking system.
2. The legal environment will probably slow this development down. We need new laws and regulations - but also the new GDPR will limit what can be done with personal data.
3. This is tied to Q 5A. The main developments will be ensuring that banks will not pose systematic risks in the economy, but yet be like an oil keeping the economy humming. Business models will hence change only little by little and with new technology companies entering the field, they will team up with banks rather than being independent entities.
4. The consumer bank will continue to be hard pressed by increasingly strict regulatory environment. That will in part help shadow-banks and other non-bank competitors to get a growing share of the market. Crowdfunding may also become an option for individuals.
5. PSD2 and GDPR will affect the banking industry immensely. Not immediately, but in the next five years we will see new companies formed, banks co-operating with startups and tech companies, and consumers having more to say about where and how their data and money is stored safely.
6. As new technology is introduced there is going to be heavy regulation on all and nothing that has to do with banking services technology. Companies will probably explore ways to try and have as much financial service as possible under unregulated entities. There is chance that somethings like robo-advisor to the general public will simply be banned unless the customers define themselves

explicitly as customer willing to receive advice from such technology. Financial Surveillance Authorities will blow out of proportion, initiated by politicians trying to give consumers some sense of security with new technologies.

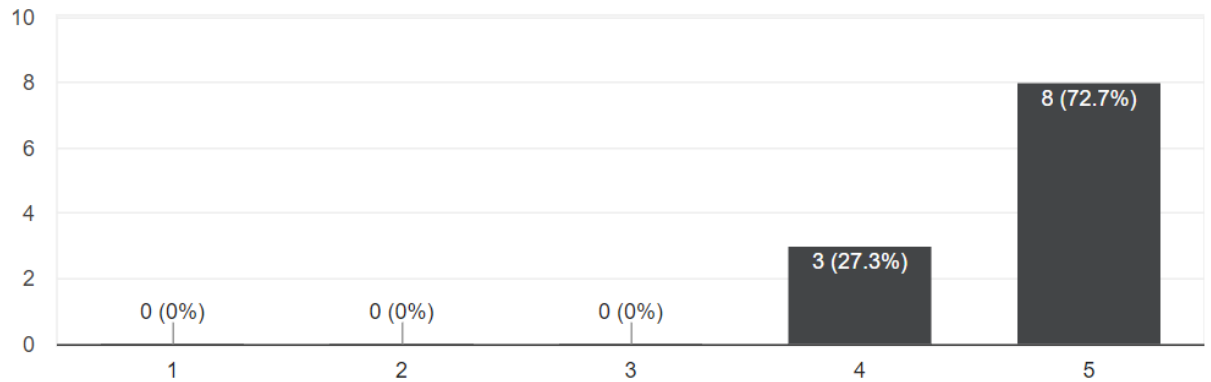
7. This is seriously affecting the banking industry and will continue to do so. It will make the banks more rigid and make it harder for them to offer some services. It also slows down other development in the banks.

8 Appendix 2 – Survey, Round 2

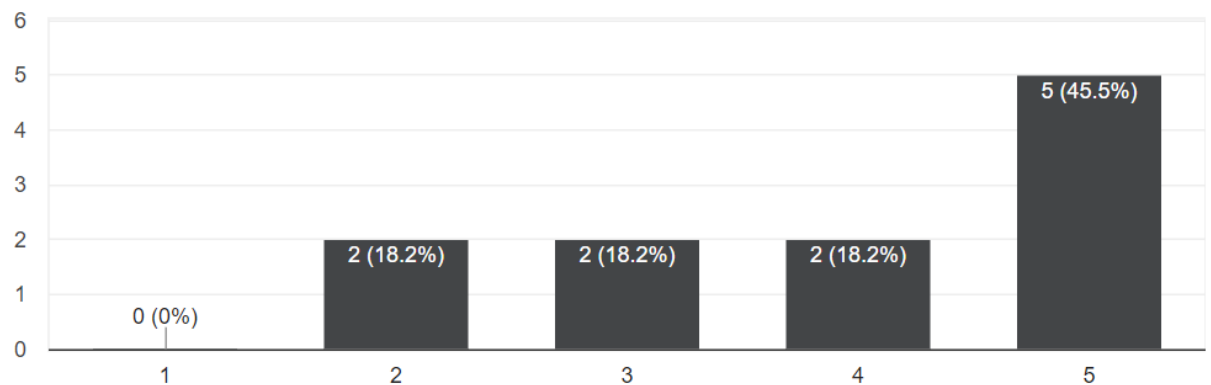
The appendix includes answers from participants in the second round. Answers are copied directly, without any modification, from the website where the online survey was conducted and pasted in a picture format.

