Effects of Digital Finance on society and Financial Institutions

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ABSTRACT,

Nowadays, digital finance plays a significant role in everyone's life. Mobile banking, cryptocurrencies, peer-to-peer lending and online investing became well known definitions. This significance made it increasingly important to know what the effects of digital finance for society and financial institutions are. Thus, it is this paper's objective to examine this. The paper is structured by answering four sub questions that relate to the main question, these sub questions answer the most important aspects of digital finance. It was found that digital finance leads to financial inclusion as well as greater accessibility and convenience. On the other hand the privacy and security concerns are crucial and bigger than ever. Financial institutions have to alter their regulatory framework to keep up with the privacy and security needs of society. The examined effects are significant and need to be studied during the further development of digital finance.

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Keywords
Digital finance, financial institutions, society, financial inclusion, mobile banking, cybersecurity, regulation.

1. Introduction

Digital Finance is all around us, everyone uses Digital Finance already in some way and it is getting bigger than we can imagine in the future. The objective of this paper is to analyze the effects of digital finance on society and financial institutions. Digital finance refers to the use of digital technologies and platforms to facilitate financial services, transactions, and management (European Commission, 2022). It consists of a broad range of financial activities that are conducted through digital channels, including online banking, mobile banking, digital wallets, cryptocurrencies, online investing, and peer-to-peer lending.

Online banking and mobile banking refer to the use of technology to access financial services, such as making deposits, payments, and transferring funds. “Mobile banking is a new, cutting-edge and complex technology-enabled information system”. This quote highlights the complexity of mobile banking and its distinctiveness from online banking, as it is a newer technology. As such, it is important to understand the differences between online and mobile banking (Singh & Srivastava, 2020).

“A digital wallet is a virtual storage system that can contain money and a digital certificate of your identity”. A digital wallet is typically a software application designed for smartphones, serving as a digital counterpart to a physical wallet. Alternatively, it can refer to an electronic device enabling individuals to conduct e-commerce transactions, such as purchasing items online or at a physical store using a smartphone. Nowadays, digital wallets are not only limited to basic financial transactions, but also include features to verify the user's credentials (Batra & Kalra, 2016).

A Cryptocurrency is a peer-to-peer digital exchange system in which cryptography is used to generate and distribute currency units. Cryptocurrencies could have a big impact on mainly the society but on financial institutions as well. They could become more popular, and cryptocurrencies are decentralized, meaning they operate independently of financial institutions (Mukhopadhyay, 2016).

Digital Investments (online investing) support individuals or institutions in investment decisions and in arranging the required investment transactions on their own by use of the respective devices and technologies. Digital Investments include mobile trading, social trading, online brokerage, and online trading in the B2C area and highfrequency and algorithmic trading in the B2B context (Gomber & Koch & Siering, 2017).

Peer-to-peer (P2P) lending is a form of financial technology that allows people to lend or borrow money from one another without going through a bank (Kagan, 2023). This is similar to the concept of cryptocurrencies. People do not have to go to banks anymore to lend money, this financial activity of digital finance has an impact on society.

Digital finance is a rapidly growing area of the financial services industry, as new technologies and platforms are providing a more efficient and cost-effective way for individuals and businesses to access and manage their finances.

However, there are several challenges that may impede the growth of digital finance. The first challenge is the reaction of the traditional financial services industry incumbents. As stated by Ketterer, “New firms are challenging the traditional financial services industry.” This means that incumbent banks and other financial institutions are likely to resist the introduction of new digital technologies, as it could lead to their displacement. A second challenge is the lack of appropriate and timely regulation. “Lawmakers and regulators are trying to encourage increased competition in the financial services industry,” but this process may be too slow to keep up with the rapid pace of technological development in digital finance. Finally, Ketterer discusses the lack of access to good-quality and affordable digital connectivity, such as broadband access, as a potential challenge. He states that “the lack of access to good-quality and affordable digital connectivity (broadband access) may slow the adoption of digital financial technologies” (Ketterer, 2017).
Furthermore, there are also security risks, digital finance relies on online transactions and storage of sensitive data, making it vulnerable to cyber threats such as hacking, data breaches, and identity theft. Privacy concerns, the collection and use of personal data in digital finance can raise privacy concerns, and there is a need for robust data protection laws and regulations. Usually, innovations are increasing faster than the law and regulations, so this could be problematic. Unfortunately, people are always occupying themselves with fraudulent activities. In digital finance this means the anonymity and lack of oversight in digital finance can lead to fraudulent activities such as money laundering, terrorist financing, and other illegal activities, but on the other hand digital finance could also lead to the reduce in circulation of bad (fake) money. (Barefoot, 2020).

