

# **The Need, Challenges, and Opportunities for Finance Transformation in Global Organisations**

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## **Abstract**

Finance transformation is a process aiming at finance efficiency and thus supports solving critical issues in the finance function, focusing on strategy, process, talent, and technology solutions. For enterprises, it is essential to perform a finance transformation to be competitive in a high-pressure business environment. Enterprises must transform the way the finance function operates in terms of the integrated information technology (IT) landscape towards effective process ownership and governance. The literature review identified a lack of systematic descriptions regarding how to construct a framework and investigations on key factors and drivers.

The researcher has developed a concept for finance transformation through strategy, design, and implementation. A stakeholder analysis was performed to identify the different stakeholders involved in the transformation process and their needs. A survey investigated the characteristics and requirements of a finance transformation and the key challenges. The target respondents were people who have specific knowledge and background in finance, IT, or professional roles associated with finance to collect a variety of personal experiences of people. Furthermore, the process of designing a finance transformation was assessed, and a finance transformation framework was constructed based on both the information gathered in the survey and the existing literature.

All respondents highlighted the need for finance transformation. The findings confirmed that finance transformation is perceived to have slowly transformed from a process of compliance to a strategic innovator to become a source of value creation and competitive advantage. Closing the finance transformation gap requires a significant investment in technology and a substantial change in finance skills and culture. The existing finance function is primarily transaction driven and supported by non-standardised processes across regions and business units. The result of a successful transformation would be a more important role in an organisation's success. The study contributes to a better understanding of the role and importance of finance transformation. A survey of experienced people in finance has been performed to measure the activities that are important to determine a well-designed finance function and allow drawing meaningful and statistically sound conclusions. The main contribution to the knowledge of this research is the development of a finance transformation framework and practical recommendations for its effective implementation.

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## **Declaration**

I hereby declare, that the materials contained in this thesis, have not been previously submitted for a degree or professional qualification in this or any other university. I further declare, that this thesis is solely based on my own research and own independent work.

I declare, that all information in this research has been obtained and presented in accordance with academic rules and ethical conduct.



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Carsten Schröder

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## Abbreviations

AI	Artificial intelligence
AIS	Accounting information systems
APQC	American Productivity and Quality Centre
CFO	Chief financial officer
CoE	Centre of excellence
COO	Chief Operating Officer
CRO	Chief risk officer
CSR	Corporate social responsibility
ERP	Enterprise-resource-planning
ETL	Extract-transform-load
FT	Finance transformation
FTE	Full-time equivalent
IBM	International Business Machines
IDC	International Data Corporation
IT	Information technology
KMO	Kaiser-Meyer-Olkin
KPI	Key performance indicator
LoB	Line of Business
PwC	PricewaterhouseCoopers
RPA	Robotic process automation
S2P	Source-to-pay
SaaS	Software as a service
SAP	Systeme, Anwendungen und Produkte in der Datenverarbeitung
SME	Subject matter expert
SPSS	Statistical package for the social sciences

# 1 Introduction

The aim of this study is to analyse what determines a well-designed finance transformation. Finance functions in organisations are no longer restricted to bookkeeping and statutory compliance but are considered strategic for all divisions and functional areas in the organisation. Companies measure the success of a finance operation by its quickness, efficiency, and accuracy in terms of process, data, and system handling. Digital technologies will drive the next stage of transformation in finance and can improve the performance of the finance function (Ehrenhalt, 2016). Trust and transparency in organisations and businesses will become central to the way people interact with stakeholders (Ernst & Young, 2018).

The changing demands on finance are coming from the stakeholders, such as customers, regulators, corporate boards, sales and marketing departments, suppliers, and internal and external auditors. Finance will have to be disrupted to meet emerging business objectives. Stakeholders increasingly expect finance to serve as a true business partner, not a pure back-office department focusing on transactions and historical reporting (Mailliard, Mulhall, and Sehgal, 2018). Digital technologies give finance an opportunity to improve growth and profitability (PwC, 2016). To realise the full potential of digitisation, organisations should embrace the growing demand for the digital workplace, flexible cloud deployment, and interoperability (Kurchina, 2017).

A large number of companies undergo a finance transformation in which changes affect systems, suppliers, and customers all through the organisation with an end-to-end process accountability (Bhimani and Willcocks, 2014; Brown, 2016; Coyne, Coyne, and Walker, 2017). The consequences of not doing a finance transformation will result in a missed opportunity for reinventing the value of finance (i.e. process handling large amounts of data; incorporating information into the organisation; automating to improve the speed, efficiency, and quality of the revenue cycle; and providing additional information that drives greater customer insight).

In this study, the researcher aims to understand the process of finance transformation and to implement the process more efficiently to better attain business objectives. To do this, the aim is to construct a framework for finance transformation to determine a well-designed

finance transformation. The result of applying the framework should lead to an improved finance department that is able to present stronger internal and external results, has the ability to adapt to change, has an environment of satisfied employees and customers, meet objectives, and focus on continuous improvement (Bhimani, 2013; Castellina, 2015). In the past, the finance function operated in an siloed environment, the future finance function will work closer with other departments in the enterprise to extract and analyse business data (Qari, 2016).