Chapter 1 – Payment Methods

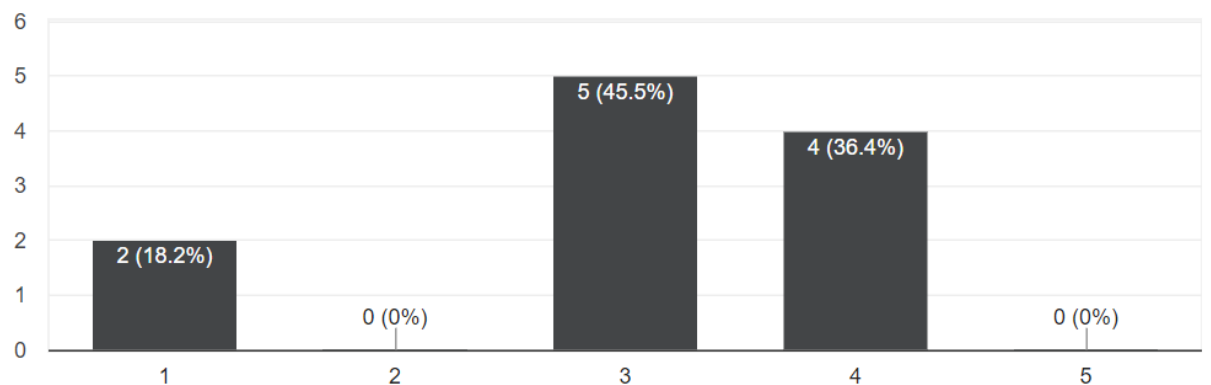
Part A) Digital payments will be dominant payment method in 10 years.



Part B) Personal bank accounts will still be needed in 10 years.

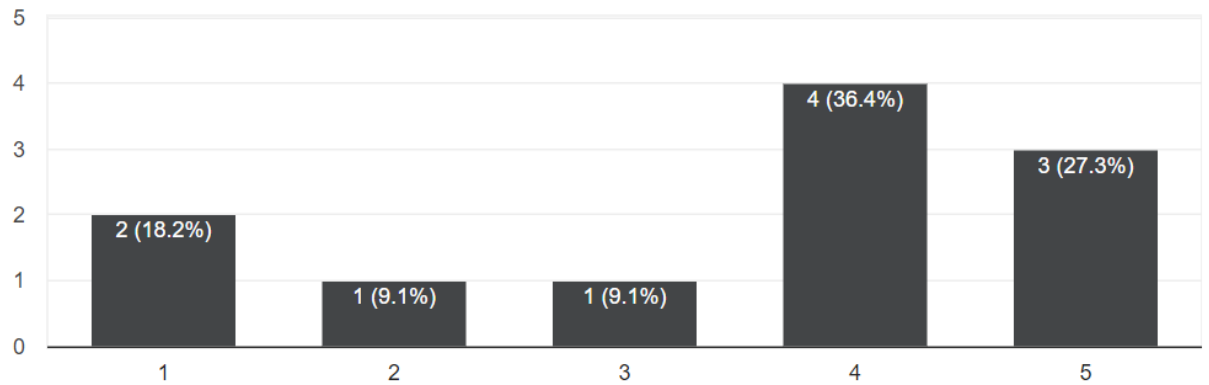


Part C) The Blockchain technology will not have a dramatic effect on consumer banking in 10 years.



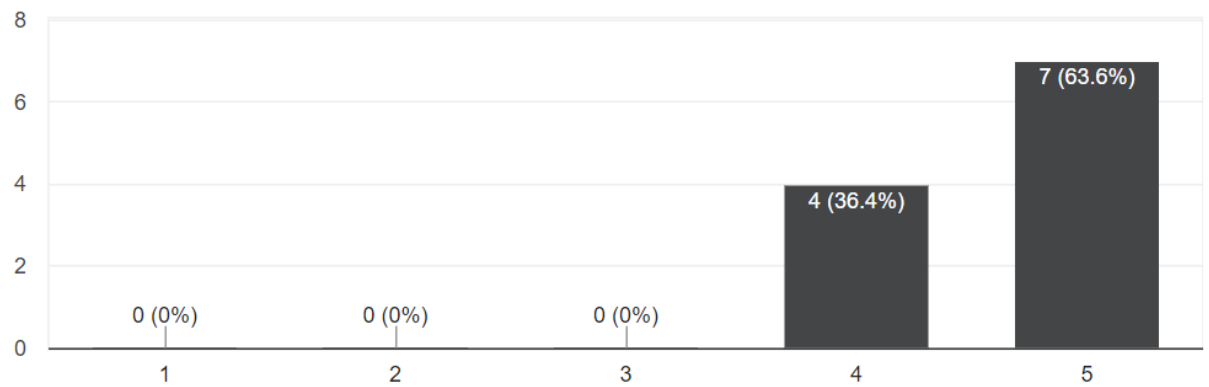
Chapter 2 – Bank Branch

In 10 years, bank branches will mostly consist of digital services.