Digital finance has the potential to create a wide range of opportunities for the financial services industry. Digital finance leads to enhanced customer experience: Digital finance has made it easier and more convenient for customers to access financial services, reducing wait times and providing more personalized experiences. This is the case for developing countries as well as developed countries. In developing countries, digital finance has the potential to provide affordable, convenient, and secure banking service to poor individuals. Next, digital finance will lead to increased financial inclusion: Digital finance has the potential to reach underserved populations, providing access to financial services to those who were previously excluded. Furthermore, Improved efficiency: Digital finance has the potential to streamline financial processes, reducing transaction costs, and increasing efficiency for financial institutions. Also, innovation and new business models: Digital finance has enabled the creation of new financial products and services, including peer-to-peer lending, crowdfunding, and robo-advisory services, providing more choices for customers. Finally, digital finance can have a long-term positive effect for banking performance and benefits governments (Ozili, 2018).

In the mentioned challenges and opportunities financial institutions and society are always correlated to the impact of digital finance. The paper will analyze how these connections influence society. The digital finance industry is constantly evolving, with new technologies and services emerging to meet the changing needs of consumers and businesses. The paper aims to further investigate the main research question: what are the effects of digital finance in society and financial institutions?

The research question will be addressed by answering the following questions:

- How has digitalization of the financial sector impacted the nature of work in banks and financial institutions?
- To what extent, the digitalization of the finance sector can impact behavior of clients of banks and financial institutions?
- What are the implications of digitalizing the finance sector from the privacy and cybersecurity perspective?
- How has digitalization changed the regulatory landscape of financial institutions?

The structure of this thesis is designed to provide a comprehensive analysis of the effects of digital finance in society and financial institutions. The subsequent chapters are organized as follows: Chapter 2 presents the methodology used in this study, outlining the systematic literature review and shows a step-by-step figure of how the articles were selected. In Chapter 3, the findings derived from the research are presented, highlighting the key discoveries and observations made throughout the research. Building upon the findings, Chapter 4 delves deeper into the main outcomes, discusses how the sub research questions are connected to each other and answer the main research question. Finally, Chapter 5 serves as the concluding chapter, summarizing the work and addressing its limitations. Building upon the limitations it suggests potential areas for future research.

2. Methodology

For this research a systematic literature review in digital finance is used through Google Scholar as well as Scopus. A systematic literature review is a research methodology that aims to identify, evaluate, and synthesize all available evidence relevant to a specific research question or topic. It involves a rigorous and transparent search process to identify relevant literature, followed by a critical appraisal of the quality of the evidence and a combination of the findings (Charles Sturt University, n.d.).

To identify relevant literature on digital finance using Google Scholar and Scopus, there is a certain combination of search terms or research queries used. The inclusion criteria for the systematic literature review are, published within the last 10 years (2013-2023), written in English and it should be peer reviewed articles or academic reports. Exclusion criteria for the systematic literature review are, focus on traditional finance topics without significant relevance to digital finance, duplicate studies or studies with insufficient data.

The queries that are used are:

- "Digital finance" AND "financial inclusion", 353 results.
- "Digital finance" AND "mobile banking", 87 results.
- "Digital finance" AND "impact in banks", 125 results.
- "Digital finance" AND "digital payments", 372 results.
- "Digital finance" AND "society", 362 results.
- "Digital finance" AND "regulation", 312 results.
- "Digital finance" AND "privacy and security", 125 results.

