Tomorrow's Corporate Finance

The impact of digital evolution on the financial function

and the role of the CFO

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Dissertation submitted in partial fulfilment of the requirements for the degree of

MBA Finance at Dublin Business School

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January 2020

Declaration

I declare that this dissertation submitted to Dublin Business School for the award of MBA Finance is the result of my own investigations, except where otherwise stated, where it is clearly acknowledged by references.

Furthermore, this work has not been submitted for any other degree.

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Dublin Business School

Acknowledgements

First, I would like to thank the administration and lecturers of Dublin Business School for their educational support, and the strong quality of the courses they organized.

I would especially like to thank my research supervisor, Enda Murphy for his excellent lectures throughout my year at Dublin Business School, and above all for his strong supervision during the semester dedicated to this dissertation. His availability and his precise guidance allowed me to better orientate and achieve my research.

I wish to extend special thanks to every person who participated to the study, on the first hand the 45 people who took the time to answer the questionnaire, and on the other hand the five people interviewed for the qualitative study for the valuable time they gave me despite their busy schedules. They have provided me precise information and have greatly contributed to the quality of this study.

I would also like to thank every people who have written their studies (who are quoted in references) that I used to complete my paper and people who made these analyses available.

Finally, I would like to thank my family and my friends for their support, encouragement and their patience all along this work. And especially my parents, Christine and Jean-Luc, for the efforts they make every day to offer me a good education.

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Abstract

Digital technologies have started being developed for some time now and made today's world totally digitalized. Digital sources have already improved business processes at a high level and its opportunities for evolution are endless.

The financial department plays a key role in the company, many studies have examined that digitalization has an impact on corporate finance: the past finance is not the same as today's and tomorrow's finance.

The aim of this research is to know more about the future impact of digital technologies on the finance department and the challenges CFO's are facing while implementing new digital processes. The study involves an analysis of the literature supporting this topic and mixed primary research, based on one-hour interviews with five decision-makers from financial departments and the questionnaire that had been shared online to all financial workers.

Key words: digital – digitalization - corporate finance – CFO – managers – performance monitoring - dematerialization – automation – artificial intelligence – change management

1.Introduction

The overall topic of the dissertation is the digital change in the financial departments. It considers literature evidences on the impact of technological development on the finance function, the importance of digital to improve the financial department's processes, the role of the CFO in that change and the resistances to change that can exist inside a business.

The world is becoming digitalized more than ever, as well in people's personal or professional life. In professional life, technologies brought new means of work that allowed businesses to gain productivity, efficiency, customers loyalty… Digitalization has impacted every function in all sectors. In finance function, digital solutions are multiple, but most of the time their use is not optimized in financial services of companies. This dissertation focuses on the impact of digital in this specific department.

The attention is focused on financial departments for many reasons. First, this department plays a key role in the development of a company and the multiplication of tools is leading them to rethink the way they are working, using technology to improve their performance. Secondly, although digitalization and technologies are taking a huge place in our daily life and work, there is no such research paper available to date, even if there are studies from big advisory companies, which are predicting the future of financial departments. However, various researches were made about how digitalization is affecting financial markets and the banking sector or even the other business in general. Moreover, the writer has a solid background in corporate finance, due to her many internships where she could observe that companies are in process to change their habits in using technological tools more wisely (document dematerialization, process automation...).

In the first chapter, the dissertation will discuss about recent literatures which are central for the subject, to demonstrate especially the impact of digital technology on corporate finance businesses. The next chapter will explain the methodology used for the research and it will be followed by the data analysis, findings and discussion.

The following section will introduce the background of the study to provide a fist insight on the topic before providing the overall research question and the explanation of the research objectives and hypothesis.

1.1. Background

In today's world, the old management companies which are still using traditional methods of work are falling (Corporate Leaders, 2018). "Digitalization" - defined as the process to converting something to digital form (Merriam Webster – 2019) – has become a force to drive businesses, innovations and it became the new standard for companies (Barrett et al., 2015). Companies around the world are facing a new competitive reality, linked with the rapid evolution of technologies, new market entrants and the constant change in customer requirements. It requires firms to take the necessary measures to ensure their survival (Teradata, 2019).

In opposite to the common belief, digitalization does not only impact companies in the technology sectors. It affects all types of companies in every sectors (Elvis Gonzalez, 2016). Indeed, options of digitalization are very large, they simplify traditional data compilation and centralization of processes.

Digital technology is used in many departments, in various ways, to improve performance (McLaughlin et al., 2018). In manufacturing companies, digital is commonly used to improve productivity, and it's called digital manufacturing. One relevant example when it comes to digital manufacturing is Tesla. Intelligent automation is one of the main characteristics of its production model. New technology such as automation, data collection, and automated industrial research are used by the factory. In California, Tesla's factory is already using 200 robots to perform procedures such as welding, assembling and painting (Finch, 2019). Digital transformation has also impacted lot of marketing and communication practices in companies. First, it has made communication more efficient, increasing the transparency and the instantaneity of the information. Digital allowed companies to get a better relationship with their customers (O'Brien, 2016). Digital marketing practices are also making the customer experience better with the customization of products and a better targeting (McLaughlin et al., 2018). All these technologies also simplify the transmission of information within the company, as they provide reliable and useful information for decision-making (Teradata, 2019).

Finance departments are especially concerned by the digital transformation, first of all with the accelerated automation of accounting tasks, but also by the fact that they are fully involved in the interconnection and processing of all the company's data, which is becoming increasingly reliable and easier to obtain (Noriega, 2019).

The financial department is an essential service for the company. Indeed, it helps managers to make decisions (Cohen, 1991). In this way, it collects the sums necessary on a given date to finance a given activity and helps to manage risks and regulate the company's situation in accordance with the legislation. Good management of the financial department, therefore, allows better profitability and optimization of the company's performance (Cohen, 1991). It is thus essential to optimize the performance of this department and digitalization may be the key (Mennesson, 2019).

The evolution of finance functions is mainly related to the digitalization of process. Digital is leading finance to impose a new operating model. As tools multiply at high speed, it is essential for finance heads to consider current and future changes in order to identify the new skills to be developed, especially as the traditional tasks of the function become more automated. However, it is difficult to measure the potential of these new technologies on financial departments and especially their impact (Mennesson, 2019).

Studies have shown that many companies have failed to implement their digital strategy (Morgan, 2019), but the company's performance level often results from its ability to follow these transformations without slowing its productivity (Herbé, 2017). However, managers often face resistance to change[1] from their employees, often due to a lack of capabilities or investment on their part (Nishimata, 2018). According to an article published by Forbes in 2017, Change Management[2] is an effective partner in digital transformation. While 40% of companies studied have integrated digital issues into their strategy and 60% say that the transformation to digital is a medium-term priority, Change Management makes it possible to effectively involve employees in this transformation. It helps to address resistance to change and helps employees adopt a new model and the work practices that goes with it (Herbé, 2017).

[1] Concept explained in the definition of term, p16, and in the last part of the literature review (change management p32)
[2] Concept explained in the definition of term.

1.2. Research Specifics

Research question:

How CFO could overcome the challenges that come with digitalization in financial departments?

Secondary questions:

How digital can helps finance departments to improve performance?

What are the challenges that CFO will face while implementing a digital strategy?

1.2.1. Research hypothesis:

The overall research hypothesis is that financial departments have an infinite number of digital solutions at their disposal, nevertheless their use is not optimal, and they need to implement an efficient digital strategy.

More specifically, there is four hypotheses:

- **H1:** Digitalization will impact the organization of work for every role in the Finance Function including CFO
- **H2**: Business benefits realized to date could be improved upon
- **H3**: There are skills gaps and training needs if Digital is to be correctly addressed
- **H4**: Change Management is a required skill for CFOs at present and in the future

1.2.2. Research objectives:

The objectives of this project is to know more about how financial functions will evolve in companies in response to all these new technologies and innovations. Indeed, this digital transition has already changed the way companies operate, yesterday's financial management is not the same as today's and tomorrow's either. Because we, master’s students in Finance, are entering the financial sector soon, we need to know the challenges we will face in our profession.

The author set up five main objectives for this research:

- **O1**: Understand current and future impact of Digital on CFO role and Finance Function
- **O2:** Identify the principal business benefits that may be realized
- **O3**: Identify the principal challenges posed
- **O4**: Assess the evidence to date regarding the way Digital has impacted and been managed
- **O5:** Evaluate future developments

1.2.3. Research contribution:

This research will aim to add insight into how digitalization is seen and used inside companies and especially in financial departments. It will affect directly the organization because it will also provide examples of companies, feedback from the employees' point of view and above all an argument on the importance of digitization to improve performance in financial departments.

Moreover, having the view of CFOs about how they will implement their digital strategy and what are the obstacles will allow other CFOs to get inspired and to have a better approach to digitization.

1.3. Definition of terms

This section is defining the key terms of the study. These definitions are taken from Business Dictionary (2019) as they are considered by the author as giving brief and complete meaning.

Digitalization is the introduction of digital technologies in everything that initially doesn't include digital. It can be applied as well in everyday life as at work. ***Digitization*** and ***digital transformation*** are also term that are describing this phenomenon.

Corporate finance is the department that deals with all the financial aspects of a company, in particular accounting and investment.

Change management is a structured approach implemented by company's leaders to minimize the resistances to change and succeed the organizational change.

Resistance to change relates to the actions of people when they see a transition that is coming to them as a threat.

2.Literature review

2.1. Literature Introduction:

This part is providing an introduction of the literature, starting with the strategic role of the finance function in company, then describing the history of digital in finance departments.

2.1.1. Role of the finance function in company

It is difficult to evaluate a company without considering its financial aspect. Indeed, the main purpose of a business is *to maximize profit for its owners* (Mildton Friedman, 1970).

The finance function in a company is really important as it plays a key role in the maximization of profit (Roland, 2016). It provides all the necessary information for the better strategic decision-making. First of all, it ensures that decision-makers will have the necessary funds to finance a particular activity and that the company's capital is invested profitably. It also pays great attention to risk management to limit the financial risks that could cause harm to the company. The financial ratios established by the finance departments provide a diagnosis of their performance that makes it possible to know its financing capacities and to plan any development strategy.

Figure 1: Main activities of finance functions

For Fabrice Roland, expert in company consulting (2016), financial management is guided by three criteria that are necessary for the sustainability of the company: profitability, solvency and liquidity. If profitability seems obvious according to Friedman, solvency and liquidity are also two very important points for the company’s development. To develop itself, a company needs to have loans and banks are cautious about risk and only provide money to solvent companies. Liquidity is also something that banks look at when they lend money and it’s important to have cash in case of emergency (Lewis, 2017).

2.1.2. History of digital integration in financial departments

This topic has been constantly discussed since recently but it’s in the late 1990s and early 2000s that processes started to be computerized and digital has been implemented in companies (Auriga, 2016). Historically, the implementation of digital technology in finance even started in the late 1970s when VisiCalc, the first calculator table for computer was launched. At that time, more than 700,000 copies of this software had been sold in six years. Microsoft Excel then appeared and became the largest player on the market (Wright, 2019). Nowadays, Microsoft Excel has become an integral part of businesses and especially finance departments around the world (James, 2015). Many companies saved hours and days to manage enormous amounts of financial data, thanks to this worksheet file. Especially thanks to the numerous Excel formulas, a large part of the work has been automated and financial professionals don’t have to calculate everything manually anymore. (James, 2015). In the basic financial accounting, Microsoft Excel is also very popular, especially in small and midsize organizations, as they use it to track financial transactions and simplify the analysis by creating graphs and tables. Excel is also used in financial departments to analyse the performance, via the calculation of ratios as ROI (James, 2015).

In a latest study of Genpact Research Institute made with 160 F&A service customers, the effect of digital change on the financial function is evident. 84% of participants agree that companies which undertake digital conversion across businesses will exceed their rivals within the next two years. Besides, 3/4 said that the digital technology wave changes the operation of the finance function (Dunkerley, 2019).

Management information is increasingly integrated into the ERP structure and nowadays, management control is mainly carried out by ERP in big company. It allows decision makers to have a global and very precise view of information flows letting them refine and accelerate decision-making. Moreover, by removing the constraints of collecting and storing information, automatically publishing monitoring reports and accelerating feedback procedures, ERPs are a means to improve information production and control, making it possible to introduce new practices or new control methods (Hall, 2019).

Our whole society is driven by technologies and we are entering the second phase of digitalization in companies. For Susanne Liepmann, CFO of Ethyfarm Group (Daf-Mag, 2019) the first phase of digitalization is the change that general spreadsheet software made by bringing efficiency and reliability to the finance function. The new digitization, however, is encouraging a complete rethinking of the finance function, to transform it. Today, organizations have become aware of the need to use digital technology to adapt to the new realities of the competitive environment and the changing consumer behaviour and expectations (Boutteau, Naim, 2019).

2.2. Challenges of financial departments nowadays

2.2.1. Companies are suffering from inefficient process

According to a study realized by IDC, businesses are losing 20% to 30% of their annual profit due to inefficient processes. Despite that, many organizations' leaders keep being satisfied with their current applications and systems, even if they are outdated (Candito, 2016).

The cause of this poor process efficiency is partly explained by a concept developed by the American sociologist Diane Vaughan, called normalization of deviant. This concept means that people, within an organization, become so used to a "*deviant*" behaviour – or inefficient process – that they don't consider it "*deviant*" – or inefficient (Henshall, 2017). This concept therefore explains the fact that bad processes are not identified, because they are deep within the companies and they are accepted by both corporate structures and culture.

In finance and accounting departments, there is a heavy reliance on manual processes and installed systems that lead to inefficiency, increased risk, lack of visibility and control, which leads to an overload of work for accounting teams. According to a study conducted by the French magazine Finyear in 2019, 95% of corporate executives have full confidence in their accounting data, compared to only 56% of financial professionals. As a result, 67% of the professionals surveyed believe that their company has already made important decisions based on obsolete or incorrect financial data (Partners, 2019). The multiplicity of data sources (41%) and the process of collecting and processing this data (35%) are the two main elements questioned by respondents who concede a lack of confidence in the accuracy of their accounting information. The skills of the people who entered them (30%) and human error (24%) follow, while 14% point to the lack of automated controls or technologies in these tasks. Companies are therefore seeing digital as an opportunity to face these difficulties and improve the performance (Mennesson, 2019).