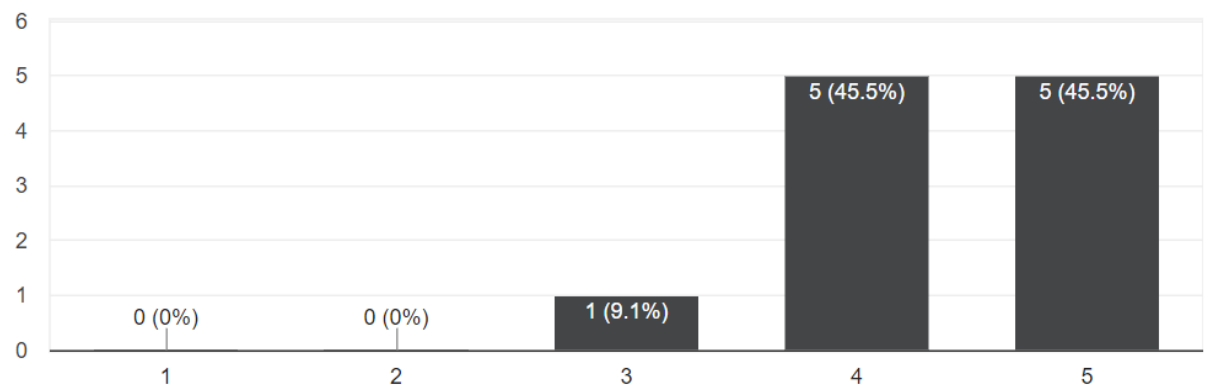


Chapter 3 – Financial Services

Part A) Financial services through digital channels will be dominant.

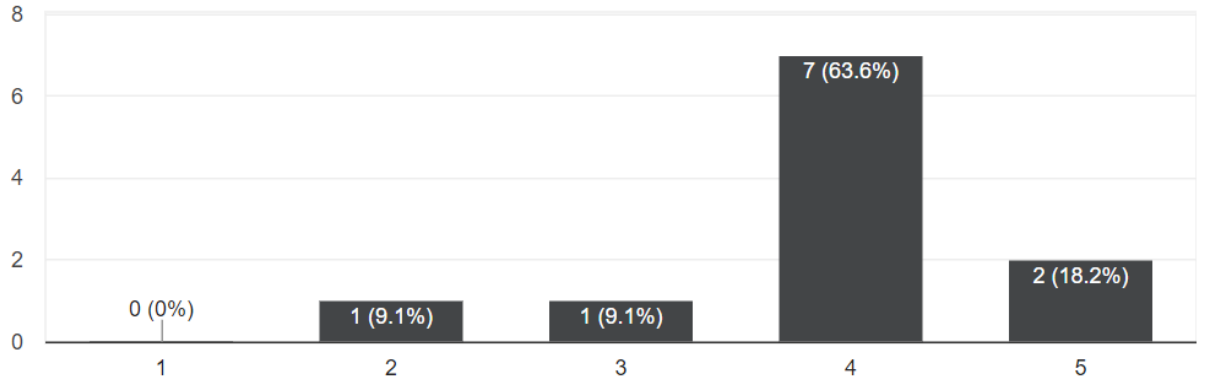


Part B) There will always be the need for some human interaction in financial services.