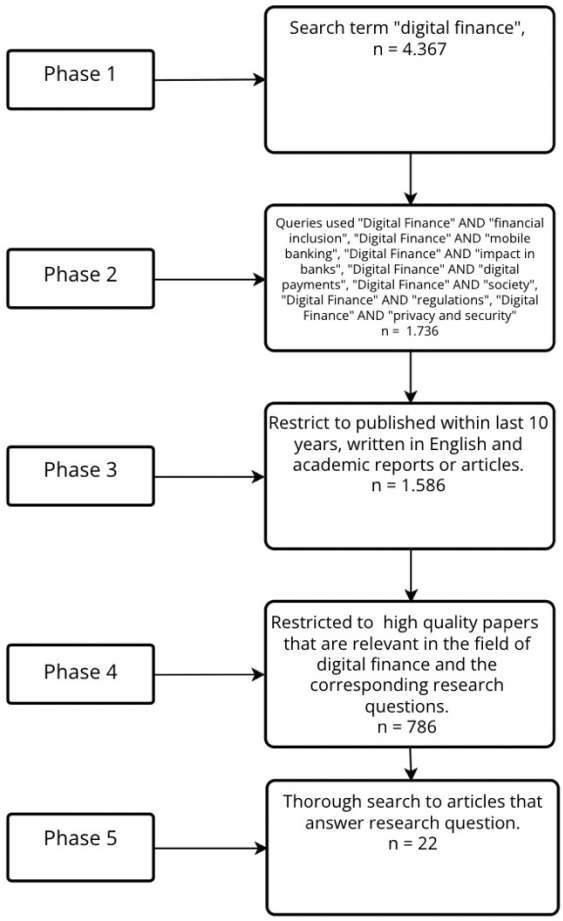

Fig. 1. Stages of the study selection process for the literature review.

The initial search began with getting a broad view of digital finance, the query used at the beginning was simply “digital finance”. In the next phase, the articles had to give a better understanding of the related research question and sub questions. Within Scopus the selected queries were based on article title, abstract and keywords. Google scholar is used as additional search engine. Within google scholar the function AND is not used, but the queries were added together, like “Digital finance and financial inclusion”. In the third phase the articles were restricted to being published within the last ten years, written in English and they had to be academic articles or reports. The fourth phase restricted the papers to high quality papers, that are relevant in the field of digital finance and the corresponding research questions. Certain aspects are required for a paper to be of high quality. The high quality research papers will move from the general to the specific and begin with the background of the work. In order to develop the discussion and draw conclusions based on the material covered in the research manuscript or paper, it moves through the problem statement of the research that is being investigated, a clear description of the research method, providing analytical results of the research, and finally relating these to the original context of the research work. Another important section of a high quality paper is the abstract. In this fourth phase the abstract is mostly used to restrict the current papers to high quality papers (Mahaliyanaarachchi, 2017). In this phase articles that complied to the research question based on the queries, but in fact did not answer relevant topics were removed. The final

phase included a thorough search to appropriate articles or reports for this study. This thorough search was manually done and based on article titles, but also included reading the abstracts to determine if they were appropriate. These queries led to a selection of research papers, which were 22 research papers that were appropriate for the research on the effects of digital finance. Figure 1 shows this process step-by-step.