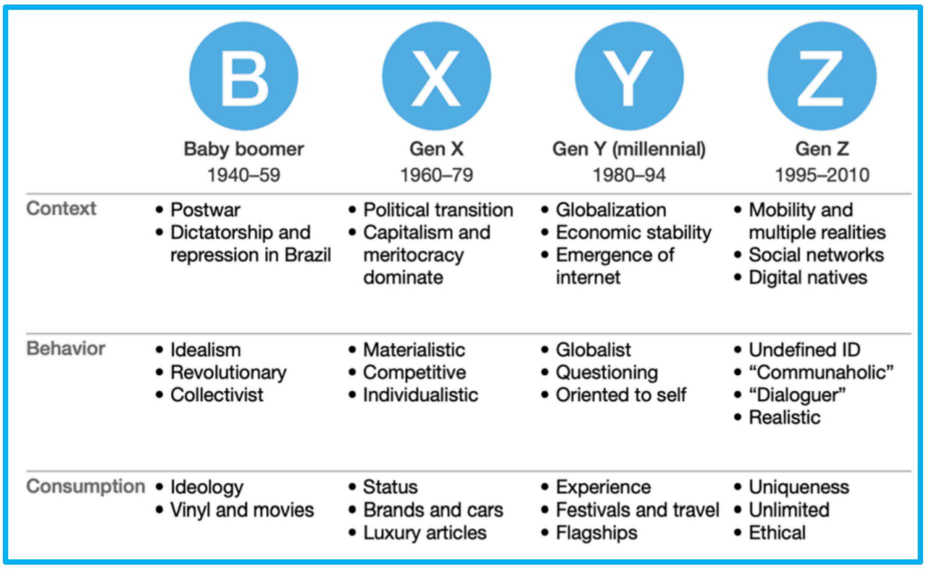
Nowadays, many companies are suffering from poor system integration (Boss, 2016). Indeed, with digitalization and the increase of automation, the integrated processes are becoming more and more important to succeed. For example, in the sale centre, workers have to be conscious of all customer management systems in order to constantly improve the consumer experience. Nevertheless, if no unified solution exists to access all these data, they must continuously move from one source of information to another, and uncertainty or productivity gaps can arise (Boss, 2016).

From the start of the digitalization process, impact on productivity was difficult to measure and the famous economist Robert Solow said in 1987: *"We see computers everywhere, except in productivity statistics."* This phenomenon, called the Solow paradox, could be back nowadays (Krishnan, 2018). Indeed, organizations are allocating considerable time and resources to develop and adapt themselves to the digital world. A study made by McKinsey Global Institute in 2018 measured the future global productivity growth to at least 2% annually while nearly 60% will come from digitalization. However, global productivity growth is now stagnating around 0.5% per year (Remes, 2018).

2.2.2. Challenges of generation Z who are entering in the professional world

Technology has brought young people and the rest of the world an unparalleled degree of accessibility. It facilitates changes in populations and accelerates technology developments. The move will pose both obstacles for businesses and incentives that are equally attractive (Francis and Hoefel, 2018).

As the millennials and Generation Z seals the employee's slots, the personality characteristics and styles of work to be learned are new but may not be as difficult as expected by managers. Even if the actions of Generation Z as a collective may vary from that of centuries, CEOs did not change their style of managing. Generation Z seems finally closer than baby boomers and Generation Xers (Mendoza, 2019). Daniel Sanchez Reina, an analyst at Gartner, stated: "*CEOs cannot guide the Generation Z in the same manner that they direct millennials*".



	Baby boomer 1940–59	Gen X 1960–79	Gen Y (millennial) 1980–94	Gen Z 1995–2010
Context	• Postwar • Dictatorship and repression in Brazil	• Political transition • Capitalism and meritocracy dominate	• Globalization • Economic stability • Emergence of internet	• Mobility and multiple realities • Social networks • Digital natives
Behavior	• Idealism • Revolutionary • Collectivist	• Materialistic • Competitive • Individualistic	• Globalist • Questioning • Oriented to self	• Undefined ID • “Communaholic” • “Dialoguer” • Realistic
Consumption	• Ideology • Vinyl and movies	• Status • Brands and cars • Luxury articles	• Experience • Festivals and travel • Flagships	• Uniqueness • Unlimited • Ethical

Figure 2: Today’s young people differ from yesterday’s - McKinsey study, 2017

Generation Z is conceptually living first digitally in our modern world, making it the best generation to predict customers and constituent their desires. (Mendoza, 2019). “*We are well placed to determine emerging digital products and services’ potential value*”, said Reina. According to a Gartner research of 2019, in 2025, it is Generation Z who can expect highly valued technical skills.

2.3. Business benefits that can be realized

2.3.1. Implementing digital allows to improve performance in financial departments

According to a PwC study of 2019, the use of new technologies, tools and new operating methods allow the company to position themselves more efficiently so that their employees can perform better. Its Benchmark Study for Finance Effectiveness identified several main characteristics of such successful financial teams.

Growth in company's value

Task automation and better information processing enable staff to improve their abilities in more complicated services to focus on activities that require expertise and generate values (Hirji and Bishara, 2019).

Digital allow to save a huge amount of time

With digitalization, companies record that they can complete the report of closing month-end cycles. in less than four days high performers report completion of closing month-end cycles. Integrated instruments in planning and rolling forecasts allow teams in less than a week to prepare forecasts and budgets.

Digitalization is improving the performance of the financial department and also makes it possible to considerably reduce the gap between forecasts and the final result. If this gap reached 25% a few years ago, which could lead to a loss of management confidence, which is no longer the case today.

In addition, its accounting balance sheet is now released on January 8 or 9, whereas previously it was in March or April. (Noriega, 2019). Any financial restructuring plan needs an on-demand closing. It's important to leverage expertise and gain organizational knowledge by enabling financial closeness to a data-driven digital strategy. Leading companies invisibly conduct corporate and administrative processes and intelligently execute strategic and evaluation activities. In fact, automated reconciliation and inter-company reporting branches have been remarkably successful. Many of these systems will soon run like a machine and contribute to activities without interaction. The financial role becomes more knowledgeable by applied simulations in their heart of machine learning, computational linguistics and computer sight (Saxena, 2019).

The webinar noticed that most businesses use software to close their accounts promptly. For example, the transformation of its R2R feature, including improves process standardization and lower funding costs, near efforts and reporting time, had a significant effect on Mondelĕz International. Redesigning the closing process means deleting many profiles, manual scrolls and reconciliations, and disconnected files. Digital controls streamlined procedures, aligned structures and organizational structures, together, provide faster and efficient closing. Allow the team to work on more value-adding tasks, gain trust in the statistics you produce, and provide high-quality feedback that generates an agile financial process.

2.3.2. It allows a better reliability of information

While companies often focus on customer interfaces in terms of digital evolution, a study conducted by Cognizant in 2016 reveals that they too often neglect the performance of their internal digital tools, especially in the financial sector, where the back office could be a way to streamline operations and processes (Pring and Roehrig, 2016).

Automation also allows to limit the number of errors in financial statements and analysis (Hirji and Bishara, 2019).

Opportunity using blockchain:

According to a 2018 article from Forbes, “*blockchain is a series of connected blocks or boxes*”. Each block includes operation-specific data. Each new operation adds a new block to the chain to form a database that contains an infinite amount of information (Mulhall, 2018). Some analysts also say that "blockchain" might probably end the banks with the infrastructure underpinning Bitcoin's digital currency (Grewe, 2016). If blockchain is more commonly known in the financial market, it represents just a few of the possibilities of Blockchain technology, which maintains an authentic digital transaction directory and moves it across a computer server for several users.

Figure 3: Blockchain Technology

The advantages for CFOs and their finance departments are overwhelming: Increased rates of data accessibility, quicker availability of information and innovations such as' smart contracts' would improve financial operations dramatically (Walker and Sehgal, 2019). One of the following features was listed in the recent report by KPMG analysts:

- **Increased efficiency:** a single leader that is coordinated constantly in the entire network reduces mediation criteria. KPMG research suggests that the productivity of a "*single version of the truth*" delivery improves by 40 percent.
- **Reduced failure and fraud:** permanent archives that all members see can improve data integrity and protection. The danger of scam can be reduced and compliance showed via an audit trail.
- **Better customer experience:** Blockchain will enable companies to share details with suppliers and retailers to serve people better and even find new selling possibilities.

- **Better capital availabilities:** Blockchain technology would reduce capital demand, according to KPMG research, thanks to the quicker settlement of transactions, transparent distribution and free transfers of money.

Blockchain's effect on financial activities will also be important. Such key developments are expected in the study by KPMG researchers. Based on current systems, Blockchain will not replace the existing ERP frameworks immediately. Nevertheless, the implications of blockchain's real-time datasheet will take time to completely understand (Grewe, 2016).

Go private, and then public. Financial companies continue to maintain sensitive information for private blockchains, but they could then give access to blockchains with corporate partners and even clients.

Take into account the regulation gap: government regulators require time to understand the technologies and decentralize financial activity

2.3.3. Reduction of cost and better profitability

The use of software and its new technologies makes it possible to simplify processes and combine some tasks. Operational costs are then reduced, allowing actors to focus on cases requiring more attention (Justenhoven and Loits, 2017).

Optimizing selling process to optimize the cash flow

Increasing payables should be a core strategy when it comes to optimizing working capital. Most companies work on this path to optimize free cash flow by stretching their budget as long as possible. That strategy is sadly not always right. Unfortunately, Payment postponed will, in some situations, erode goodwill contributing to longer delivery times, poorer commitment to repair errors, quicker replies to demands, and more costly payment terms. In the case of vendors receiving early payment incentives or rebates, early payment can sometimes be substantially advantageous (Bryc and Huey, 2019).

Companies should adopt best practices like centralized payment management and monitoring throughout the organization via a shared service system to ensure that all workers conform with common practices and expectations and assess their success against established business metrics. Moving to an environment of paperless processing. Though not for everyone electronic data transfers, companies automating their payable payments processes by allowing electronic communication with manufacturers to benefit significantly from making deals or rebates accessible. Establish service databases so that vendors can track order status, distribution dates, possible inventory defects and receive payments electronically. Develop service records that enable retailers to monitor order status, delivery times, product shortages and electronically received payments. Reinforcement of permits by specifying the management authority standard needed to make transactions in different sizes (Bryc and Huey, 2019).

At **Stormshield**[3], within the Finance Department, purchases are automatically and securely recorded and paid, this represents the equivalent of a full-time position, i.e. 50,000 euros carried over to higher value-added tasks. Travel expenses are managed automatically; without a proactive cost reduction policy, the simple fact of implementing expenditure ceilings by nature, controlling the booking of first or second classes, etc. has generated savings of 25,000 euros per year. As for supplies, which were better controlled and more finely anticipated, they made it possible to reduce stocks from 11 to 7 million euros in one and a half years (Justenhoven and Loits, 2017).

[3] Data collected at a round table organized by WalterFrance in Lyon, France, where several business leaders and recruiters analyzed the impact of digital transformation on financial management in October 2019.

Using cloud can reduce inventory costs

For large companies, dematerialization represents the main equipment project in terms of digital tools (Finch, 2019). In this way, there are more and more companies and therefore financial departments that are using the cloud to store data (Figure 4). It allows them to obtain advantages that go far beyond cost-effectiveness and improving processes, which are the main objective of a CFO (O'Brien, 2017).

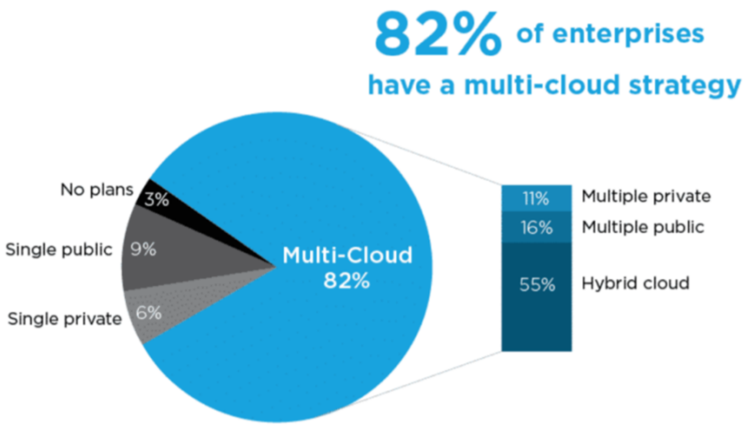


Figure 4: The majority of large enterprises use multiple clouds, RightScale 2016

Now that the broad use of cloud computing is relatively new, several businesses remain concerned that cloud applications will be introduced (Turco, 2013). Switching to a cloud system may seem redundant and inconvenient for businesses with existing IT departments and facilities. However, this technology may offer significant financial advantages such as budget savings and higher productivity in workplaces. In reality, a 2013 study made by Rackspace on 1,300 firms found that 88% of cloud users saved expenses and 56% had an increase in their profit.

A cloud computing benefit is that storage expenses are minimized. The infrastructure requirements are transferred to the manufacturer instead of using on-site facilities. Off-site hardware eliminates the cost of power and reduces the cost of inventory (Turco, 2013). Huge data centres can hold expensive office space and generate a lot of electricity. Going to cloud systems or storage will then make room optimum and reduce energy costs significantly. Cloud systems can also result in significant cuts in manpower and maintenance costs. Apart from the obvious labour benefits, the improved staff efficiency of Cloud Computing can also make it highly cost-effective for businesses. Cloud software delivery is much quicker than conventional deployment and it may take a few hours instead of requiring weeks or months for regular company-wide deployment. This implies that workers can wait less time and work longer. In a "*pay-as-you-go model*"[4], cloud services are available. This format offers numerous forms of savings and flexibility. Most importantly, the software not used must not be paid for by your company. Cloud technology usually costs only per user, unlike an up-front license (Turco, 2013).

2.4. Focus on the role of the CFO

2.4.1. The role of the CFO is changing with digitalization:

The financial manager has evolved over time. He was an accountant in the 1980s and a business partner in 2010. Today, he acts as a strategic advisor to the Executive Board (Francoise, 2018).

Recently, the Finance Function and its employees have been facing many organizational, technological and regulatory changes. According to a study[5] conducted by the American consulting firm McKinsey & Company, CFOs are increasingly involved in activities that go beyond their traditional scope. Indeed, 38% are responsible for IT-related projects. Thus, CFOs

[4] Digital data storage where the company pay according to the number of data.
[5] McKinsey survey, December 2019

have the responsibility to support their organizations in their digital transformation and that’s their objective (Figure 5).

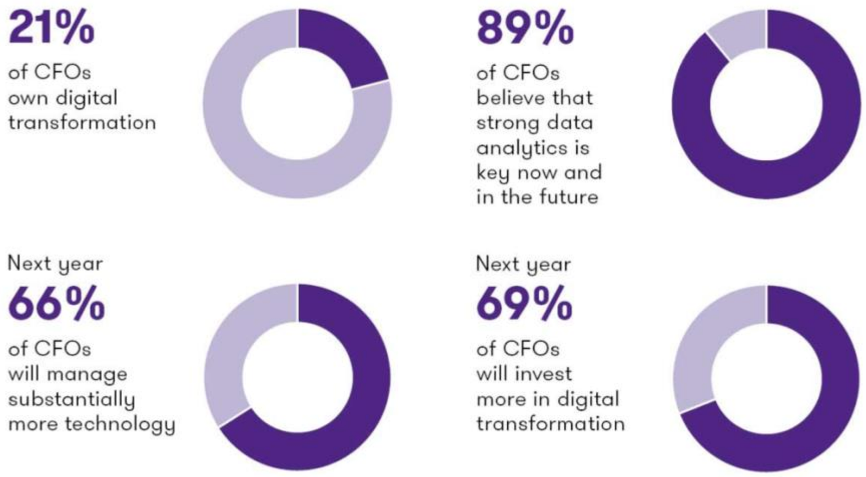


Figure 5: CFO Insight on new technologies- Grant Thornton study (Sastry, 2018).