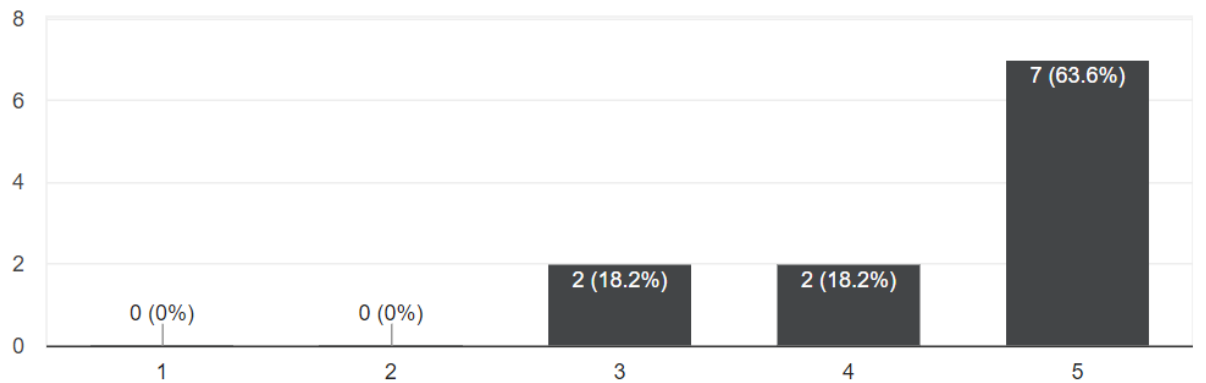


Chapter 4 – Competition

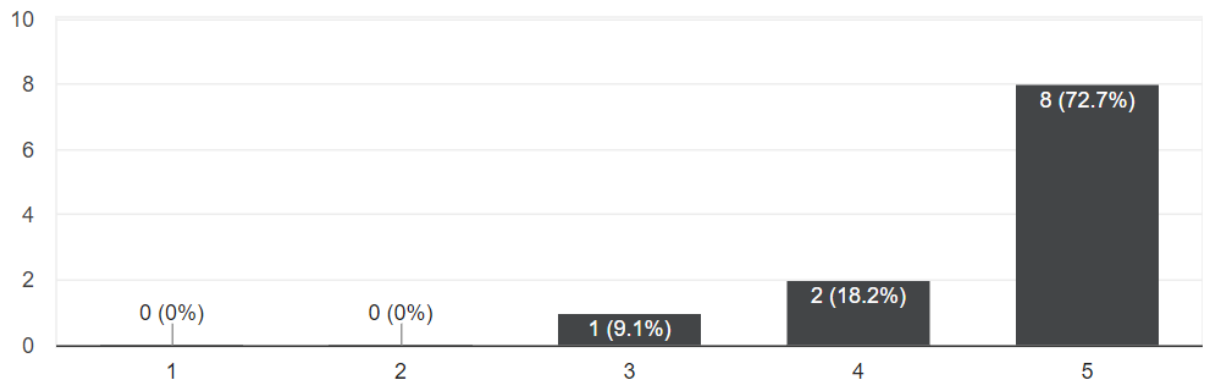
Part A) Rates and prices will be the most important factor in competition among banks in 10 years.



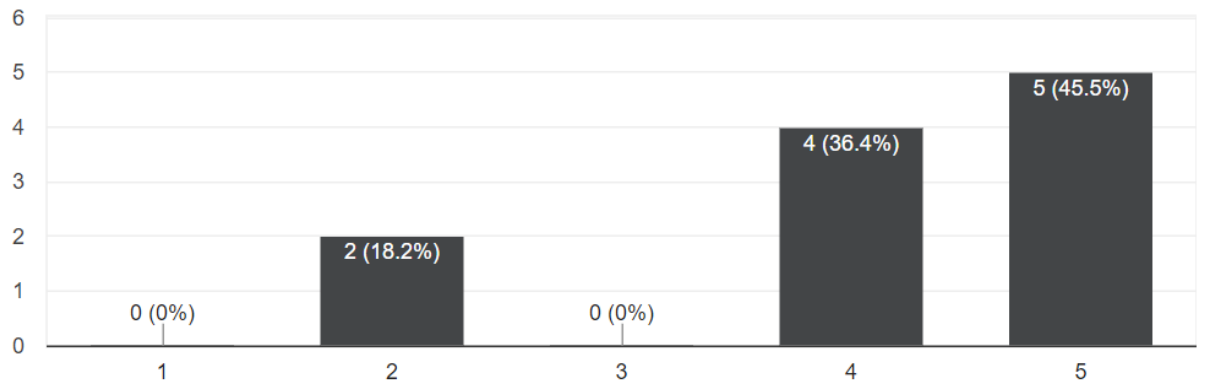
Part B) Bank's ability to work with third parties will be important in 10 years.



Part C) Having a good digital service platform will give a competitive advantage in 10 years.

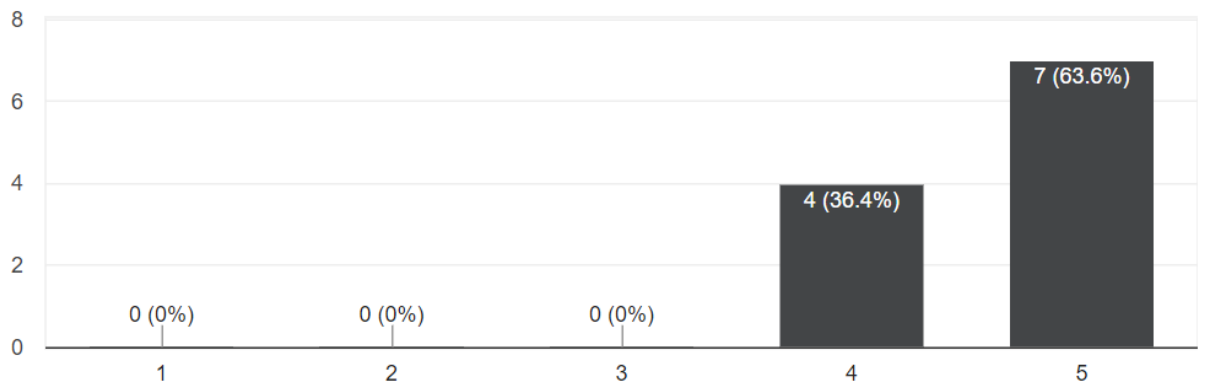


Part D) Foreign competition will increase in 10 years.