3. Findings

Digital finance has effects for both the society as financial institutions. All effects are interconnected, but some effects are more drawn to the society and others to financial institutions. The main effects for the society are the improved financial inclusion by providing access to financial services to previously underserved populations. People in remote locations can now access credit and insurance services, create bank accounts, conduct transactions, and participate in the official financial system thanks to mobile banking and digital payment platforms. Digital finance has also improved the accessibility and convenience of financial transactions. Individuals can now access financial services anytime and anywhere, thanks to the growth of mobile banking. This has decreased the need for physical branches (Dev, 2006). Additionally, the cost of financial transactions for both consumers and financial institutions has decreased because of digital finance. While digital platforms offer low-cost or even free services like online banking, money transfers, and digital payments, traditional banking services frequently come with fees (Karlan, 2016). Next, innovation opportunities have risen through digital finance, and established financial systems have been disrupted. Peer-to-peer lending, crowdfunding, robo-advisory services, and cryptocurrencies are just a few of the innovative technology and business models that companies have launched. Traditional financial institutions have been forced to adapt and adopt new technology in order to remain competitive as a result of these advancements. Finally, through facilitating financial intermediation, expanding investment options, and encouraging entrepreneurship, digital finance has the potential to encourage economic growth. Digital payment methods and the digitization of financial records also improve accountability, lessen corruption, and support a stable economy. (Noman, 2023)

The main effects for financial institutions, financial institutions' payment processing, deposit and loan operations are significantly impacted by digital finance. Through the technology spillover effect, it has actively supported the enhancement of the total factor productivity of commercial banks. The term "spillover effect" describes the positive impacts of new technological knowledge on the productivity and inventiveness of other businesses and nations. Digital finance has a diverse range of consequences on banks, with large, state-owned commercial banks and joint-stock commercial banks benefiting most favorably. Because of advances in technology and finance as well as a close integration of the two, commercial banks' asset-liability structures have altered and their production efficiency has increased thanks to digital finance. Input-output mix adjustments and technological advancements have been made as a result of the impact that digital finance has had on risk governance and the industry's competitiveness. Commercial banks differ in their sensitivity to digital finance due to differences in their asset allocation, ownership structure, resource limits, and business philosophies. However, the local economy can also benefit from digital banking, and commercial banks' digitization through technological investment may have a side effect of raising sustainable productivity. (Zuo, 2023)

This report does not delve deep into what can be accomplished with digital finance, but rather it researches how digital finance impact society and financial institutions. These impacts are researched by changes in employment, spending behavior of society, privacy and security of society and changes in regulations for financial institutions. Since these aspects have the biggest impact on society and financial institutions.

3.1 Digital Finance and Its Impact on employment in Banks & Financial Institutions

Because digitalization has increased the effectiveness of financial services and decreased the cost of infrastructure, it has significantly affected employment in the financial industries. The existing financial model has been disrupted, the availability of financial services has improved, and employment opportunities for underprivileged groups has increased. Additionally, the acquisition and analysis of user information to create intelligent risk control models is made possible through the emergence of digital technologies such as big data, cloud computing and artificial intelligence, thus changing the traditional production and lifestyle of resident households and helping to promote the diversification of residents' income sources. (Li & Liu, 2023)

The impact on the financial sector is also to be seen, with the number of employees in the industry declining by 6.6% between 2000 and 2020. This decrease in the number of employees suggests that digitalization has had a negative impact on employment in the financial sector, as automation has allowed companies to reduce the number of workers they need. Digitalization has also reduced the amount of human labor and increased the use of technology and automated procedures, changing the nature of work in the financial sector. This shift towards the use of technology and automated processes indicates that digitalization has changed the nature of work in the financial sector, as more employees are now focusing on the development and maintenance of automated systems and processes, instead of performing manual labor. (Deng & Liu, 2022)

Digital finance has led to the automation of various financial processes and transactions. Tasks such as payment processing, account management, and loan approvals can now be performed faster and with greater accuracy through digital platforms and algorithms.

Through the automation of financial processes, the job market has also changed. While some traditional job roles in the financial sectors have been impacted, digital finance has also created new employment opportunities. The paper of Deng & Liu says that professionals with expertise in fields including data analysis, software development, cybersecurity, user experience design, and digital marketing are needed by fintech startups and companies. Thus, these emerging roles contribute to job creation and the growth of the digital finance industry. These new jobs involve changing skill requirements for the employees. The nature of work in the financial sectors has evolved due to digital finance. There is now a greater demand for employees with digital literacy, technological proficiency, and expertise in data analysis and cybersecurity. To adapt to the changing environment, employees also require a mix of