According to a PwC study "*CFO Priority 2018*", 73% of CFOs define performance management as their short and long-term priority. Managing performance means giving their employees the resources to create more added value and tools to effectively define their company's development strategy. Their second objective is the development strategy. The CFO is no longer restricted to traditional financial issues. He plays an advisory role and is involved in the company's strategic decisions. He became “*Chief Performance Officer*”, a referent in terms of operational performance. The third priority is process optimization: reducing financial information production times (67%), improving information quality (52%), achieving productivity gains and reducing costs (46%), all objectives that can be achieved through dematerialization. Thus, the digitalization of incoming flows is seen as a benefit by CFOs. It allows repetitive but essential tasks to be performed more quickly and efficiently.

2.4.2. New role of CFO and finance function

The digitalization of the finance function has clearly brought about many changes in the role and missions of the CFO. From now on, he works closely with his CEO to develop the company's development strategy and ensures its execution (Domrane, 2018). The function of the CFO is evolving with these three objectives: monitoring, data exploitation, and performance. Monitoring improves the organization's performance by using new indicators, algorithms, and more developed processes, it is able to evaluate performance. With the data, the CFO manages digital transformation, dematerialization, data processing, and exploitation projects, in his department but also in the other departments of the company (HR, Logistics ,etc.). Moreover, he is the author of the company's organizational and technological changes. His strategic vision is applied across the entire company to drive it to the top (Domrane, 2018).

Generally, digital technology is driving Finance to reorganize itself around three major components (Simao, 2018):

- Analysts: their role is to assess trends that impact products, customers, projects and expenses. Their data mining allows them to identify the financial impact of each operational event or decision.
- Cross-functional teams: the majority of traditional financial services will now be provided by integrated service teams.
- A control and communication centre which manages the basic responsibilities of finance (accounting, compliance, taxes, treasury, risk management, communication, and investor relations).

A recent study by Gartner revealed that operational business knowledge became as much as important as finance function management for the new CFOs (Figure 6).

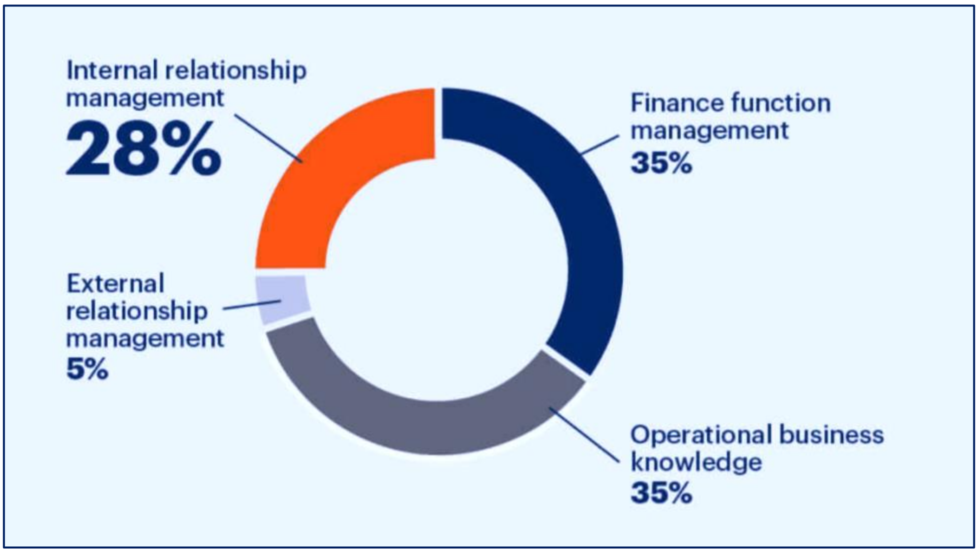


Figure 6: Most important development area: new CFOs - Gartner Study (Humphreys, 2019).

2.5. Using change management to implement the digital strategy

To implement a successful digital strategy, the CFO has to choose wisely what digital tool and solution could be used to improve the performance of the financial department. He should have good leadership qualities to implement a digital strategy, and it's essential that he has a clear vision of the future and a clear path to pursue (Domrane, 2018).

2.5.1. The difficulty to implement a digital strategy:

An article from Forbes in 2019 is revealing that 70% of digital transformation strategies are failing. While most businesses and managers know how critical it can be to create software and develop digital processes and technologies, they are not many to succeed when implementing them (Morgan, 2019). In that way, in 2012, Procter & Gamble wanted to be "*the most digital company on the planet*"[6], but the economy was fragile, and it faced many challenges. Burberry was the best digital luxury brand in the world but after the first improvements, performance

[6] Harvard Business Review, March 2018.

started to decline. Ford has invested heavily in digital strategies to see its share prices fall elsewhere in the company due to high costs and quality issues. All these companies have spent millions of dollars producing digital products, infrastructure, and have failed to achieve the expected performance, which has had the opposite effect to that expected (Morgan, 2019).

Several challenges come with digitalization because digitalizing means redefine the way of doing things, it can be costly and in the same time difficult to measure the potential and the impacts. A study showed that businesses waste almost $400 billion annually on digital projects that fail to produce the expected return on investment (Genpact, 2019). However, numerous studies believe that enhanced technology would increase the efficiency of finance procedures and 70% of CFOs expect digital innovations to alter the way they operate their financing organization (PwC, 2019).

The main cause of digital transformation failures comes from the fact that it does not pay attention to the human factor (Cuvelliez, 2018). A recent McKinsey study shows that 70% of corporate change programs fail primarily because of employee resistance (Tams, 2018). Digital transformation is changing ways of doing things that have always worked well before and it is rarely a question of correcting a malfunction. Companies often face resistance to change from their employees. For Charles Cuvelliez, Professor at the University of Brussels, top management will be even less inclined to change the way they do things. He affirmed "*After all, if they have managed to move up, it is because of the old ways of working*".

Another challenge of the CFO that comes with digital is to insure the cybersecurity. Indeed, cybercrime is one of the most prevalent kinds of economic crime reported by respondents to financial services, according to the 2014 PwC Global Economic Crime Survey with 38% in 2011 and 39% in 2014. It's therefore very important to ensure that they have the necessary IT resources to cover the need to have an efficient and secure business. IT Security enables financial companies to innovate and compete with confidence by creating strong security and risk management programs (Symantec, 2015).

2.5.2. Change management

Insanity is doing the same thing over and over again and expecting different results. This quote from Albert Einstein is often used to describe change management, since it refers to doing things differently (Miller, 2017).

With digital change, it is now vital for structures wishing to remain competitive to review their organizational and working methods. The digital strategy choice should be made wisely as most of the companies fail implementing the strategy (Morgan, 2019). In this context, change management is an essential process that will enable companies to adapt to digitalization to ensure their sustainability in a rapidly changing environment (Davidson, 2018).

According to a Deloitte's study of 2017, the essential skills for digital transformation are:

- **The culture**: clear visions allow employees to understand the way they should work and innovate. While the older generations of finance professionals worked in an environment that valued predictability, new generations tend to be more interested in experimentation, innovation and progress. This aspect must therefore be taken into account when new recruitments are made.
- **The skills** required for digital finance have changed significantly. Today, financial competence is characterized by a solid knowledge of technology and data science, as well as a deep understanding of the sector. The expected skills of the recruits might be

higher. As for the company's current employees, they will have to do training to acquire the required skills.

- **The motivations** of employees are also very important, they need to have a purpose and to know how the digital change is important, to be involved in that change. A 2015’s McKinsey study reveals that when employees are fully involved, the change is 30% more likely to succeed (Ewenstein et al., 2015).

“*Learning is more effective when it is an active rather than a passive process*”, Kurt Lewin. In a perspective of conflict resolution, the psychologist Lewin (1947) developed the concepts of "group dynamics" and "resistance to change". He then defined three levels in change management (Mulholand, 2017):

Figure 7: Lewin's model

The first step is very important as it allows to prepare employees for the change (Kothari, 2018). For that, leaders have to make everyone realize the need for change. The objective is to question the organization’s culture (beliefs, values, attitudes) and current process. Indeed, it ensures that every move and human interaction will be examined for possible improvements.

Once the current situation is unfreeze, this is the experimentation process (Kothari, 2018). According to Lewin, managers must prepare many change options to anticipate possible mistakes. While the change is addressed, companies need to focus their attention toward employees (Raza, 2019). In this way, there are two main behaviours for the CFOs to adopt when managing their employees:

- **Communicate clearly and accurately** about the proposed project, the benefits and the people concerned.
- **Involve employees** by encouraging them to take part in the transition proactively and by providing regular guidance.

Finally, when the change is made, it is about making it sustainable. Lewis defined it as the refreeze process. Indeed, without appropriate steps to maintain and promote the transition, the previous habits will tend to reaffirm themselves (Raza, 2019). In this step, the manager must encourage all employees to follow the new methodology and when required adapt the organizational structure. It’s important to communicate with employees and organize regular feedback to ensure it. Managers can also reward employees according to their strategy (Kothari, 2018).

This change management strategy is especially well designed for digital strategy as it’s made for businesses that need drastic changes (Mulholand, 2017).

2.6. Literature conclusion

2.6.1. Evolution of functions

The digital transformation will lead to a disruption in the organization of financial services by saving costs and time in data production and consolidation tasks. This reorganization has a direct impact on the role of accountants, financiers and management controllers towards more strategic and analytical tasks with higher added value (Collin, 2019).

According to the survey realized by PwC at the end of 2017, the number of employees in finance and accounting section was supposed to fall due to digitalization. The technology will be replacing human beings but all in all the demand for finance and IT experts are needed in finance (Justenhoven and Loits, 2017).

The first function that is likely to change and even disappear is the accounting function. For Thierry Mathoulin, CEO of Workday, the main threat to the accounting profession is artificial intelligence. According to him, the AI may propose accounting records for human validation or go as far as accounting that cites and monitors new tax and accounting standards with the AI as an expert, who will recommend actions to optimize taxation or comply with standards. In the end, AI offers anticipation and better visibility on financial flows (Mennesson, 2019).

However, for some researcher, new type of doings will be additional to the routine work. (Justenhoven and Loits, 2017). Meanwhile, the big job is to shift to new tasks and job specifications in accounting and finance that digitalization requires.

Globally, that's all the finance functions that are likely to change (Collin, 2019). The possibilities of digital seem infinite between payment behavior forecasts, intelligent reporting, inventory management optimization, cash flow analysis… For example, the position of CFOs will also change. The digitization of procedures will push them to focus more on data analysis and the evaluation of political and strategic performance, thus enabling them to become valuable actors in targeting the best opportunities. In addition, the digitization of internal processes, leading to a real-time view of flows, will enable CFOs to anticipate risks and ensure the best possible business relationships between suppliers and customers. As for other financiers, traditional reporting and expenditure controls will give way to real analysis and collection of the right data to enable them to extract the key information needed to manage the company (Collin, 2019).

2.6.2. Tomorrow's finance

Digitalization is impacting finance departments and according to a PwC study realized on 98 audit companies in 2017, most of the finance department plan to have hold to ERP system. The ERP systems that are loaded in the finance and accounting sections at most firms are surveyed more likely to stay. The firms are updating and modifying around their current ERP systems and also their systems using artificial intelligence. The main task to the digitalization in finance and accounting is thus orchestrating the data around the numerous different systems (Justenhoven and Loits, 2017).

In coming years, cloud-based ERP, automation and cognitive innovation will carry on apace which will provide openings to fundamentally simplify processes and also free up individuals. Second, there will be speeding up in this trend with the addition of Blockchain to the mix. Along with this acceleration the capability of human being to enhance worth will be unleashed (Hogan and Sher, 2018).

Companies continue to be in the early stages of using digital technologies to finance processes to achieve longer-term performance, perspective and quality. According to a McKinsey 2018 survey, CFOs themselves say that they want to devote extra time on digital edges and the products of digital technology to finance jobs, but they are hesitant about where to start. (Chandra and Plaschke, 2018).

It will be worthy start for CFOs to grind with the CEO, the board and other seniors to steadily recognise tasks and methods inside finance sector that will be most beneficial with help of digitalization and they can invest in that technology more to advance it (Chandra and Plaschke, 2018).

3. Methodology

The following part will discuss details about how the primary research has been be conducted. The explanation of the methodology will be based on the research onion (figure 8), to illustrate the phases involved in the progress of the study. It will include research design, research strategy, data collection, and limitations. Each part will represent a layer as for Saunders et al (2007) the research methodology, as an onion, needs to be unwrapped layer by layer. The aim is to analyse step by step the research process, to finally achieve the desirable objectives.

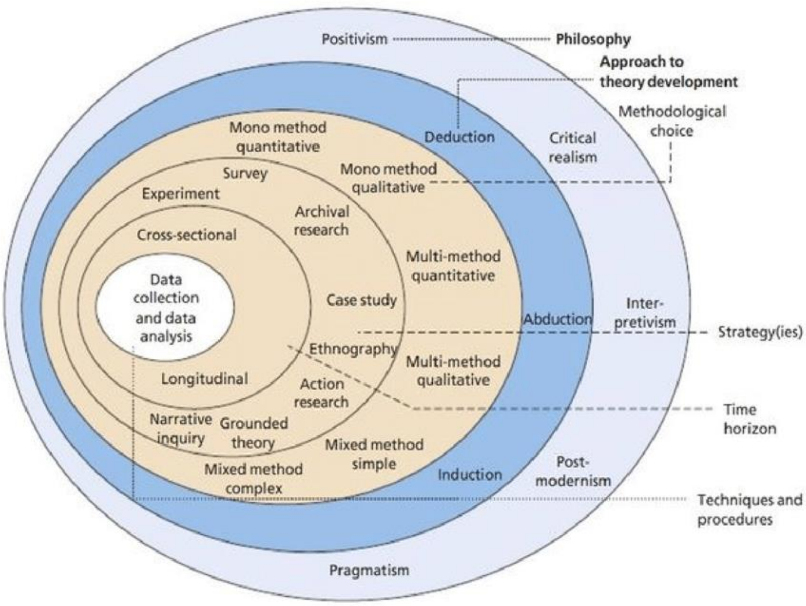


Figure 8: Research Onion (Saunders et al, 2016

3.1. Research design

3.1.1. Research philosophy

The mentioned research philosophy relates to key assumptions that support the research strategy of the author as well as his chosen methods (GuhaThakurta, 2015). There are different types of research philosophy. The most important are objectivism, subjectivism (Saunders et al., 2009).

We'll have two main keys assumptions in that research. First *digital allows finance department to perform better (Mennesson, 2019).* According to a PwC study on the CFO's priorities, performance management was the main challenge for CFO in 2018. This study revealed that they cannot imagine this management without using digital tools. Indeed, more than 70% of the CFOs surveyed see digitalization as a chance to improve efficiency in operation, customer experience, internal and external collaboration (figure 9).

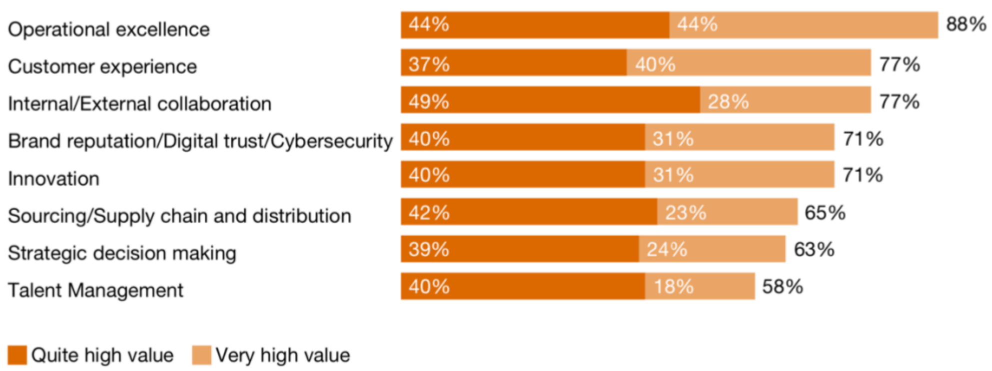


Figure 9: Digital opportunities seen by CFOs, PwC study, 2019

The next assumption is that *digital strategy is difficult to implement*, especially because employees tend to be resistant to change. There is two reason why focusing of the change management is important. First, digital technology is driving businesses to change the way they operate, and it can be an issue for the success of the strategy if employees don't collaborate.