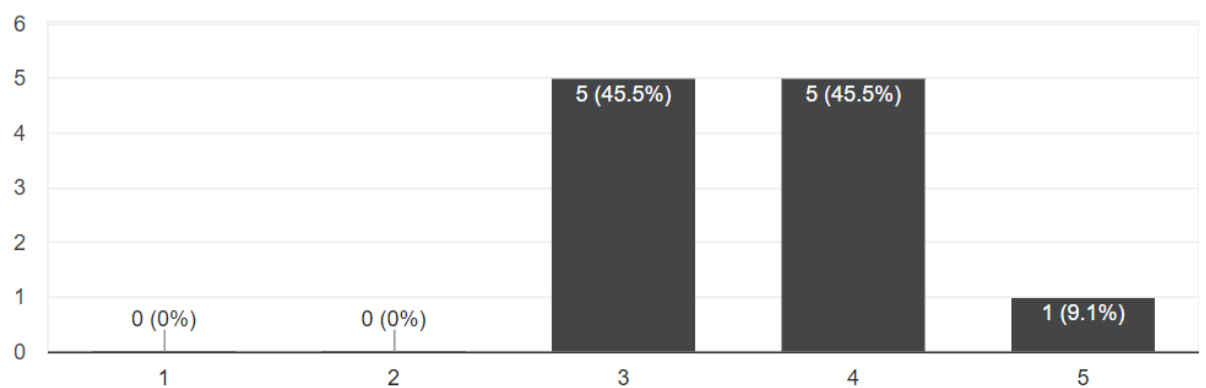


Chapter 5 – Measures

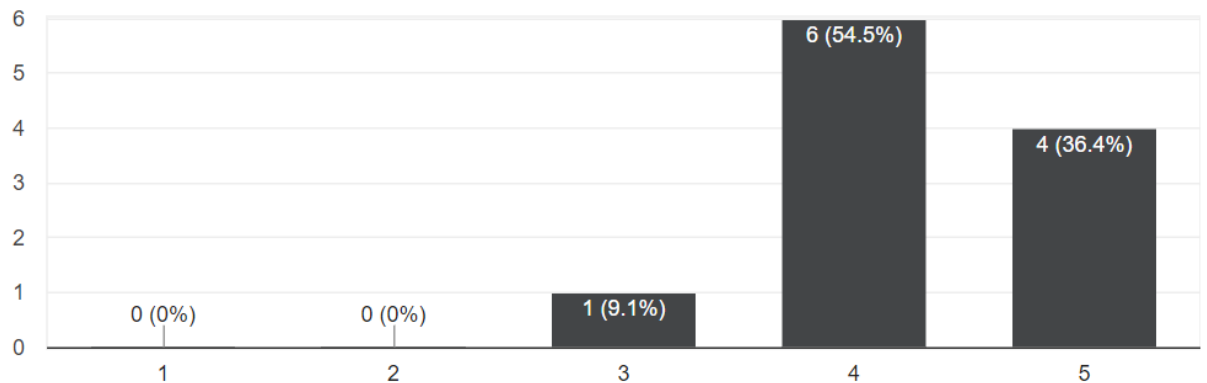
Part A) Measuring through digitalized channels will be necessary in 10 years.



Part B) Financial measurements will be the most important KPI for banks in 10 years.

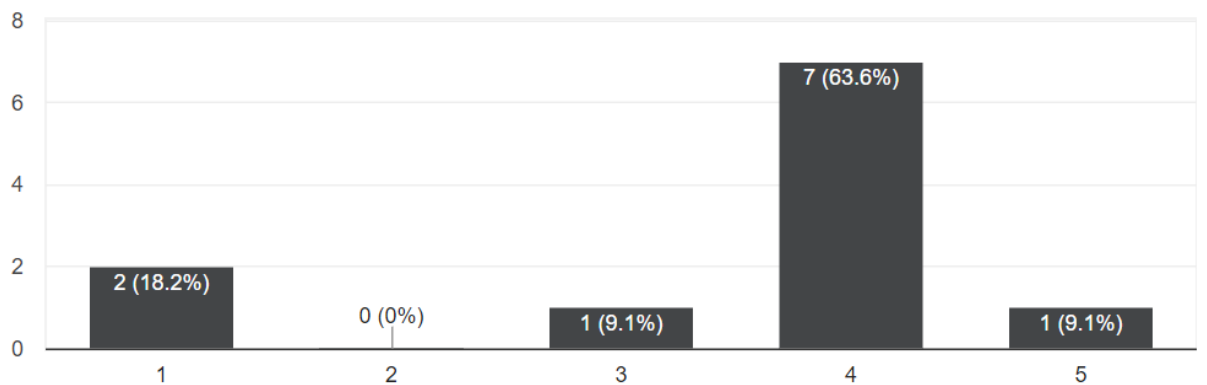


Part C) With increased automation, customer related measures will become more important.



Chapter 6 – Legislation

Part A) Developments in the legal environment will give non-banks and other financial institutions (Fintech's, start-ups etc.) a competitive advantage in financial services.



Chapter 7 – Open ended question

Part A) In 10 years, what might disrupt the traditional banking sector?

- Well, that is the essence of disruption. No one sees it coming, until it becomes the norm. If I had the answer to this question, I wouldn't be working at a bank. More seriously, there are some very intelligent people trying to "solve" banking. I can't say what the disruption will be, but I am certain it will have to do with who provides the service (distribution channels) and who has the trust of consumers do perform those services. It's not going to be technology in itself that will be the disruption.