financial and technological abilities (Deng & Liu, 2022). Customer interactions have transformed because of digital money. Customers are relying less on physical interactions as they use online services, smartphone apps, and digital platforms for their financial needs. Tellers and other traditional brick-and-mortar banking positions have declined as a result, while increasing the demand for customer support roles in digital channels. Furthermore, digital finance has disrupted traditional intermediaries and introduced new business models. For example, peer-to-peer lending platforms and crowdfunding platforms connect borrowers and lenders directly, reducing the need for traditional banks as intermediaries. This has affected employment in the banking sector but has also opened opportunities for professionals in alternative lending and crowdfunding platforms but has also opened opportunities for entrepreneurial individuals. (Mosteanu, 2020)

Certain job roles completely vanished while other job roles emerged. In the following figure, the most common job displacements and job creations can be found.

Job displacements:
- *Manual Transaction Processing*
- *Traditional Banking Roles*
- *Administrative and Back-office Functions*
Job creation:
- *Digital Banking and Fintech*
- *Data Analysis and Business Intelligence*
- *Customer Support and Relationship Management*
- *Cybersecurity and Risk Management*
- *Digital Marketing and User Experience*

Fig. 2. Alterations in job market through automated financial processes.

Digital finance does not only affect the employment in the financial industry, but in other industries as well. The paper of Li & Liu says that digital financial inclusion can significantly contribute to the growth of residents' total income and income from different sources, and the enhancement effect is more obvious with the increase of the use. As a product of the combination of digital technology and financial inclusion, digital financial inclusion largely improves the efficiency of financial services and promotes the growth of residents' income. The empirical results of the study of Li and Liu show that digital financial inclusion can increase the wage income of households by increasing their probability of employment, their business income by increasing their entrepreneurial opportunities and their property income by increasing their financial market participation. Their heterogeneity analysis shows that digital financial inclusion has a greater effect on the income of residents at higher income levels. (Li & Liu, 2023)

3.2 The Digitalization of the Finance Industry and its Impact on Clients

Digitalization has transformed the spending habits and patterns of individuals in several key ways. The paper of Setiawan says that these include the introduction of mobile payment systems and electronic payments, which are more convenient and secure than traditional cash and card payments; the expectation of future income fluctuations or increased expenditure pressure, which may lead to consumers saving more and consuming less; and the availability of online shopping, which has changed the traditional way of consumption. Thus, the availability of online shopping led to the increased use of digital platforms for shopping, the average frequency and value of spending on digital platforms, the choice of shopping using digital platforms for domestic product, personal products, leisure, and enjoyment. (Maman Setiawan, 2022).

The paper of Asia University says that individuals now have the ability to perform financial transactions in seconds at their fingertips while less fearing cash theft. Nonetheless, many individuals are still concerned about theft and unfair use of their financial data, which will be stored electronically when making transactions. These concerns are justified, the report will dive deeper into these concerns in the next sub-question. Digital finance has also enabled financial inclusion, which has improved mental and physical health and positively impacted the income and consumption of individuals and firms of small size. Additionally, it transformed spending habits through personal finance management, providing the ability to track spending and has enabled the development of new payment technologies such as mobile banking and internet banking. This increased awareness helps individuals make more informed decisions, optimize their spending, and achieve their financial goals. Finally, digitalization has enabled consumers to access more information, making them more empowered in their purchasing decisions. (Asia University, 2023)

The theory of technological determinism suggests that technology drives social and economic change (Technological Determinism, 2008). Digital technologies have a significant impact on society, including the way people conduct financial transactions, access financial services, and interact with institutions. The abovementioned introduced technologies are examples of technologies that cause social and economic change. It is crucial for financial institutions to keep up with emerging technologies and to remember and act upon this theory.