Secondly, a 2018 study of McKinsey Global Institute, made on 50,000 employees around the world, demonstrated that successful transformation and digital evolutions are correlated. Indeed, according to the figure 3, organizations with successful changes are using more technologies than the one who have difficulties to implement change.

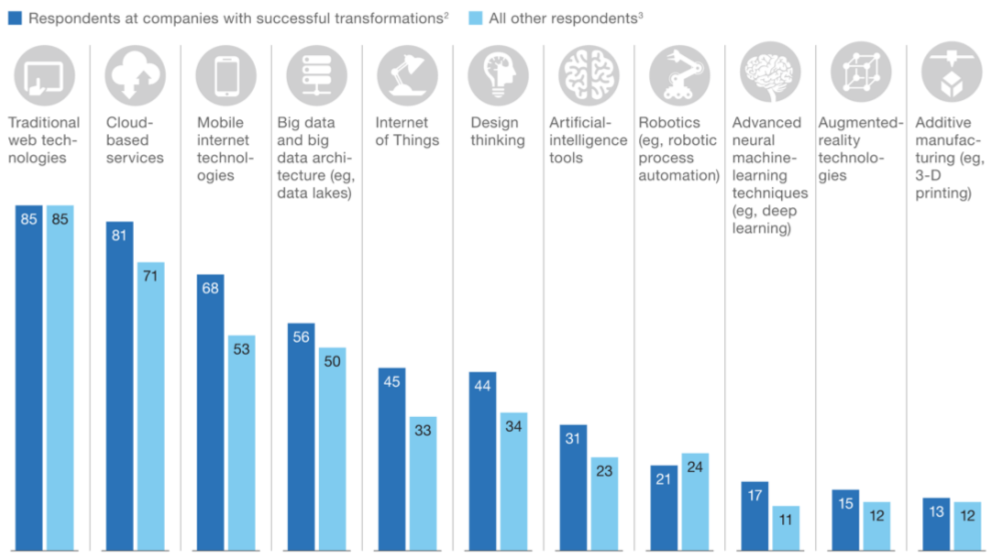


Figure 10: Digital technologies used by organizations, in percentage - McKinsey&Company 2018

The research philosophy used in that paper is subjectivism. Indeed, subjectivism is described as "*the social sciences which refer mainly to individual experience, perception, and interpretations of the world as well as the material conditions and social relations that mold a person's vision*" (Mills et al., 2010). Indeed, the aim of the research is closely related to the reactions of people to the digital change. This study will allow to gain insight about the perspective of a CFO, but also the perspective of any finance worker.

3.1.2. Research Approach

The choice of a research approach is an essential part of any study, regardless of the subject (Saunders, 2012). There are three types of research approach: deduction, induction and abduction. The approach used in that paper is a combination of inductive and deductive approach.

The research will combine both deductive and inductive approach. The inductive approach will be used to analyse the qualitative analysis, as the aim of this analysis is to identify the main challenges that digital bring to CFOs. This part of the study starts from the research question and the findings will allow to generalize and elaborate theories on the challenges and the vision of decision-makers.

The deductive approach will be used for the second part of the study, which is a quantitative analysis. In opposite to the inductive approach, the deductive one start from a general idea to get more specific. First, a theory has been formulated, then hypothesis has been set up. This hypothesis will be tested during the research process and the data analysis will allow to illustrate and verify concepts.

3.1.3. Research Strategy

The research strategy defines how the writer plan to carry out the study. (Saunders et al, 2007).

The research strategy represents two layers of the onion. The first choice to make is the choice of the method used (mono, multi or mixed method). The mixed method will be used in this thesis as the quantitative and the qualitative analysis will be combined to produce a precise data collection.

The first approach, which is the more important one, will be qualitative, based on interview from 5 decision-makers who are working in corporate finance. These decision-makers are working in companies from completely different sectors. It provides a more objective perspective and allows the researcher to generalize thought and strategies, beyond the sector. The quantitative analysis aim is to know what their objectives in the short and long-term basis about digitalization in the financial department are, why they think digital can help them to improve performance, and how they want to operate the change.

The second approach will be a quantitative analysis, by using a survey shared on the web. The aim is to find out the general state of digitization in a larger number of companies, but also targeting all finance workers to find out their views about these evolvements and their ability to change their habits according to their age and profession. This analysis will support the quantitative analysis since it will relate the point of view from the other side; from the employees that the decision-makers will have to manage while setting up a digital strategy.

3.1.4. Time horizon

The time horizon represents the necessary time for the achievement of the study. According to the research onion (figure 1), the time horizon can be cross-sectional or longitudinal. The main difference between these two approaches is the spread over time: the longitudinal approach is extended during the time while the cross-sectional one relates to the collection of data at a specific time (Cherry, 2019).

If the literature review uses a longitudinal approach - by reviewing articles relaying the evolution of corporate finance from technology development to today, and by using studies that assess the impact of digital in the future – the time available to realize the empirical study doesn't allow the writer to use this approach. The approach used is, therefore, the cross-sectional approach as interviews and surveys reveal the use of digital at the present moment.

This approach enabled the researcher to collect a large amount of information relatively quickly from a broad sample (Cherry, 2019). The author is collecting data on different variables to see how variation in gender, age, or function can be correlated with the mindset regarding the use of digital technology and the developments it can bring.

3.2. Participants

This part relates to the last layer of the onion from Saunders et al as it describes the data collection and data analysis method. The characteristics of the study's participants will be explained, it will show how each participant will contribute to this project.

3.2.1. Sampling, selecting respondents

First, it is essential to define a sampling strategy to ensure that the units studied are representative of the general population relative to the research area. A good sample definition improves the quality of the final result. The sampling methods can be divided into two types (figure 11): probability and non-probability sampling.

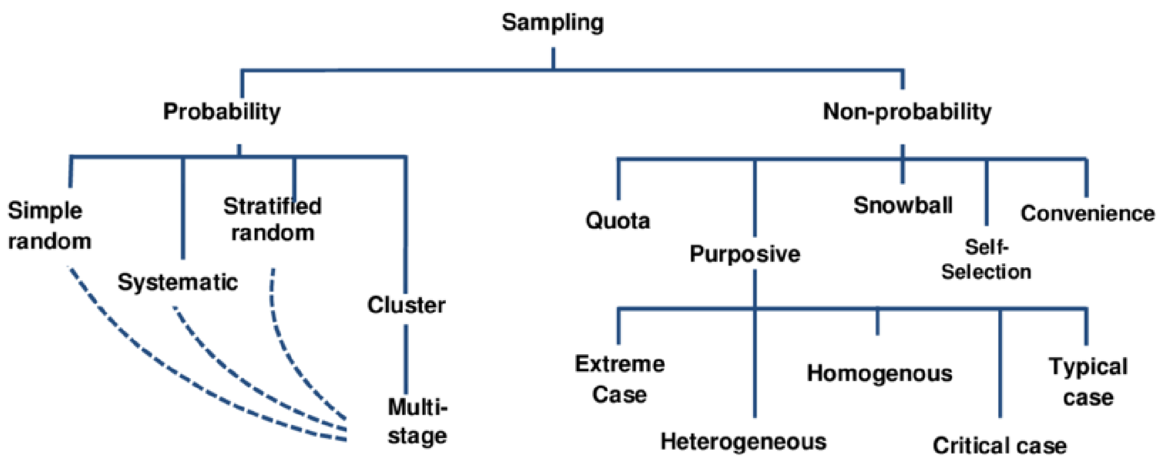


Figure 11: Sampling techniques (Saunders et al, 2016)

This study is using both probability and non-probability sampling. Saunders et al (2016) describe the non-probability sampling as a small group which meets specific criteria. The qualitative analysis uses a non-probability sampling as the participants were not chosen randomly. The participants interviewed needed to be decision-makers in a financial department, and this sample is very small since it generally represents only one or two people in a company.

On the other hand, a probability sampling has been chosen for the quantitative analysis as it is larger both in number and in criteria. The only criteria that participants had to meet was to work in the finance department, but any finance worker was able to participate, regardless of the function. The sampling technique used was self-selection sampling – volunteer sampling.

3.2.2. Participants:

3.2.2.1. Qualitative analysis participants

In total, five people participated in the qualitative analysis. These five decisions-makers are males between 30 and 45 years old. The table below presents their characteristics.

Table 1: profile of the participants

	Participant 1:	Participant 2:	Participant 3:	Participant 4	Participant 5
Profession	**Corporate Financial Officer**	**Chartered accountant and auditor**	**Corporate financial officer**	**Vice President**	**Chattered accountant**
Company	French radio and event group	French advisory company	French housing rental company	French asset management company	IT company which provide support / infrastructures for network.
Financial department to manage	1 accountant officer - 5 accountants - 1 management assistant	6 auditors + 5 accountants	3 accountants	3 financial analysts	2 accountants, 1 credit controller and 1 purchasing officer
Location	Lyon, France	Lyon, France	Lyon, France	Dublin, France	Dublin, Ireland

The participants had been selected mainly through the student's professional network. Three out of five of the interviewees have worked with the researcher in previous (internships) or current work experience. She already had their contacts and only contacted them by email or private message via a professional social network.

The last two people were contacted directly following the sharing of their contact information by the student's professional network.

3.2.2.2. Quantitative analysis participants

To complete the interviews, a quantitative study was conducted online by a panel of 45 corporate finance workers. The profiles of the sample respondents are described below.

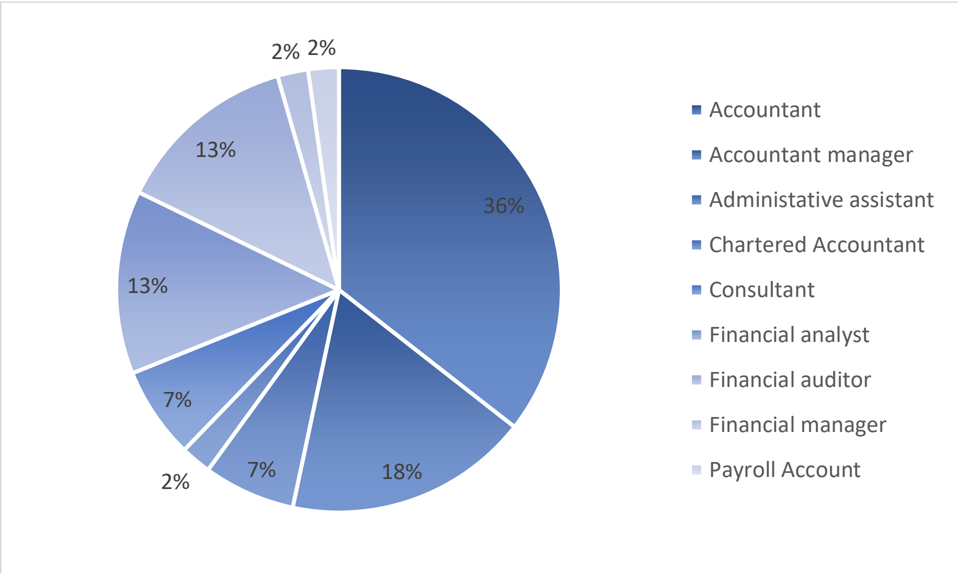


Figure 12: Profession of the participants

This form had been shared via a professional social network where the author has many connections with workers in the Finance field, on a volunteering basis (i.e. part 3.2.1.). 20 people responded to this publication. The other people who responded had been personally selected in compliance with the required criteria and had been contacted via email, social network. The sampling opportunity was selected from the different groups to which the student has belonged during his professional career (previous classmates who start working, employees of companies in which she has completed internships).

In term of the size of the company in which the participants work, the sample is relatively large since they work in any size of the company (figure 13 and 14).

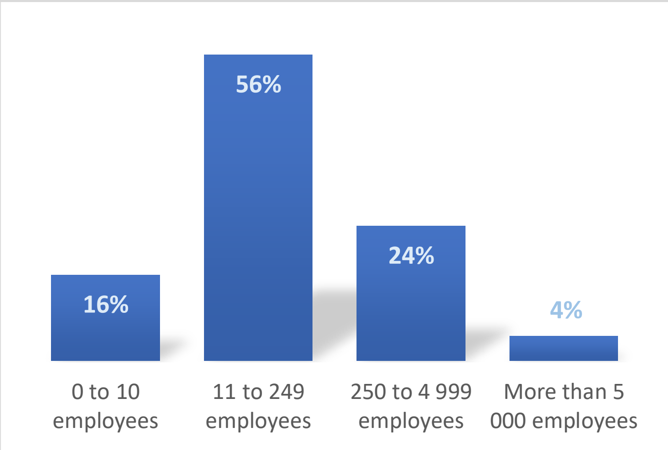


Figure 13: Size of the company's participants

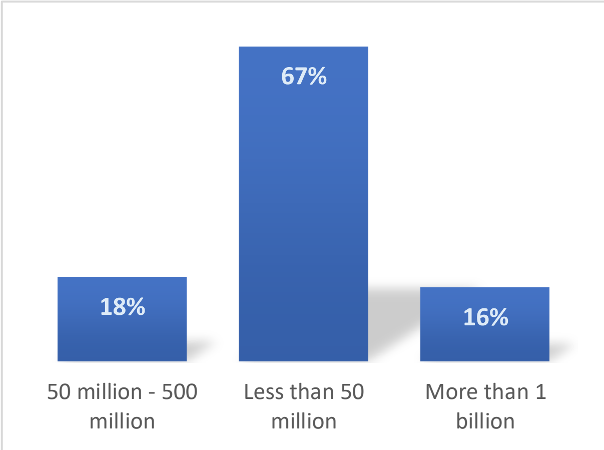


Figure 14: Annual revenue of company's participants

However, we can see that the small and mid-size enterprises are more represented as 72% of the companies have less than 249 employees and their annual revenue is less than 50 million euros for 67% of them.

All participants are in the 18-34 age group. However, the group is very mixed at the gender level with approximately as many men as women participating in the study (figure 15).