2. Entrance of giant technology firms into the financial sector; disinter-mediation of key financial services products; step changes in technological development.
3. Blockchain technology, cost, unwillingness to adapt to social and technical changes. Unforeseen vulnerabilities and threats. Black Swan.
4. AI, Blockchain, new competitors. The traditional banking sector of today will change more drastically during the next 10 years than ever before.
5. I do not see a revolution in the banking sector but more of a evolution. It is an industry that is changing rapidly. Digitalization and AI will shape a lot the financial sector in near future. The financial service sector is a highly regulated one and that will have an impact. New players will emerge, but legislation will be more or less the same for all - legislation might come a bit later and give new players competitive advantage from time to time but current industry is and will adapt at the same time. The key issues for success of new entrance as well for current players are; risk management, cost effectiveness and customer centricity. Those that do not do well on these, whether current or new players, will not succeed in the competition. Knowledge of all three, digitalization and the right culture will be of key importance.
6. Not a whole lot. Legislative issues and consumer protection will mean that traditional banking will only slowly change, despite technological advances.
7. Advancement in digital world
8. Some new technology
9. Automation and further globalization

9 List of references

- amazon. (2016). *Introducing Amazon Go and the world's most advanced shopping technology*. Retrieved from <https://www.youtube.com/watch?v=NrmMk1Myrxc>
- Amazon Echo - Alexa Voice Service - Amazon.co.uk. (n.d.). Retrieved September 8, 2017, from <https://www.amazon.co.uk/Amazon-SK705DI-Echo-Black/dp/B01GAGVIE4>
- Arion Banki. (2017). Kringluútibú - Arion banki. Retrieved September 10, 2017, from <https://www.arionbanki.is/bankinn/utibu-og-thjonusta/kringluutibu/>
- Arner, D. W., Barberis, J., & Buckley, R. P. (2015). The Evolution of FinTech: A New Post-Crisis Paradigm. *Georgetown Journal of International Law*, 47, 1271.
- Bagnall, J., Bounie, D., Huynh, K. P., Kosse, A., Schmidt, T., Schuh, S., ... European Central Bank. (2014). *Consumer cash usage: a cross-country comparison with payment diary survey data*. Frankfurt am Main: European Central Bank.
Retrieved from <http://bookshop.europa.eu/uri?target=EUB:NOTICE:QBAR14059:EN:HTML>
- Bank of America. (2001). *Bank of America 2000 Summary Annual Report* (Summary Annual Report) (pp. 15–25). North carolina: Bank of America.
- Barbara G. Ludwig. (1994). *Internationalizing Extension: An exploration of the characteristics evident in a state university Extension system that achieves internationalization*. (Dissertation) (p. 52). Columbus: The Ohio State University.
- Board of Governors of the Federal Reserve System. (2016). *Consumers and Mobile Financial Services 2016* (pp. 1–3). Federal Reserve Board.

- Campbell, D., & X, F. (2010, March 1). Serving Customers Online Gets Results—But It Costs More. Retrieved August 17, 2017, from <https://hbr.org/2010/03/serving-customers-online-gets-results-but-it-costs-more>
- Capgemini. (2016). *World Retail Banking Report* (pp. 8–9). Retrieved from https://web.uniroma1.it/dip_management/sites/default/files/allegati/World%20Retail%20Banking%20Report%202016.pdf
- Chris Lamberton. (2016). *Get ready for robots* (pp. 1–12). United Kingdom: Ernst & Young. Retrieved from <http://www.ey.com/gl/en/industries/financial-services/insurance/ey-get-ready-for-robots>
- Corday, R. (2014). The evolution of assembly lines: A brief history | Robohub. Retrieved May 27, 2017, from <http://robohub.org/the-evolution-of-assembly-lines-a-brief-history/>
- Creswell, J. W. (2013). *Research Design: Qualitative, Quantitative, and Mixed Methods Approaches*. SAGE Publications.
- Custer, R. L., Scarcella, J. A., & Stewart, B. R. (1999). The Modified Delphi Technique - A Rotational Modification. *Journal of Career and Technical Education*, 15(2). Retrieved from <https://ejournals.lib.vt.edu/JCTE/article/view/702>
- Dapp, T. F., Slomka, L., AG, D. B., & Hoffmann, R. (2014). Fintech—The digital (r) evolution in the financial sector. *Deutsche Bank Research*, Frankfurt Am Main. Retrieved from [http://dbresearch.com/PROD/DBR_INTERNET_DE-PROD/PROD000000000345837/Fintech+%E2%80%93+The+digital+\(r\)evolution+in+the+financia.pdf](http://dbresearch.com/PROD/DBR_INTERNET_DE-PROD/PROD000000000345837/Fintech+%E2%80%93+The+digital+(r)evolution+in+the+financia.pdf)
- Delbecq, A. L, Van de Ven, A. H., & Gustafson, D. H. (1975). Group techniques for program planning. *Scott, Foresman, and Co.*
- Dias, J., Patnaik, D., Scopa, E., & Bommel, E. van. (2012). Automating the bank’s back office | McKinsey & Company. Retrieved November 9, 2017, from

<https://www.mckinsey.com/business-functions/digital-mckinsey/our-insights/automating-the-banks-back-office>

Dietz, M., Hårle, P., Khanna, S., & Mazingo, C. (2015). *The fight for the customer:*

McKinsey global banking annual review 2015 | McKinsey & Company.