Digitalization has changed the spending behavior by making it possible to transfer capital from one location to another and between classes of financial actors, digitalization has changed people's spending habits and patterns. According to the paper of Mader this has led to differentiated credit pricing, serious new class distinctions, and easier outreach for financial service providers. These financial service providers are also changed because of digital finance, for example in the form of peer-to-peer lending, more about peer-to-peer lending in the next paragraph. Digitalization has also made it possible to analyze the large amounts of data produced by the weak and allowed for the expansion of governmental control over their finances. This expansion of governmental control could be helpful but could also be dangerous, especially in countries where the government is still not to be trusted, within countries that have a dictatorship for example. (Mader, 2016)

Digital finance ensured that individuals could invest their money online, this could be in either cryptocurrencies or all kinds of stocks. The total value of cryptocurrencies is around 804 billion dollar (James Royal, 2023). Online investing influences society as well as financial institutions a lot. The availability of buying stocks online has made it way easier to invest, which of course contributed to the growth of total money invested. As is evident from theoretical and empirical studies, the stock market has played a significant role within both the advanced economy and the emerging market (Masoud, 2013). Cryptocurrencies on the other hand are peer-to-peer digital exchange systems, cryptocurrencies are decentralized and operate independently from financial institutions. Cryptocurrencies as well as peer-to-peer lending

reduce the size and need of financial institutions. Peer-to-peer lending is supporting financial inclusion and economic growth by providing access to credit to the unbanked and underbanked individuals and SMEs. The historically low yield environment and a massive amount of high interest rate credit card debt also supported the rapid growth of peer-to-peer lending in the US. However, there are also threats and risks associated with peer-to-peer lending, such as credit risk assessment and credit defaults, lack of access to credit bureaus and reliance on alternate data sources, and the potential for regulatory challenges and legal issues. The rapid growth of lending volumes may lead to lower underwriting standards and increased risks to investors. Institutional investors may also threaten the peer-to-peer lending industry by seeking higher yields and potentially disrupting traditional banking profits. (Patwardhan, 2018)

Digital financial platforms enhance savings behavior and improve the welfare of individuals. The paper of Karlan says that because digital financial platforms have made it possible for people to overcome behavioral biases by boosting their memory and willpower, to gain access to a variety of financial products that address the specific constraints faced by less empowered groups, to reduce transaction costs in informal markets and strengthen risk-sharing networks, to take advantage of features such as commitment savings products, text-message reminders for savings and loan repayments, automatic savings contributions or default retirement account enrollment, and automatic withdrawal of insurance premiums from harvest proceeds. (Karlan et al., 2016)

Spending habits of society are formed through behavioral economics. Behavioral economics combines insights from psychology and economics to explain how people make financial decisions (Mheslinga, 2022). Behavioral economics helps to explain how financial institutions can react to or develop strategies for customer behavior and decision-making, such as through personalized recommendations.

3.3 Digital Finance: Privacy and Cybersecurity

Since the emergence of digital finance, there is so much online money traveling from all over the world via financial transactions. The world relies on the systems of the financial institutions. Digitalization has made financial transactions vulnerable to privacy and security concerns. The impact of these transactions is huge and the privacy and security is crucial for the whole society. Therefore, the investment in cybersecurity is about 170 billion dollars per year. Digitalization has significantly impacted the security and privacy of financial transactions, and has brought both challenges as opportunities. First it is important to know the difference between privacy and security. Privacy relates to users' data, particularly sensitive data that shouldn't be shared with everyone or only with the owner's consent. This prohibits any exploitation, unauthorized access, or use of it. Therefore, privacy means that everyone has the freedom to choose how much they interact with their surroundings, or how much data is appropriate for this involvement. Security is an older concept that deals with the protection of the privacy. The main aspects regarding security are availability, authentication, confidentiality and integrity. (Sen & Basahel, 2019)

Digitalization of financial transactions have impacted the security and privacy through the emergence financial technologies, they have provided innovative and convenient financial services, which on its way lead to speed and accessibility. On the other hand, they have raised new security and privacy concerns, one of the major concerns is the privacy of society through the unauthorized access to sensitive information. Cybercriminals have become increasingly sophisticated in cyber attacks, data breaches, and financial frauds.