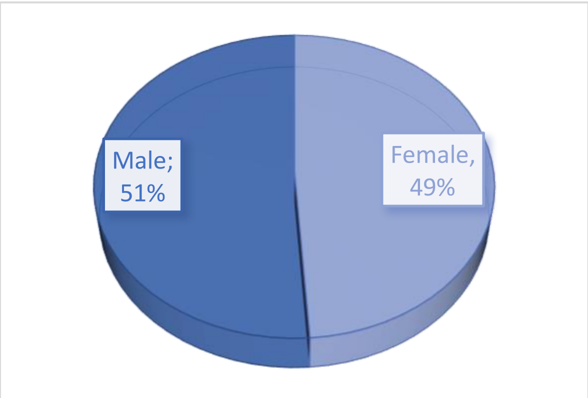


Figure 15: Gender of participants

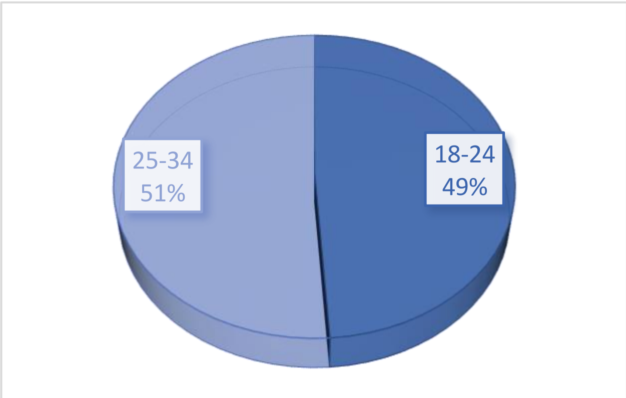


Figure 16: Age of participant

3.3. Procedure

The Data collection is a procedure by which the researcher gathers information from all pertinent sources to find responses to the research question, in testing the hypothesis and evaluating the results (Dudovskiy, 2018). The author used two types of data collections: primary data collection which is the data directly collected by the researcher during the project, and secondary data collection which are the similar studies which have been made at bigger scale by big advisory companies. The secondary data collection will allow completing the finding.

The aim of this section is to describe in detail how the study has been conducted with participants. It provides a chronological description (figures 17 and 18) of the study and especially the role of the participants, starting from the first contact with them until the research is completed.

As digitalization is something that impacts countries and companies all over the world, there is no limitation on geographic area. The data has therefore been collected in France and Ireland as it's the two countries where the author has more professional connections.

3.3.1. Qualitative analysis procedure

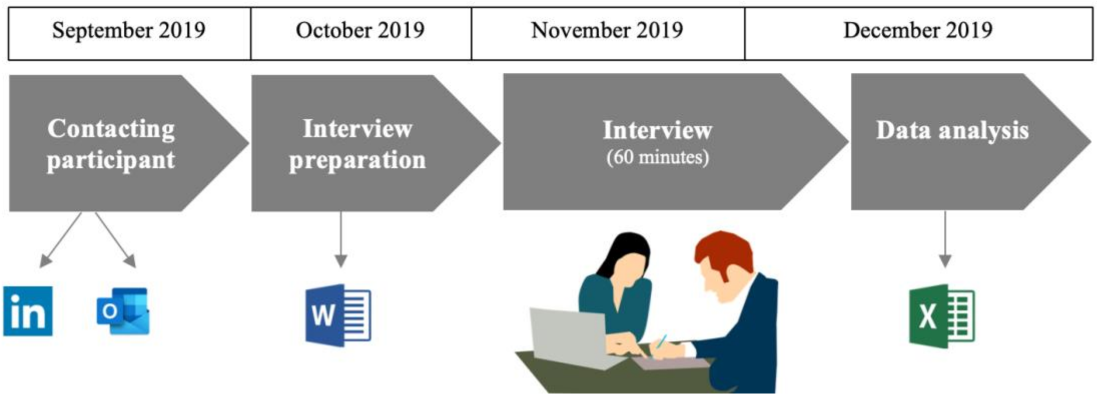


Figure 17: Chronological account of qualitative analysis

The participants have been involved in the first and the third step of the figure above, from the end of September to the beginning of December.

At the end of September 2019, the researcher established a first contact with the persons targeted to talk to them about the project of memory study and ask them for their agreement to participate in the research.

Once they agreed, they gave their availability and face-to-face interviews were arranged. The student traveled to the workplace of 4 out of the 5 participants. The last one has been met in a cafe.

These interviews took place between om November and December 2019. They last between 20 to 60 minutes, depending on the interviewee. The author chooses to organize semi-structured interviews as it allows him to structure the interview into main points to easily study relationships between variables (Saunders et al., 2009). This structure has been chosen because it allows mixing the structural interview method with the non-structural one. The structural choice is providing a foundation of questions that answer the research question but also allows some flexibility in the interview by asking open questions, in order to allow interviewees to see the subject from different perspectives. These interviews have been recorded and transmitted later in key points.

The interviews have been conducted in three parts: an introduction of the context by the researcher and a short presentation (1), a first part structured with general questions on the interviewee, its company and the current use of digital in its finance department (2), a second part made of more open questions and oriented towards the interviewees' decision-making function and their digital evolution objectives to improve performance in their department (3) (Appendices 1).

Concerning the structured part (2), the questions were basically the same as the general one that has been shared in the online questionnaire to be able to make a correlation between the findings of these two analyses.

1- *Introduction to the subject*

This part generally lasted 5 minutes. The aim was to introduce the subject by explaining the research question, the elements that determined the choice of subject by the researcher and the structure of the interview. They were also explained that the interview is based on 3 main themes:

- Digital challenges in corporate finance works
- Organizational responses to these issues
- The governance of digital transformation

2- *Structured part*

The structured part lasted between five and fifteen minutes, depending on the participant. It is made on ten general questions related to the company he works for and the current process used in his financial department (Appendices 1).

3- *Non-structured part*

The non-structured part lasted between ten to forty minutes, according to the interviewee. It is made on 15 open questions related to their point of view about the digitalization of the finance department and the digital objectives they would like to implement for the development of their department.

3.3.2. Quantitative analysis procedure

Quantitative analysis also allows relationships between several variables, but it is based on statistical data (Dudovskiy, 2018). This method was chosen to complete the qualitative analysis because it is not time-consuming and is applied on a larger scale. Also, it is easy to compare the results.

The quantitative analysis was conducted between October and December 2019 (Figure 18).

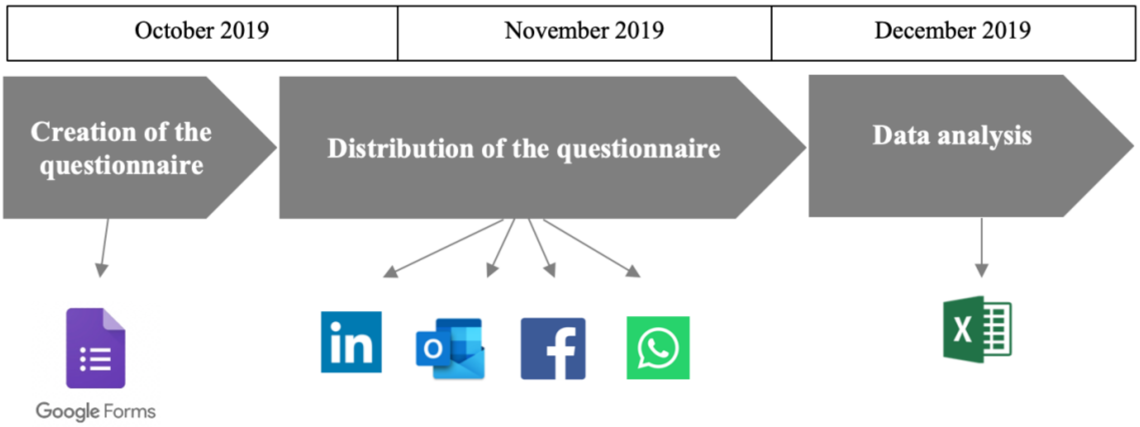


Figure 18: Chronological account of quantitative analysis

As shown in the figure above, data for quantitative analysis has been collected via Google form. Two forms were created: one French version for the French workers and one English version for the Irish workers (Appendices 2).

The online form shared for the research was made of fifteen questions. It can be divided into three main themes:

- General questions about the respondent and the company he's working in (Q1 to Q5)
- Questions about the way he's currently using digital tools in his function (Q6 to Q9)
- Questions on his personal view on digital change and its readiness to the change (Q10 to Q15).

Most of the items were providing responses options and the participant only had to select one.

3.4. Ethics

Research ethics is an important part of every research. This research has been approved by the Research Ethics Committee of Dublin Business School.

As the researcher has a link with people while collecting data, it's very important to conduct the research with the highest ethical standard in order to make the participant comfortable.

- For the qualitative analysis, the participation of the interviewees is kept confidential. Both parts signed a consent form explaining the terms of the interview.
- Regarding the quantitative analysis, the participation of the respondents is kept confidential as neither the name the participant or the company he's working in is asked.

There was no question about sensitive personal data (as ethnic origins, political opinions, religious or others similar beliefs) as it's not linked at all with the dissertation's subject and there is no interest to ask participants about that. There is, therefore, no ethical issues concerning that. The student stayed objective during the data collection process.

Finally, the data has been recorded honestly, all the procedures and methods have been explained the most possible precise way.

3.5. Data Analysis

As the study is using a mixed-method, there are two approaches of data analysis.

The qualitative data have been analyzed with the grounded theory. This analysis is divided into 4 steps: coding, conceptualization, categorization, and theorization (Dudovskiy, 2018). The first step is to identify the key points of the study, then collect code of similar content to allow data to be consolidated (2), large groups of similar concepts are therefore formed (3) to generate a theory (4) which will generalize the observed facts. This generalization may or may not confirm the hypotheses put forward at the beginning of this project.

More specifically, the data has been analysed using the software NVivo 12 which is qualitative data analysis software. It allows to code information by theme and sub-themes and to gather information from all interviews (Appendices 3)

Regarding the qualitative analysis, the fact that the researcher has shared two online forms (English and French versions) does not allow the use of the analysis and figures already made by Google Form, since it is necessary to consolidate the data from these two questionnaires. The data collected from the quantitative study were therefore transcribed and analysed in Excel. This allowed the author to statistically measure the responses in order to verify the assumptions made at the outset of the project. Correlation analysis is also used to analyse the relationships between the different variables under this questionnaire, but also to analyse the correlation of variables between the responses to the questionnaires and the interviews conducted.

The Rosemberg Self-Esteem Scale method (1965) has been used for one question (Q11). Many other questions had possibilities of answers that had several degrees and therefore makes it easier to measure the answers, in the same way as the analysis of Rosemberg. The higher scores indicate that is will be easier for managers to implement the change with these employees.
We can distinguish two subscales for the measure: one will measure the readiness to change and the second one will measure the desire for improvement using technologies.

4.Result

4.1. Qualitative analysis

The data collected during the qualitative analysis are of high quality, in particular, due to the fact that the participants work in completely different companies, in two different countries and therefore have different working methods (*i.e. table 1 p 43*).

After coding and analyzing data, the researcher identified four main themes: digital data storage, automation of processes, challenges of digital strategy implementation and especially challenges of managing employees. This section describes the background of each participant, their current methods and objectives regarding the main themes and their general point of view on the subject.

4.1.1. Background of the participants:

Every participant is managing a finance department. Three out of five are managing a finance department inside a company while the other two are managers from finance organizations and are handling financial workers who do corporate finance with external companies.

This part is describing the function of the participants, the company they are working in and the department they manage.

Participant 1:

The participant 1 is a Corporate Financial Officer who is working in a French audiovisual group from mid-size created in 1987 that developed around the radio (around 200 radio channels). In addition to this, it has recently established an events subsidiary.

The priorities of his profession today are mainly performance monitoring, cash management and risk management. He is managing the administrative, and finance department of the group, consisting of an accounting manager, a management assistant, and five accountants and payroll managers.

He has been CFO for 14 years and 2 years in this company. During these many years' experience, he saw an evolution in his function related to digital. He related that "*Before everything was manual, there were a lot of papers. Today, the basic accountant does not exist anymore, there are less and less manual operations and so we are more into controlling and monitoring. However, nothing related to legal evolve*".

Participant 2:

The participant 2 is a chartered accountant and auditor who is co-director of a French advisory firm specialized in statutory auditing, accounting and financial auditing created in 1972.

The priorities of his function are, for the chartered accountant part, to supervise a team of five accountants and come in support to help them with customers when necessary and advise them. He is also director of the audit department, made of six financial auditors, and he is the decision-maker in terms of tools' optimization.

He has been doing that for 10 years. During that time, the audit department has evolved much more than the accounting department. Before, all the supervision process was made on paper, but today it's fully dematerialized with electronic signature and e-transfer of the documents to the collaborators. Concerning the accounting department evolution, the participant reported "*the supervision method for the accounting process is different. For now, there are no tools that allow efficient supervision on the computer*."

Participant 3:

He’s Corporate Financial Officer of a big group’s subsidiary specialized in the housing rental business in the region of Lyon, in France.

The main priorities of its function are to have a vision of the future, to manage the evolution of the cash position, the client position and to verify the reliability of the information. He’s managing three accountants in his finance department.

He has been CFO for 15 years and 3 years in that company. For him, his function has clearly evolved with digital developments because it has made information more reliable and easier to access. Before all the work was manual but today there is more reflection. He explained: “*Thanks to digitalization, we have been able to free up time to concentrate on control, the processing time is much faster*”.

Participant 4:

He is Vice President of a financial advisory and investment management firm established in Dublin since 2017. He’s in charge of the financial advisory department, which primarily provides financial, operational and administrative support to alternative investment equity funds and Institutional investors targeting namely the Renewable Power. He is managing three financial analysts.

He has been Vice President there for two years now, but he has been working in finance for several years. He really saw the evolutions related to digital when he started working to his current company because they are working in 100% with digital and it was not the case in his previous work.

Participant 5:

The participant 5 is a chartered accountant who has his own IT company in Dublin. This is a small company that provides support and infrastructure for the network (especially IT security). His work priority is "*to make the administration process as efficient as possible*". The finance department he is managing is made of four people: two accountants, one credit controller, and one purchase officer.

He has occupied this position for seventeen years and for the last few years in his own company. Concerning the evolution of his function related to digital, he stated: "*initially when we started the business, we had a lot of manual procedures, our invoices were prepared on Excel, they're now prepared using Sage that streamline the whole process*".

4.1.2. Data storage – current methods and objectives

The first theme of the interview was data inventory. The data collection is, again, very rich as the participants have different methods of data storage and therefore different objectives linked to dematerialization.

One out of five interviewees didn't start yet the dematerialization process as his company is using only papers to store the data. Two of them store documents in both dematerialized (cloud or server) and paper formats. Finally, the last two are completely dematerialized and store their data on a cloud (participant 4) and server (participant 2). However, participant 4 has a midterm objective to work on remote servers instead of cloud to secure data.

The three participants who do not use digital in an optimal way for the storage of documents all have the objective to reduce the paper storage. For participant 3, who keeps the documents only on paper, it will not be possible to eliminate paper completely, but he assumes the importance of being able to digitize pay slips, customer and supplier invoices - all in a secure server. For this, they also need to change the paper culture, which is very strong in their company. This is a goal he has set for the next five years. The participant 5 stated that the trend in his department is moving towards less and less paper: "*we have more and more emailing invoice*". Participant 1 has a mid-term goal of removing entries on the purchasing process and using the electronic signature in the sales process. Regarding the transition from a paper inventory to a dematerialized inventory, he said that it will be complicated because it is difficult to assess the return on investment that this can bring, and managers of SME French companies do not want to invest in online storage facilities. Indeed, it is the third SME he's working in and he's facing the problem while trying to convince managers to move towards more digital storage: "*they do not understand that archiving has a cost and it is therefore complicated for them to grant the budget to dematerialize documents. The notion of pay-per-use is complicated for SME bosses, especially if it is something intangible, they feel they are paying for nothing*".