McKinsey & Company. Retrieved from

<https://www.mckinsey.com/industries/financial-services/our-insights/the-fight-for-the-customer-mckinsey-global-banking-annual-review-2015>

Edelman Marc, D. C. (2015). Competing on Customer Journeys. *Harvard Business Review*, 93(11), 88–7.

Edgington, C. (2013). The “Age of the Customer” Demands Effective Onboarding.

Retrieved November 9, 2017, from <http://www.banktech.com/management-strategies/the-age-of-the-customer-demands-effectiv/240154052>

Eurostat. (2016, December). Internet access and use statistics - households and individuals - Statistics Explained. Retrieved August 17, 2017, from

http://ec.europa.eu/eurostat/statistics-explained/index.php/Internet_access_and_use_statistics_-_households_and_individuals

Forest, H., & Rose, D. (2015). *Digitalisation and the Future of Commercial Banking*

(pp. 3–16). Deutsche Bank. Retrieved from

http://cib.db.com/docs_new/Digitalisation_and_the_Future_of_Commercial_Banking.pdf

Frédéric, J., Konstantynova, N., Maxwell, M. N., Patiath, P., & Ross, E. (2016).

Radically Simplifying the Retail Bank (No. 8). McKinsey & Company. Retrieved

from <https://www.mckinsey.com/industries/financial-services/our-insights/radically-simplifying-the-retail-bank>

- Gartner. (2017, October 30). Digitalization. Retrieved October 30, 2017, from <https://www.gartner.com/it-glossary/digitalization>
- Georg Lúðvíksson. (2017, September 24). Veðja á bankana. Retrieved from <http://www.vb.is/frettir/vedja-bankana/141562/>
- Gerard du Toit, & Burns, M. (2015, November 18). Customer Behavior, Experience and Loyalty in Retail Banking. Retrieved November 9, 2017, from <http://www.bain.com/publications/articles/customer-loyalty-in-retail-banking-2015-global.aspx>
- Goldman Sachs. (2015). *Millennials: Coming of Age*. Retrieved from <http://www.goldmansachs.com/our-thinking/pages/millennials-changing-consumer-behavior.html>
- González-Páramo, J. M. (2017). Digitalisation and Banking sector (pp. 1–8). Presented at the Tomorrow's Banking and How Central Banks Have Developed in last 15 Years., Helsinki: BBVA.
- History.com. (2009). First ATM Opens For Business. *A+E Networks*. Retrieved from <http://www.history.com/this-day-in-history/first-atm-opens-for-business>
- Hsu, C.-C., & Sandford, B. A. (2007). The Delphi technique: making sense of consensus. *Practical Assessment, Research & Evaluation*, 12(10), 1–8.
- Iansiti, M., & Lakhani, K. R. (2017, January 1). The Truth About Blockchain. Retrieved September 30, 2017, from <https://hbr.org/2017/01/the-truth-about-blockchain>
- Investopedia. (2013, July 12). Retail Banking Vs. Corporate Banking. Retrieved August 18, 2017, from <http://www.investopedia.com/articles/general/071213/retail-banking-vs-commercial-banking.asp>
- Íslandsbanki breytir skipulagi. (2017, ma). Retrieved May 23, 2017, from <https://www.islandsbanki.is/um-islandsbanka/frettir/frett/2017/05/23/Islandsbanki-breytir-skipulagi/>

- Kamakodi, N., & Khan, M. B. A. (2008). Customer Expectations and Service Level in E-Banking Era: An Empirical Study. *ICFAI Journal of Bank Management*, 7(4), 50–70.
- Kristinn Steinar Kristinsson. (2017, December 10). Bráðum hægt að selja húsið á Blockchain. Retrieved from http://www.mbl.is/vidskipti/frettir/2017/10/12/bradum_haegt_ad_selja_husid_a_blockchain/
- Iansiti, M., & Lakhani, K. R. (2014). Digital Ubiquity: How Connections, Sensors, and Data Are Revolutionizing Business. *Harvard Business Review*, 92(11), 90–99.
- Latimore, D. W. (2017). *Banking on a Digital future* (pp. 2–4). Kofax. Retrieved from <https://www.kofax.com/~//media/Files/Kofax/whitepaper/wp-banking-on-a-digital-future-en.pdf>
- Laura Bradley, & Kate Stewart. (2002). A Delphi study of the drivers and inhibitors of Internet banking. *International Journal of Bank Marketing*, 20(6), 250–260. <https://doi.org/10.1108/02652320210446715>
- McKinsey Global Institute. (2017). InternationalAutomation. Retrieved November 11, 2017, from https://public.tableau.com/views/InternationalAutomation/WhereMachinesCanReplaceHumans?%3Aembed=y&%3AshowVizHome=no&%3Adisplay_count=y&%3Adisplay_static_image=y&%3AbootstrapWhenNotified=true
- Michael Crosby, Nachiappan, Pradan Pattanayak, Sanjeev Verma, & Vignesh Kalyanaraman. (2016). Blockchain Technology: Beyond bitcoin. *Berkeley Engineering*, (2), 14.
- Miller, L.E. (2006). *Determining what could/should be: The Delphi technique and its application*. Ohio: Columbus.