The paper of Gai says that in order to address these concerns, financial institutions have taken measures such as improving security mechanisms in data storage and processing, conducting authentications and access controls through cryptography-based approaches, using attribute-based access controls for protecting customers' privacy, and developing privacy-assured searchable data storage in cloud computing. They have also focused on reducing financial cyber risks caused by unexpected third parties, unclear business processes, and large-range distributed usage. In addition, they have developed novel security mechanisms including proximity-based authentications, temporal location security tags, and using multimedia to strengthen access controls. They also have explored machine learning-based methods, semantic techniques, and ontology-based solutions to create knowledge representation graphs and to identify potential cyber hazards. Despite these efforts, traditional threats still persist, and financial frauds have emerged as a new challenge, forcing financial institutions to continuously evaluate and improve their security and privacy strategies. (Gai et al., 2017)

3.4. Digital Finance: Regulations

Digitalization has fundamentally altered the financial regulatory landscape by introducing new risks associated with the privacy and security of personal information of individuals. The implementation of financial regulatory requirements has led to the growth of the compliance industry and RegTech. RegTech is the use of technology to manage regulatory procedures within the financial sector. Regtech primarily focuses on tasks including monitoring, reporting, and compliance with regulatory requirements (Frankenfield, 2020). The use of RegTech has arisen from the high costs of complying with new institutional demands by regulators and policymakers, which has driven global centralized risk management and compliance functions. As a result of this shift, authorities have created technological and regulatory solutions to reduce risks and strengthen market integrity. A new regulatory paradigm that addresses digital identification, data sovereignty, and algorithm oversight is required as the banking sector transitions from KYC (know your customer) to KYD (know your data). The emergence of RegTech offers opportunities for more efficient reporting and compliance systems that better control risks and reduce costs. One of the major challenges concerned to RegTech is that regulators must develop regulatory approaches that allow innovation but limit risks to consumers and financial stability. (Arner, 2018)

Digitalization also increased the use of regulatory sandboxes, which offer the opportunity to pilot new regulatory architecture. The use of technology and data is driving a shift from relationship-based to data-driven banking and finance. The European Union has developed a centralized strategy to build a RegTech ecosystem to underpin the digital financial transformation. The road of the European Union to RegTech has rested upon four apparently unrelated pillars. The four pillars of extensive reporting requirements, strict data protection rules, open banking, and a legislative framework for digital identification together will underpin the future of digital financial services in Europe and drive a Big Bang

transition to data-driven finance. The conflicting requirements of data regulation and financial regulation present challenges for the financial industry globally. Consumers and society may face negative implications from these changes if risks such as cybersecurity breaches are not effectively addressed. (Zetzsche et al., 2019)

4. Discussion

Digital finance has significant effects on financial institutions and the financial sector as a whole. The effects of digital finance extend even beyond the financial sector, there are effects for the whole society. The main effects are increased financial inclusion, digital finance has the potential to reach underserved populations, providing access to financial services to those who were previously excluded. Another main effect is the increased efficiency and convenience. It is easier for customers to access financial services, reducing wait times and providing more personalized experiences. Furthermore, Digital finance has the potential to streamline financial processes, reducing transaction costs, and increasing efficiency for financial institutions. These streamlined processes lead to the automation of tasks which on its way lead to job transformations in the financial sector. Since Digital finance became so huge another main effect is the privacy and security risks. Cybercriminals have become increasingly sophisticated in cyber attacks, data breaches, and financial frauds, while privacy of unauthorized access to sensitive information is more important than ever. To make sure privacy and security is guaranteed to society, there are regulations in place and the regulatory framework is constantly adjusting to the new privacy and security rights of individuals.

The sub questions used in this research are all interconnected. They helped each other answer the main research question of what are the effects of digital finance in society and financial institutions. Digital finance changed employment in the financial sector, employment influences society as well as financial institutions. In general, society represents employees and financial institutions represent the employers. Through the automation of tasks financial institutions need less employees, this means there are less employee opportunities for society. The impacts of digitalization on employment in the financial sector extend beyond just the job market. They reflect broader shifts in the economy and society, such as the automation of tasks, the need for upskilling and reskilling, and the changing nature of work in the digital age.