4.1.3. Digital objectives: automations of processes

The second digital challenge that was brought out in the interviews is the automation of processes. Each one of the participants has his own objectives related to that subject.

Participant 1:

The participant 1 is currently contracting with a company that provides expert business intelligence and data visualization software, which allows retrieving data from all software used by the company (HR software, payroll, accounting...). According to him, "*each of the software used has developed reporting modules but they only take the data available in the corresponding software. This software cross-references the data and links the data from all its* *software*". It allows a more exhaustive analysis of the data and therefore a better performance monitoring for this CFO.

Participant 2:

He has objectives of process automation for the accounting departments. He would like to use artificial intelligence to improve performance by investing in software that offers bank flow extraction for direct data integration. "*This would allow a completely assisted data input*".

Participant 3:

The participant 3 is commissioning an IT company to see how to adapt the processes by increasing their automation.

He has a medium-term objective to integrate an ERP developed by a subsidiary of the group which allows to automate and analyze more efficiently a large part of the department's functions (rental management, accounting, invoicing, digitalization of supplier invoices).

Participant 4:

He is leading the development of a software that automates asset management, so that his investor has access to real-time data, but also so that his department's financial analysts require less manual work. The primary objective of this software is to automate reporting by extracting data directly from the accounting systems. This will free up more time for these analysts to focus on the analysis "*rather than on manual transcription errors or formula errors, which are common in large Excel documents*". The long-term objective of this software is, that it can read the contract information to retrieve key dates, which are then very important in asset management, and then integrate them directly into the management tool. "*Contracts currently take a lot of time to read, this would save a lot of time*".

Participant 5:

Although participant 5 did not go into the details of his projects, he did mention that automating certain processes using digital technology was one of the objectives to improve the performance of his department.

4.1.4. Digital challenges

All participants agree that digital strategy is something that needs to be worked on and that some challenges remain. For them, they have to change the way they operate, and the procedures need to be adapted to digital and automation.

Some participants are confronted to obsolete software. This is particularly the case of participant 3, who uses an ERP with only a few modules, due to a low budget. This is also the case of their accountants who take three days only to extract their financial statements.

The participant 2 highlighted the fact that the digital strategy needs to be worked on. On the first hand, managers have an analytical work to do on the choice of appropriate tools: he notes: "today, the difficulty is the mass of software supply, we need to choose wisely which one will allow us to improve performance, without wasting so many time". Regarding the digital data storage, for him, companies need to be very organized or else "it's a step backward as you will waste time instead of saving, and you can lose everything".

For the CFO of the French radio company, directors have higher expectations in terms of deadlines with automation. He states that with his data integration software, it will be "important to prioritize important data to not overflow with information and lose the essentials".

For participant 4, there is a technical barrier, as its company is a small company, they have few IT means and they struggle to find the technical availability as the IT team is focused on the optimization of their asset management platform. He relates “implementing digital strategy might be time-consuming and it’s not necessarily the first priority”. It’s also the opinion of the CFO of the housing rental business, who has been trying to implement digital transformations for one year. For him, “*this is a sector where digitization has been ignored at the administrative and financial level*”.

The French managers also consider the French government as a barrier to digitalization. For the French chartered accountant interviewed, few software companies are interested in the needs of accountants. There is a barrier at the level of the tax authorities because there are a lot of rules.

The last challenge observed by the researcher is to manage employees to digital transition. The next part is dedicated to that point.

4.1.5. Managing employees to digital transition

For some participants, it’s going to be difficult to manage employees to change. According to participants 1 and 3, their employees are not open to change. Indeed, the two accountants who are working in the rental housing company are from the old generation and then so used to the traditional ways of working that they have little facility with the use of digital. For the participant 3, “*existing profiles can't continue, they need to change*”. However, he affirmed that new recruitment will take place and the requirements will be openness to change. Regarding participant 1, openness to change is not related to age but "*it's a matter of philosophy*". He has only millennia working in his department, and yet they are not open to change. For him, there are no technical or skill limits, it's just a state of mind: people who had habits for many years find it difficult to change them and leave the paper. "They are attached to their calculator, their methods, and it's hard to explain to them that they're going to do something else". However, he states that 75% of the new accountants are more open (whereas, on the other hand, about 25% of the older generation was open). According to him, there is no point in forcing employees to change because they won't do it properly and it will be a waste of time instead.

For the other interviewee, their employees are opened to change. They are even proactive in the accounting and audit company, however, the participant stated that "*employees don't see the challenges of implementing new tools because they have to be used wisely*".

All participants are agreed to say that they take into consideration digital skills while recruiting an employee nowadays. For Participant 1, today's "*an accountant who contextualizes is* essential". However, they are not worried about the new generation. The participant 2 stated that he will only have a reserve in case of older recruitment to assess their ability to handle change and developments. In that case, the skill required will be "*to be comfortable with the tools to provide qualitative feedback to clients*".

For participant 3, digital will change the employees' profile and it will give the profession more reflection because for him, "today there is no brainstorming in accounting and financial services". For the French chartered accountant, staff will be trained to be deeper on financial advice, there will be a reclassification challenge at the employee level. It's also the point of view of the radio's CFO who strongly believes that bookkeepers and assistant accountants will disappear. For him, accounting input is going to be done away with, but not the accounting profession which only will change.

4.1.6. Conclusion and point of view of participants

Four out of five finance managers interviewed are considering digital evolutions important for the improvement of their department's performance and one considers it as essential. It is, therefore, an important challenge in the financial departments.

They all believe that digital has brought many changes in corporate finance and that it will bring even more. For them, digital is not a threat for their employees but a chance as they will be more trained. According to participant 1, the payroll process in France is so complex that there will always be a need for people. He declared: "*the biggest payroll file cannot be automated; we need people who think. Even if everything has already been automated at the regulatory level, we still need a control phase*". For him, digitizing financial departments does not save time because the time spent is the same, it is just that there is less manual work and employees spend more time controlling, and therefore the information is more reliable. He thinks that automate everything doesn't work, "*sometimes, when you go too far on automation, you're missing out on some big mistakes*". According to participant 3, the objective with digitalization is to simplify everything that can be simplified and "*it gives humans real control missions, more* interesting".

For the vice president of the asset management company, to optimize the use of digital, the whole scale must be digital, all partners equally. He stated, "*It is important to push partners to work more and more with digital*". The participant 1 also affirmed that digitalization improved the relationship between the accountant and the suppliers as it has simplified exchanges.

4.2. Quantitative analysis

This analysis is more oriented towards the view of general finance employees that the participant interviewed for the qualitative analysis can be willing to manage.

4.2.1. Current use of digital in their company

Digital storage

Concerning the data storage method, most of the respondents are quite advanced in the digitization process. As shown in the figure below, 89% of them are using digital storages including 47% who exclusively use it for their data. 42% have a mix storage method, with some of their data stored in the cloud and some in papers inventory. Just 11% of the respondents are stocking data only in paper inventory.

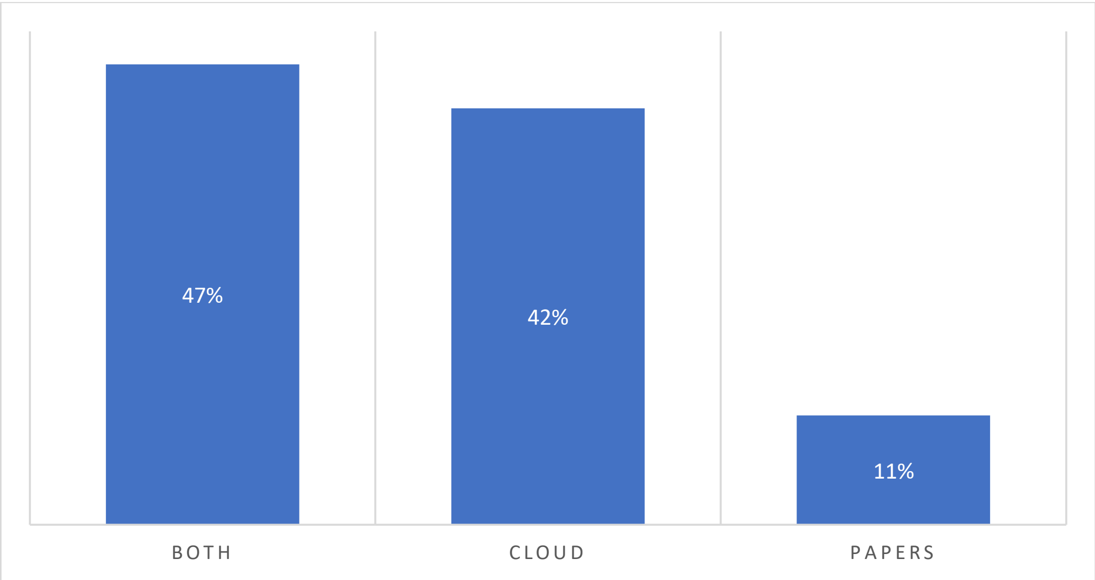


Figure 19: Storage Method of the participants

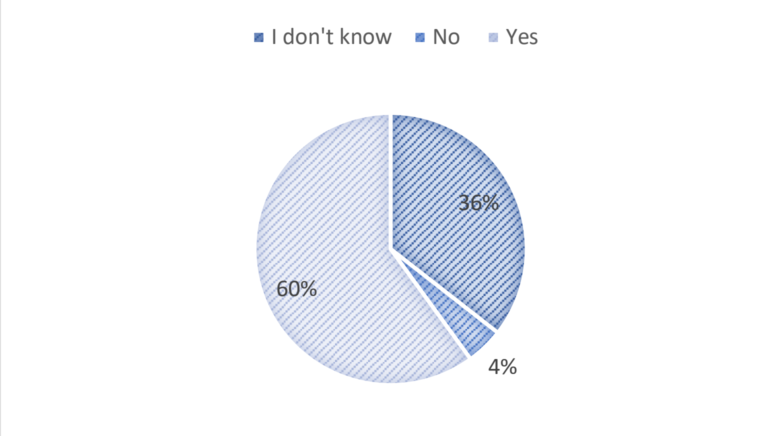


Figure 20: respondents' data storage

Among the respondents who are using a mix data storage, 60% of their companies have objectives of dematerializing the current paper inventory (36% have no idea about it).

Use of automated software

30 out of the 45 respondents are using an ERP in their work. 40 answered Excel among the three applications they are using the most at their work.

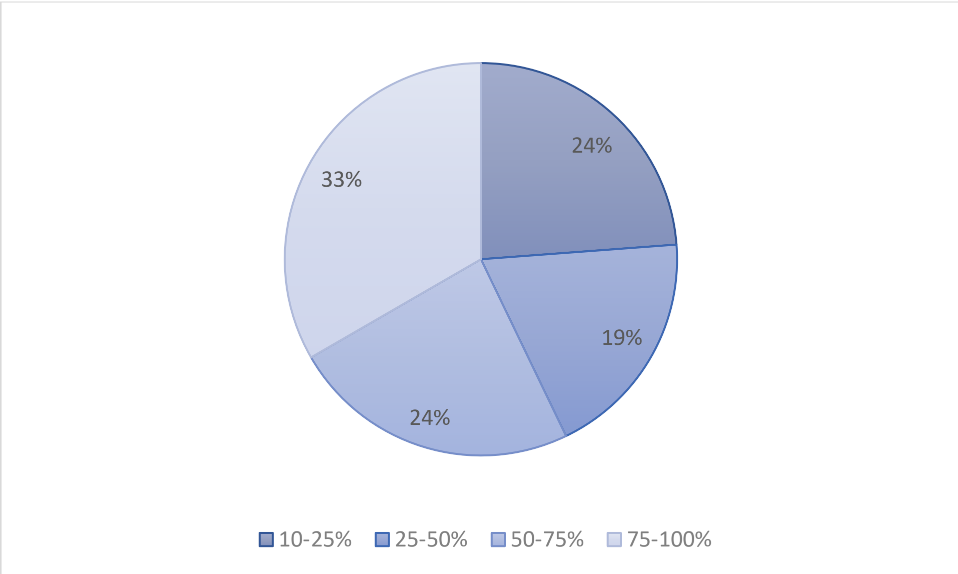


Figure 21: How often they are using Excel, in %

Among the participants who are using Excel, the frequency of use is very diverse. The figure above shows that they are 57% to use it more than half of their working time: 33% are working on Excel between 75 and 100% of their time and 24% between 50 and 75%.

However, the study has shown that the trend differs according to the function (table 2 and 3). Indeed, the study revealed that 97% of the accountants use ERPs, compared to only 50% of the accountant managers who use more Excel: 43% of the respondents who answered that they use Excel 75 to 100% of their time are accountant managers.

Table 2: ERP use per profession

Are you using ERP?		
Accountant	**14**	
No	1	7%
Yes	13	93%
Accountant manager	**10**	
No	5	50%
Yes	5	50%
Administative assistan	**3**	
Yes	3	100%
Chartered Accountant	**1**	
Yes	1	100%
Consultant	**3**	
No	3	100%
Financial analyst	**6**	
No	3	50%
Yes	3	50%
Financial auditor	**6**	
No	1	17%
Yes	5	83%
Financial manager	**1**	
No	1	100%
Payroll Account	**1**	
Yes	1	100%

Table 3: Excel use per profession

Frequency of Excel use		
10-25%	**10**	
Accountant	5	50%
Accountant manager	1	10%
Administative assistant	2	20%
Consultant	1	10%
Financial auditor	1	10%
25-50%	**8**	
Accountant	2	25%
Accountant manager	2	25%
Consultant	1	13%
Financial analyst	1	13%
Financial manager	1	13%
Payroll Account	1	13%
50-75%	**10**	
Accountant	4	40%
Accountant manager	1	10%
Administative assistant	1	10%
Financial analyst	2	20%
Financial auditor	2	20%
75-100%	**14**	
Accountant	1	7%
Accountant manager	6	43%
Chartered Accountant	1	7%
Financial analyst	3	21%
Financial auditor	3	21%
0%	**3**	
Accountant	2	67%
Consultant	1	33%

4.2.2. Desire for improvement linked to digital

Questions 11 and 12 of the shared survey evaluated the satisfaction of employees with currents work methods and their thought about using digital to improve the way they work.

4.2.2.1. *Satisfaction of workers with current methods:*

To evaluate the satisfaction of workers on applications used, the researcher asked a question about the efficiency of these tools (Figure 22).

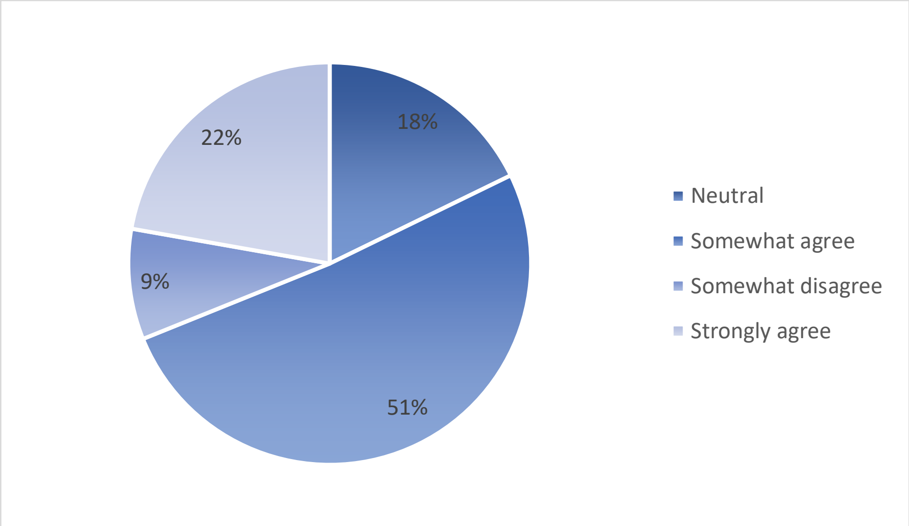


Figure 22: The Applications/Software that you are currently using, are they efficient and easy to use?