- Ministry of Finance. (2017). *Umfang Skattaundanskota og Tillögur Til Aðgerða* (pp. 5–6). Ministry of Finance. Retrieved from <https://www.stjornarradid.is/lisalib/getfile.aspx?itemid=5ea38a59-572d-11e7-941c-005056bc530c>
- Olanrewaju, T., Smaje, K., & Willmott, P. (2014, May). The seven traits of effective digital enterprises | McKinsey & Company. Retrieved November 8, 2017, from <https://www.mckinsey.com/business-functions/organization/our-insights/the-seven-traits-of-effective-digital-enterprises>
- Payment services (PSD 2) - Directive (EU) 2015/2366. (2016, December 8). [Text]. Retrieved August 17, 2017, from https://ec.europa.eu/info/law/payment-services-psd-2-directive-eu-2015-2366_en
- Russell, S. J., Norvig, P., & Davis, E. (2010). *Artificial intelligence: a modern approach* (3rd ed). Upper Saddle River: Prentice Hall.
- Samphanwattanachai, B. (2007). Internet banking adoption in Thailand: A Delphi study. In *Proceedings of the 24th South East Asia Regional Computer Conference* (pp. 18–19). Retrieved from http://www.ijcim.com/SpecialEditions/v15nSP4/P12SEARCC_InternetBankingAdoptioninThailand.pdf
- Schwab, K. (2016, January 14). The Fourth Industrial Revolution: what it means and how to respond [14.01.2016]. Retrieved August 15, 2017, from <https://www.weforum.org/agenda/2016/01/the-fourth-industrial-revolution-what-it-means-and-how-to-respond/>
- Spielvogel, J. J. (2004). *Glencoe World History* (2nd ed.). McGraw-Hill Education; 2nd edition.

- Stefano M. Stoppani. (2017, September 28). Lánshæfi flutt með „blockchain“ - Viðskiptablaðið. Retrieved September 30, 2017, from <http://www.vb.is/frettir/lanshaefi-flutt-med-blockchain/141702/>
- Sullivan, B., Garvey, J., Alcocer, J., & Eldridge, A. (2014). *Retail Banking 2020 Evolution or Revolution?* Price Waterhouse Coopers. Retrieved from <https://www.pwc.com/gx/en/banking-capital-markets/banking-2020/assets/pwc-retail-banking-2020-evolution-or-revolution.pdf>
- The European Parliament. (2016). Regulations. *Official Journal of the European Union*, (1), 12–14.
- The Ford Motor Company. (2012, May 8). Model T Facts | Ford Media Center. Retrieved September 25, 2017, from <https://media.ford.com/content/fordmedia/fna/us/en/news/2013/08/05/model-t-facts.html>
- The US Banking System: Origin, Development, and Regulation | The Gilder Lehrman Institute of American History. (2012, August 9). Retrieved August 10, 2017, from <https://www.gilderlehrman.org/history-by-era/hamiltoneconomics/essays/us-banking-system-origin-development-and-regulation>
- Uber. (2017). The Uber story. Retrieved September 10, 2017, from <https://www.uber.com/our-story/>
- Ulschak, F. L. (1983). *Human resource development: The theory and practice of need assessment*. VA: Reston Publishing Company, Inc.
- UNCTAD. (2017). *Information Economy Report 2017* (pp. 15–36). United Nations. Retrieved from http://unctad.org/en/PublicationsLibrary/ier2017_en.pdf
- Vasiljeva, T., & Lukanova, K. (2016). GROWING INSTABILITY OF THE SOCIO-ECONOMIC SYSTEM. *Journal of Business Management*, (11), 23–34.

- Wendy Matheny, Shaun O'Brien, & Claire Wang. (2016, September 3). The State of Cash: Preliminary Findings from the 2015 Diary of Consumer Payment Choice. Retrieved October 20, 2017, from <http://www.frbsf.org/cash/publications/fed-notes/2016/november/state-of-cash-2015-diary-consumer-payment-choice>
- Wilde, R. (2017, March 28). The Development of Banking in the Industrial Revolution. Retrieved August 10, 2017, from <https://www.thoughtco.com/development-of-banking-the-industrial-revolution-1221645>
- Zhao, J. L., Fan, S., & Yan, J. (2016). Overview of business innovations and research opportunities in blockchain and introduction to the special issue. *Financial Innovation*, 2, 28. <https://doi.org/10.1186/s40854-016-0049-2>