The impacts of digitalization on employment lead to higher wages and less working people. This has an effect on the spending behavior and patterns of clients of financial institutions as well as the society as a whole. Spending behavior is formed through technological determinism and behavioral economics. The transformation of spending habits and patterns due to digitalization reflects the influence of technology on consumer behavior. It highlights the increasing reliance on digital platforms, within the whole society

Spending behavior also includes the systems which individuals use to perform their financial transactions. Spending behavior is significantly changed through the advent of mobile banking. The new financial systems as mobile banking has driven the need for and importance of privacy and security. The discussion of digitalization's impact on the privacy and security of financial transactions raises concerns that are relevant beyond just the financial sector. It underscores the broader challenges of protecting personal data, maintaining privacy rights, and ensuring cybersecurity in an increasingly digital world.

To ensure the privacy and security rights there are regulations needed. This has caused the advent of the constantly changing regulatory landscape for financial institutions. Due to digitalization, the regulatory landscape reflects a broader trend of adapting regulations to keep pace with technological advancements. This highlights the ongoing challenge of striking a balance between innovation and regulation in various sectors impacted by technology.

As mentioned, all the sub questions are interconnected. In figure 3 this is made visual. It highlights per question the main findings that connect to the other questions. For example, the alterations in jobs through automation led to mobile payment systems, which on its way led to privacy and security concerns that need to be regulated.

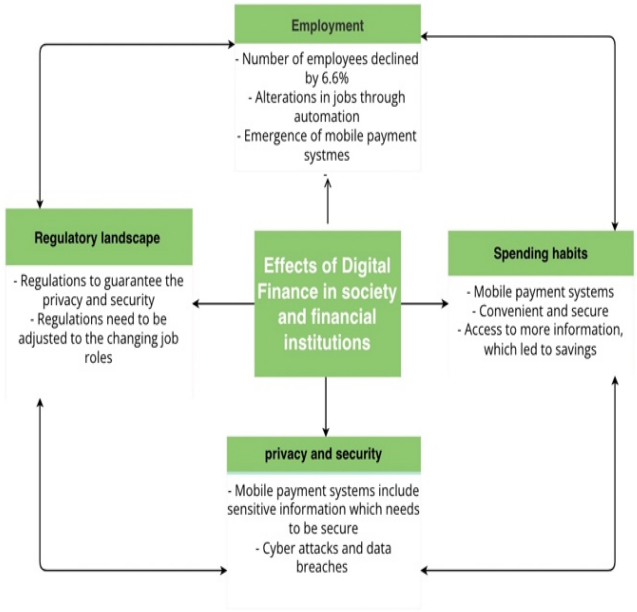

Fig. 3. Connections between sub questions, to answer main question.

5. Conclusion

The objective of this paper was to investigate what the effect of digital finance on society and financial institutions are. The effects of digital finance on society and financial institutions can be summarized by the following points: digital finance increased financial inclusion, increased efficiency, and reduced expenses. It also has the ability to streamline financial operations, lower transaction costs, and boost financial institutions' efficiency. As a result of these streamlined processes, traditional banking models have changed, and new financial services including peer-to-peer lending, crowdfunding, and robo-advisory have emerged.

This study tried to include the most relevant articles and for that reason used exclusion criteria. The exclusion criteria led to certain limitations. This study only searched to relevant articles on scopus and google scholar, it only checked papers from the last 10 years and the study only used peer reviewed

articles or academic reports. When this research is being reviewed, these limitations should be considered.

Future research is needed to keep up with the constantly evolving environment of digital finance. Mostly regarding the ethical and social implications of digital finance, in order to deal with the privacy and security concerns, which is one of the major limitations. But also, there is further research needed on the impact of financial stability. As it becomes more clear what the effects are on society and financial institutions, it is crucial to investigate how digital finance impacts financial stability to avoid scandals or crises in the future.

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