Only 22% of the respondents are totally pleased with the application they are using in their work as they responded, “strongly agree”. However, only 9% are not fulfilled at all, as this is the only ones who was disagreed to say that the application used are efficient. The last 69% replied either “somewhat agree” or “neutral” which means they are neither so satisfied or unsatisfied and we can therefore presume they think their work’s applications can be improved.

4.2.2.2. *Thought of employees using digital to improve working methods*

93% of the respondents are thinking that digital technologies can improve their method of work (Figure 23). This number is larger than the percentage of respondents not satisfied with their current methods of work. It means that even the one who are totally pleased with the methods of work they use are admitting that digital can make improvements.

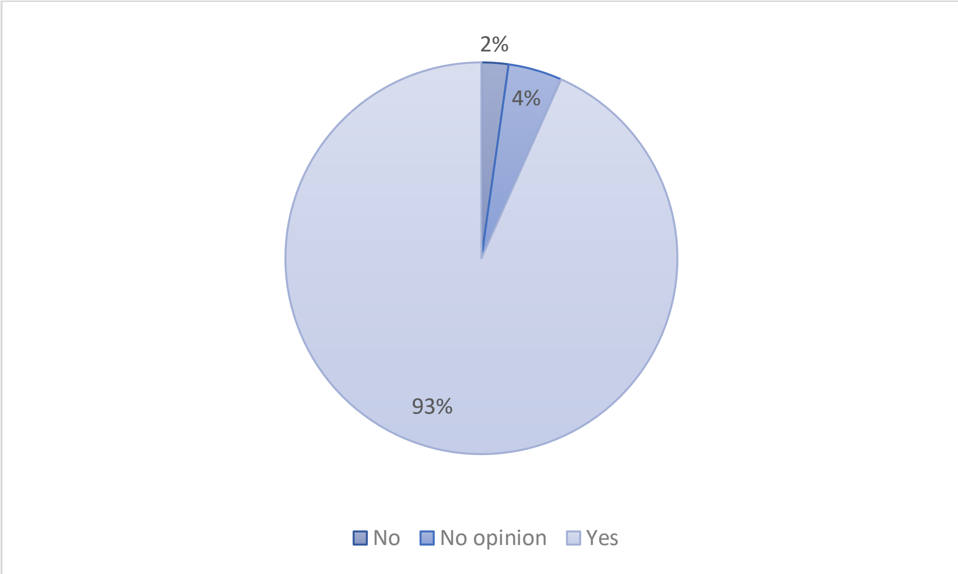


Figure 23: Do you think that the methods of your work can be improved by IT (new software, automations of processes...)?

4.2.2.3. Measure of desire

Answers from the respondents on the two above questions has been scored to measure the desire of change in the following way:

Table 4: Statistic of desire measure

	Average	Standard deviation
Employees' satisfaction	1.13	0.87
Perceived digital evolutions	1.85	0.50

The answers interpreted as no desire for change has been scored 0, and the others has been scored between 1 and 4 according to the degree of satisfaction and 2 according to the perceived digital evolution (Appendices 4).

Both averages are superior to 1, it can be interpreted as a global desire for change in the respondents' mind.

4.2.3. Readiness for digital change

Questions 10 and 13 of the survey are analyzing the readiness of participants for digital change. One is regarding the change from paper inventory to digital data storage, the other is relative to the use of new application or software.

4.2.3.1. Readiness for digital data storage

On the 45 people surveyed, 19 are entirely using cloud to store their data. The 26 that still use paper storage responded on their ability to move to a full level of dematerialization (Figure 24).

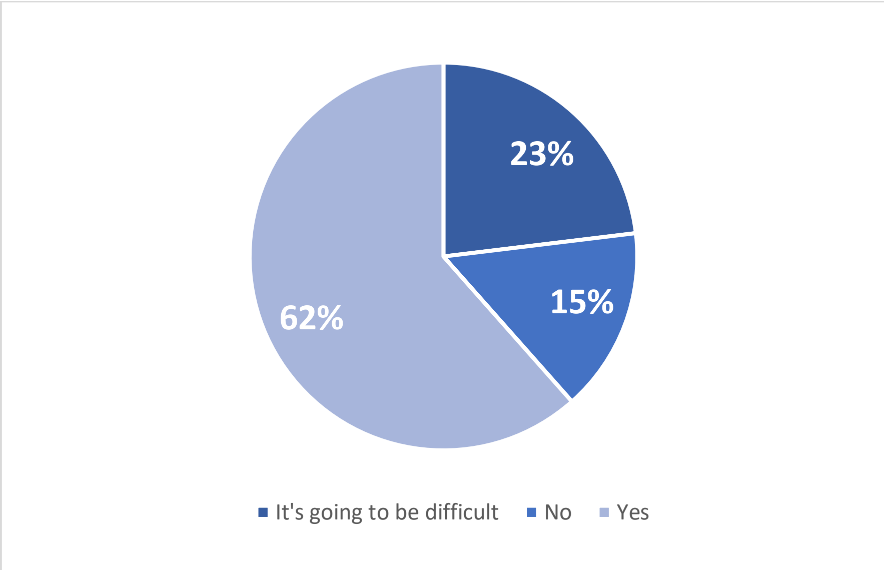


Figure 24: Would you be willing to leave paper and settle with cloud?

Globally, the majority of respondents are ready to leave paper and settle totally with cloud (62%). However, this trend changes according to the generation:

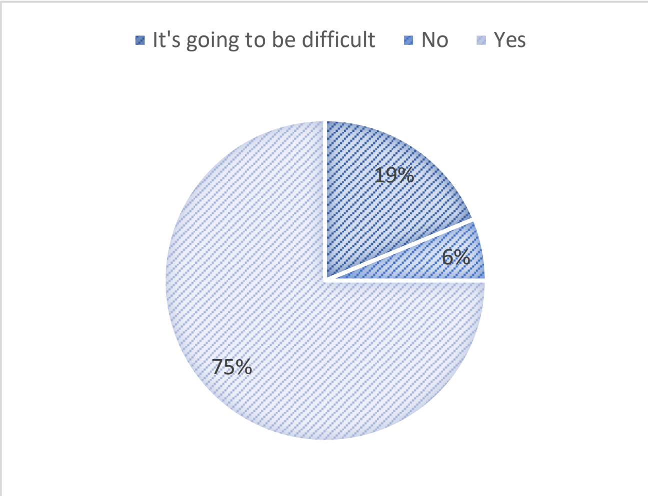


Figure 25: 18-24: Generation Z for cloud

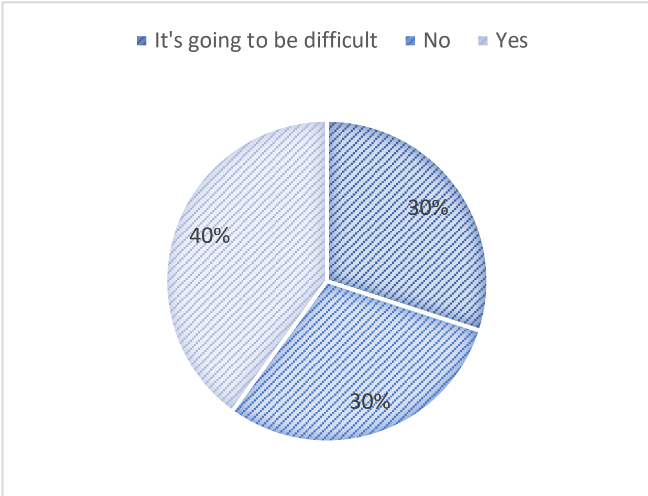


Figure 26: 25-34: Millennium for cloud

The figures show the difference between the two generations surveyed in term of digital adaptations. If 75% of the generation Z is ready to settle with cloud, only 40% of the millenniums are. This difference in mindset is further evidenced by the fact that 30% of 25-34 say they will not be able to make the transition (compared to 7% for the last generation).

4.2.3.2. Readiness for changing software and more automation

Concerning the use of a new software that change the methods to improve work, the majority of participants are open to it. Indeed, only 2 people (4%) answered no to this question (Figure 27).

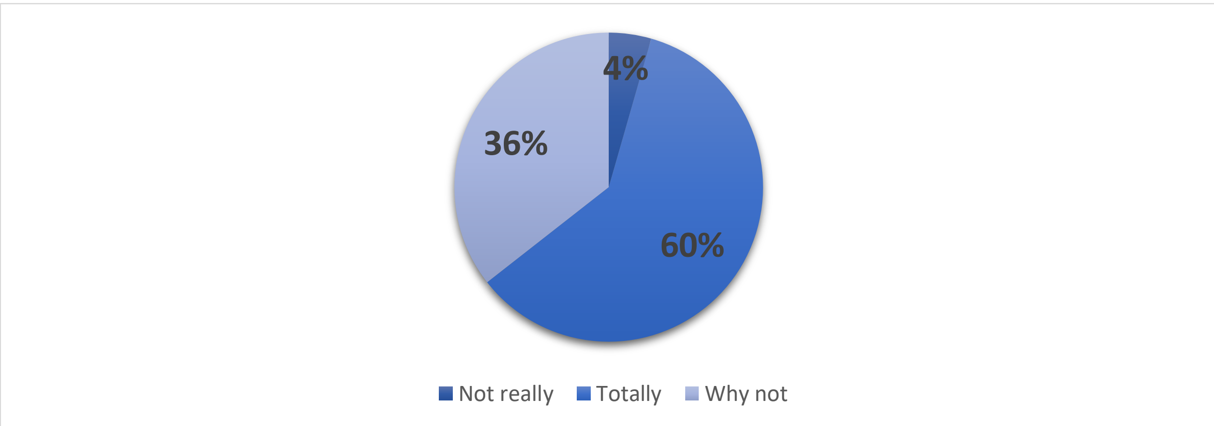


Figure 27: Would you be willing to be trained on a new software and change the methods of your work?

Table 5: Readiness per occupation

Accountant		14
Not really	14%	2
Totally	43%	6
Why not	43%	6
Manager		**12**
Totally	75%	9
Why not	25%	3
Financial analysts/auditors		**12**
Totally	58%	7
Why not	42%	5
Others		**7**
Totally	71%	5
Why not	29%	2

Nevertheless, responses differ by occupations. As the following table shows, for example, among accountants, opinions are more divergent and less than half of them would fully agree to change their working methods. On the other hand, financial managers seem more ready for the digital transition (75% would totally agree to be trained on new software).

4.2.3.3. Measure of readiness

To measure the readiness of the respondents, answers of question 10 and 13 has been scored and statistically analyzed (Table 6).

Table 6: Statistical measure of readiness

	Average	Standard deviation
Digital data storage	1.46	0.76
Automation	1.56	0.69

These two questions had three types of answers which are linked to different degrees of readiness. Scores are between 0 (not ready for the change) to 3 (totally ready). The statistical measure reveals that globally, respondents are ready to change their work methods both in storage and automation field.

5.Discussion

5.1. Discussion introduction

This part consists of an interpretation of the research's findings, and a justification of the conclusions reached.

The first section reviews each research's objectives and summarize the finding that fit with these objectives, to establish theory. The study hypothesis is also discussed, and the finding are compared with the previous study available on this subject. The next section is, more generally, linked to the strength and weaknesses of the study and focused on recommendations for further study. The last part is summarizing the finding and offers a conclusion to the research question.

5.2. Objectives review

5.2.1. Objective 1: understand current and future impact of digital on CFO role and Finance Function

The qualitative analysis especially helped the researcher to reach this objective, as she collected points of view and experience of five finance managers, including two CFO.

Theory 1: the role of finance manager changed with digital evolutions

Four out of five people interviewed have more than ten years' experience and they all said that their function has greatly evolved with the advent of digital technologies. For them, the use of paper drastically decreased with the years. Also, most of the things have already been automated and it made the information more reliable. Now their function is more oriented towards reflection, control and performance monitoring. These findings confirm the research made for the literature review (*i.e. part 2.3*).

Theory 2: it made finance jobs more interesting

For the finance manager interviewed, digitalization already impacted finance function, this has particularly made the job of accountant more interesting, by automating and simplifying what can be simplified. They are all considering digital skills and adaptation to change while recruiting an employee. However, for them, the new generation who is going to work in finance is born in digital age already and so participants are not worry about their digital skills.

The findings of the quantitative analysis also confirm the hypothesis 1 linked to that objective: "digital will impact the organization of work for every role in the Finance Function including CFO". Especially because 89% of the respondents, which are working in many finance roles, are using cloud every day to store data. The study also revealed that the majority of them are using ERP which allow them to automate the data and to limit mistakes most likely made with manual work.

5.2.2. Objective 2: Identify the principal business benefits that may be realized

The principal business benefits that may be realized had been analysed with the qualitative analysis. Participants answered about their digital objectives, and they are divided into four main themes: automation of process, dematerialization of process, digital data storage and data security.

Theory 3: digital will allow companies to improve performance, using automation

All participants mentioned automation of process while talking about their digital objectives. Some of them hope to integrate new processes in a future where further progress will be made. Two of them are currently in the process improvement phase, using digital technology. They are commissioning companies to integrate ERPs and automating a large number of jobs that are currently done manually.

The ultimate goal of these managers in the automation and use of artificial intelligence is the considerable time saving that it can bring. Also, while talking about dematerialization of process, the participant 2 affirmed that the use of electronic signatures and the electronic submission of audit reports would save considerable time.

Theory 4: digital can help business to respect environment more

All participants who are still using paper to store their data are agreed to say that they are still using too much paper and they want to reduce it. The paper culture is still very strong in their companies and they would like to reduce it. However, for two of them, it is moving towards less and less paper: more and more invoices are sent by email, and their goal is to succeed in totally eliminating paper from the sales process.

Theory 5: digital allow business to secure their data

Only one participant raised this point during the interviews; digital storage makes it possible to secure the information. On the one hand because it allows for multiple backups of documents, and on the other hand because the use of a private server secures the information and the risk from data theft.

These theories and the fact that the participants have many objectives linked to digital confirm the hypothesis 2: "*business benefits realized to date could be improved upon*".

5.2.3. Objective 3: Identify the main challenges posed

The main challenges posed with digitization has been identified on the qualitative analysis.

Theory 6: process need to be adapted to digital

Globally, the respondents said that they have already a great number of process that fit with their current methods of work. Changing the tools and go beyond more automation need an adaptation of procedures.

It's also the case for the one who are using a lot of papers, especially the French respondents. Their employee will need to learn how to control documents on their computers instead of writing on it, the managers themselves will also have to adapt their supervision methods to the digital. Participants also mentioned that dematerialization has to be very organized, more than paper, as there is an infinite number of documents in digital platforms, and it can be very easy to lose them or end up losing more time to find them.

Theory 7: Few capacities and budgets are dedicated to digital developments in financial departments, especially in small companies

The two CFOs interviewed replied that they found it difficult to convince about digital developments to their bosses, particularly in terms of digital archiving, because small business owners do not want to devote the budget to it and do not see the savings it could generate. Even if the participants consider digital developments as important or indispensable to improve the performance of their department, this is not the priority of their companies and these potential developments are often ignored.

Also, one participant affirmed that it's complicated to have the technical availability to implement digital tools as its IT team is focused on other priorities.

Theory 8: there are skills and philosophy gap to correctly address digital

Two out of the five interviewees are facing difficulties to implement the change with their employees as they are used to work in their ways, and they don't want to change it. One is facing it as he's working with older employees who are not comfortable with digital tools. The other one work with younger employees who also has been trained traditionally and it's difficult for them to see the benefits that changing process can bring. The participants 1 also affirmed that the basic accountant just doesn't have the rationale for the modern tools. These findings confirm the hypothesis 3, "there are skills gaps and training needs if Digital is to be correctly addressed".

Even the quantitative analysis revealed that it's going to be difficult to implement digital data storage on all employees, and it's going to be more difficult on millenniums than generation Z. The study therefore reveals that there is a philosophy gap, a large proportion of employees don't want to make the effort to change, or don't think they can.

This theory confirms the finding of the previous study made on the resistance to change (i.e. last part of the literature review), and especially the last hypothesis, which support that change management is a required skill for CFOs.

5.2.4. Objective 4: Assess the evidence regarding the way digital has impacted and been manage

The experience related by the participants of both quantitative and qualitative analysis shown that digital really impacted finance departments.

Theory 9: digital has completely change the way they operate in finance department

Indeed, most of the participants are working with cloud already and the majority is using enterprise resource planning or at least Excel. The study confirms that the time when accountants where using a calculator and a pen are over. Finance departments are using much less paper, and this is still changing.

This theory proves the finding of the previous studies regarding the impact of digital on the finance department.

Theory 10: digital has been managed differently in France and Ireland

Interviews with five finance decision-makers from France and Ireland allow the researcher to compare the way they are using digital and their objectives. It emerged that companies in Ireland are more advanced in the digitization process. French companies have many constraints in terms of legislation and accounting is still very restricted. As a reminder, two out of three French financial managers replied that their employees were not open to change, whereas they were completely open to the Irish managers questioned.

5.2.5. Objective 5: Evaluate future development

As the quantitative study demonstrated, most of the finance workers are not fully satisfied with the tools they are working with and the methods of work they are using. Even the five participants of the qualitative study were agreed to say that they can improve their performance with digital, and they all had objectives for the future. These facts confirm the hypothesis 2, which assumes that *business benefits realized to date could be improved.*

Theory 10: AI and blockchain is the future of finance department

Four out of five interviewees stated their wish to make greater use of artificial intelligence to completely eliminate manual tasks. They all have different objectives related to their sector of activity:

- In the accounting department, the evolution wished is to completely eliminate manual data entry by using a powerful tool connected to their bank, which would allow them to group data and enter all operations automatically.
- In the asset management area, they would like to use AI to read big contracts and detect important information in a few seconds.
- Blockchain tools are interesting for CFOs to gather data from all their platforms and analyse performance according to more criteria.

The answers of the participants prove, by following the research carried out during the literature review, that digital technology offers many possibilities for the corporate finance professions.

5.3. Study Contribution

5.3.1. Research strengths

The research is relevant in the sense that it includes both the point of view of financial managers and the type of people they could manage.

The information collected is very diverse since the people interviewed during the qualitative analysis hold different positions, in completely different sectors of activity, in two countries. Also, the respondents of the quantitative study fairly represent the main jobs in corporate finance (accountants, analysts, controllers, managers). The data collected in the quantitative analysis makes it possible to compare two generations of young workers: millenniums and generation Z.

The study ultimately confirmed most of the studies relied on by the researcher in the review literature. It reveals that there is a real willingness to improve corporate finance processes, and digital is seen as an opportunity for a large number of financial actors.

5.3.2. Research limitation

The first limitation is the lack of resources and skills of the researcher. As it was the first time she carried out primary research, she has limited knowledge about the realization of such a study and how to process and transcribe the data. The quality of the paper may, therefore, be more limited than another that comes from an performer with experience and more resources.

In addition, the sample size could not be very large since the study was individual and limited in time, so the network of respondents was limited to the student's own network. It also made the sample quite small in terms of the age of participants as most of them are between 18 to 36 years old. The researcher would have like to have received more responses from older people to be able to analyse whether there was a correlation between age and way of working or acceptance of changing the way of working.

Finally, in carrying out the analysis of the data collected, the researcher realized that she had not made enough for the conception of the questionnaire and the preparation of the interviews. She would have liked additional feedback from the respondents to deepen the analysis.

5.3.3. Recommendations

Such kind of study could be carried out on a larger scale, even more, oriented towards CFOs/financial workers in internal financial departments. It could be conducted among entire finance departments, to contrast the CFOs' views on their employees and their employees themselves.

The questions asked to managers could be more oriented towards their management style, in order to analyze whether their management actually influences the resistance to change of their employees, as observed in the review literature.

In case of interviews inside the whole finance department, a study case could also be conducted, following the implementation of digital tools, to have insight about the actual situation.

More general questions could be asked in the questionnaire, as the type of company there are working in, how long they are working in that position, to make a correlation with their readiness and desire for change. Also, the part about readiness for digital change could be in-depth.

5.4. Discussion Conclusion

Globally, the study on these 50 finances professionals' workers supports the previous research and theory analyzed in the literature review.

The primary research allows the researcher to confirm how digitalization can helps the finance department to improve performance. The participants mainly highlighted opportunities for automation and digital storage. They have also shown that the main challenges they face are resistance to change on the part of their employees, negotiating with companies to make up the necessary budget, adapting processes and selecting suitable tools.

The study answered the main research question as a literature review explained how change management can help CFOs to face the main challenges that come with digitalization: employees' resistance to change. The primary research confirmed this main challenge, and also how finance managers can overcome other challenges. For the one interviewed, they should be really organized while implementing their strategy. The work analysis before implementing a new tool or new working methods is very important, so is risk analysis.

Finally, we can assume that finance managers have a lot of ambition regarding digital improvement, and the new generation is going to be easier to manage when they have digitalized finance departments.

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Appendices

7.1. Appendices 1: Qualitative analysis questions

Interview Sample

1. Presentation of the interview:

This is a 1H interview based on 3 main themes:
- Digital challenges in corporate finance works
- Organizational responses to these issues
- The governance of digital transformation

First, self-presentation, then introduction of the context, then the interview is divided into two parts:
- 1st more general part on the use of digital in the financial service in your company => which corresponds to a survey that I shared online to get an overview of the situation
- 2nd part oriented towards your decision-making function and your digital evolution objectives to improve performance.

1.1. Self-presentation:

I am Emeline Perouse from France, I am 23; I am finishing an MBA in finance at Dublin Business School. I am now a financial analyst, in Dublin, in an asset management company that invests in renewable energies.

1.2. Interview's context:

During my studies in Finance, I did internships each year in different financial departments (audit, internal control, the treasury in an association) and I realized that digitalization was the focus of attention for each company. For some, dematerialization was in progress and a real objective of complete dematerialization was clear. For others, I intervened to set up new processes, aimed at automating certain tasks and guaranteeing the reliability of the information.

I also realized that I do not know how to work with the old working methods. I never have any paper documents, notebooks or calculators, because I find it much faster and more efficient to deal with everything on the computer. I think that most of the young financiers who enter the job market today, who will be the future managers of tomorrow, are like me. The finance and CFO function is undergoing major changes today and I think that digital will completely redefine the finance of tomorrow.

The interview is strictly confidential,
Recorded would be better to be able to transcript in the best way your answers.

2. Interview

Part 1: Questions / Answers from the survey shared with all financial stakeholders

What is your profession?
Answer here

1. What's the size of your company?
0 to 10 Employees
10 to 249 Employees
250 to 4,999 Employees
More than 5,000 employees

2. What is the annual revenue of your company?
More than 1 billion euros
500 million - 1 billion
50 million - 500 million
Less than 50 million euros

3. What are the 3 applications most used by employees in your company?
Answer here

4. What are the 3 applications on what you work the most?
Answer here

5. If you answered excel among them, how often are you using it? In %
Answer here

6. How is your company stocking documents/data currently?
Paper
Cloud
Server

7. Do you see digitalization as a threat for finance jobs? As an accountant?
Answer here

why?
Answer here

Part 2: Role of the CEO/CFO and the use of digital as a strategy to succeed in his mission

1. What are the priorities in your position/company?
Answer here

2. How long you have been doing that?
Answer here

3. Has your role already evolved with digitalization?

Answer here
How
Answer here

4. Today, when you are recruiting an employee in the finance field, do you take into consideration the digital skills?
Answer here

5. Do you think digital technology can allow you to reach your objectives more easily? How?
Answer here

6. Do you consider some applications used by your company are outdated?
Answer here

7. Do you think the consideration of digital technologies are important for the development of your finance department?
Essential
Important
Not important

8. What is the digital evolution that you consider important for your company for the long term? Why?
Answer here

9. What are your objectives in the mid/long term related to digital improvement/strategy?
Short term:
Midterm:
Long term:

10. According to your state in the current stock of data, do you want to reduce the paper used? Get into more cloud solutions?
Answer here

11. Do you think employees are open to change in your company?
Answer here

12. According to you, which will be the challenge, you will face while setting up your digital strategy?
Answer here

13. Do you have questions to add about this interview? Other things to say about the digitalization of finance departments? What is your point of view?
Answer here

7.2. Appendices 2: online questionnaire

Digitalization of finance function

Research made for the MBA FInance of Dublin Business School

*Obligatoire

1. What is your profession? *

Votre réponse

2. How big is the company you work for? *

- ○ 0 to 10 employees
- ○ 11 to 249 employees
- ○ 250 to 4 999 employees
- ○ More than 5 000 employees

3. What is the annual revenue of your company? *

- ○ More than 1 billion
- ○ 500 million - 1 billion
- ○ 50 million - 500 million
- ○ Less than 50 million

4. Gender:

- ○ Male
- ○ Female

5. What is your age? *

- ○ 18-24
- ○ 25-34
- ○ 35-49
- ○ 50-64
- ○ Over 65

6. What is the 3 applications/softwares that you are using the most at your work? *

Votre réponse

7. If you answered Excel amongst those 3, how often are you using it?

- ○ 10-25%
- ○ 25-50%
- ○ 50-75%
- ○ 75-100%

8. How is your company stocking data currently? *

- ○ Papers
- ○ Cloud
- ○ Both

9. If you answered "Papers", does your company has a plan to start using the cloud?

- ○ Yes
- ○ No
- ○ I don't know

10. If you answered "Papers" or "Both", will you, personally, be willing to stop using papers and settle with cloud?

- ○ Yes
- ○ No
- ○ It's going to be difficult

11. The Applications/Softwares that you are currently using, are they efficient and easy to use? *

- ○ Strongly agree
- ○ Somewhat agree
- ○ Neutral
- ○ Somewhat disagree

12. Do you think that the methods of your work can be improved by IT (new softwares, automations of processes...)? *

- Yes
- No
- No opinion

13. Would you be willing to be trained on a new software and change the methods of your work? *

- Totally
- Why not
- Not really
- Not at all

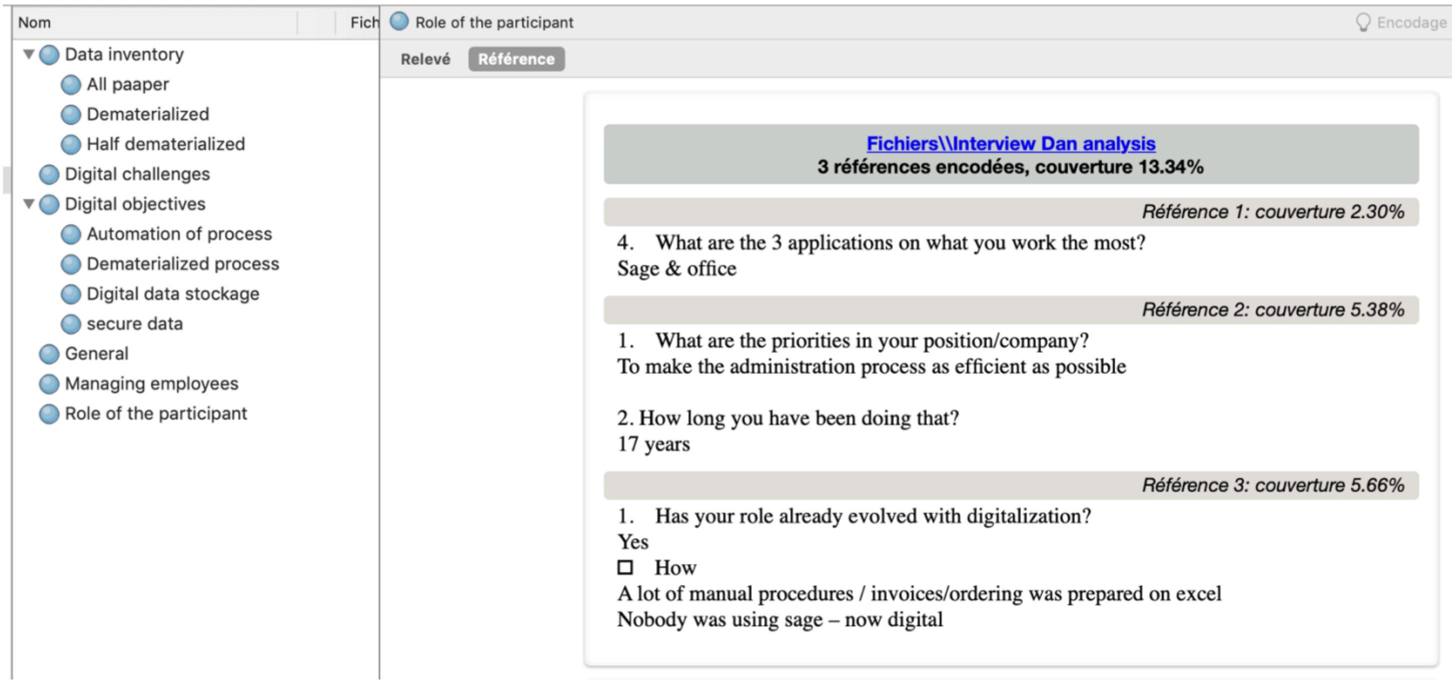
14. Do you see digitalization as a threat for your profession? *

- Yes
- No
- I don't know

15. If yes, why?

Votre réponse

7.3. Appendices 3: Nvivo data analysis example



7.4. Appendices 4: scoring for quantitative data analysis

Readiness measure scores:

Q10	**Score**
No	0
It's going to be difficult	1
Yes	2
Q13	
Totally	2
Why not	1
Not really	0

Desire measure scores:

Q11	**Score**
Strongly agree	0
Somewhat agree	1
Neutral	2
Somewhat disagree	3
Strongly disagree	4
Q12	
Yes	2
No	0
No opinion	0