This chapter starts with a background of the research on finance transformation, then explains the research aim and objectives, and gives a brief overview of the approach to research. The introductory section ends with the outline of the overall structure that this thesis will follow.

## **1.1 Background**

The motivation of the researcher is to improve the ability of continuous improvement of finance activities. These activities include the analysis and modification of processes, systems, and the organisation to better meet objectives for the benefit of enterprises and stakeholders. The possibility of building effective and efficient financial operations and change processes and the overall goal to achieve business optimisation for finance motivates the researcher. From professional experience and study, the researcher has foundation in finance topics and has gained strong working experience in conceptualisation, planning, and execution of transformation projects. The researcher examines the process regarding how to initiate the transformation and the process of designing and changing towards an efficient finance transformation. In this context, the feasibility, design, implementation, and optimisation must be identified. In this study, the researcher wants to measure the view on activities that influence the organisation's performance.

Practical recommendations for successfully managing future transformations will be provided based on the researcher's professional knowledge and experiences of finance transformation initiatives.

A finance transformation is an essential step to stay competitive in the global environment (Kops and Lyon, 2014). If enterprises aim to remain competitive, they should consider the changing role of finance in helping the entire organisation create greater value. According to

Genpact (2018), enterprises need to standardise and consolidate their finance processes and technologies across borders for simplicity, quality, visibility, and cost reduction. To be successful with the challenges of compliance and globalisation, enterprises must transform both the way the finance function operates and the relationship with other departments within the organisation (Genpact, 2018; IBM, 2016a; Lyon and Lawson, 2012). This includes acquiring new technologies and skills and understanding the effects of new regulations on the whole organisation from an end-to-end perspective. To this end, the finance function must take a fundamental role in the organisation by combining greater visibility, agility, and efficiency with a focus on the long-term strategic business needs.

Business activities and decisions are becoming quicker and leaner. Thus, more automation process activities need to reflect that, even in a finance transformation. Each time an enterprise makes a financial transaction, a trail is generated. All types of transactions, such as purchases, sales, and payments, and their process handling can be more upfront (Edwards, 2013; Weygandt, Kimmel, and Kieso, 2015).

Currently, finance technology is increasingly moving towards robotic process automation (RPA) and artificial intelligence (AI). Cognitive technologies are combining machine learning and natural-language generation to build a completely virtual workforce that can execute tasks, communicate, learn from datasets, and even make decisions based on emotional detection (Manyika et al., 2017), usually focused on cognitive and situational meaning in accounting. Finance transformation is generally considered to deliver new or modified processes, service functionalities, and analyses that fundamentally change the interactions between the finance functions and the business. Furthermore, it is about leveraging new technologies and operating models to deliver more efficient and effective finance activities. Building the most effective finance functions is a key concern of organisations and finance professionals.

The relevance of the topic can be expressed as the need for enterprises to stay competitive (Genpact, 2018). According to HostAnalytics (2017), the need for finance transformation can be expressed as follows:

- “the need to do more with fewer or the same resources”, making resources more productive;

- “the need to respond better to fast-changing economic and business conditions”, making resources more flexible;
- the need for “faster and more detailed information to support decision making” due to high pressure from management and external stakeholders, making content more productive;
- the need to handle “exploding volumes of data from internal systems and external sources such as social media”, making content more flexible;
- and the need for “better finance and operations alignment in terms of getting operational plans and models aligned to financial plans”, making more efficient results.

Benefits are valued from every company, but the focus of the thesis is on global organisations. Typical benefits from a finance transformation are improved transparency, lower operational costs, greater efficiency, standardisation, and improved governance, whereas the technology landscape can be enhanced further because of the scalability and deployment across end-to-end processes (ACCA, 2013, 2014; Kops and Lyon, 2014). Mostly, the manual effort and errors through the increased automation of transactional processing are reduced, and the speed and accuracy of real-time transaction processing and analytics are generally higher (Deloitte, 2014). In total, the lean approach is an effective approach for the systematic identification and removal of non-value-added activities (Rupprecht, Kahler, and Ovalles, 2013).

A substantial amount of literature can be found on the topic of finance transformation with Keuper and Neumann (2008), representing one of the most important authors. According to these authors, finance transformation means that all areas of the company are economically and financially oriented towards effective and efficient corporate management (Keuper and Neumann, 2008). This is the high-level definition used and interpreted in the research design. Another concise definition is given by Raghunathan, Phuah, and Yong (2016). These authors stated that enterprises performing finance transformation increase their finance productivity and capability. Based on the lean approach, lean differentiates value-added activities and non-value-added activities (Raghunathan et al., 2016).

The general goal of finance transformation is to align finance with the overall company strategy to become more efficient and provide better service to the internal customers (Lau, 2014). According to PricewaterhouseCoopers (PwC, 2017), companies with higher revenue take advantage of economies of scale. Costs of finance are between 0.6% and 1.3% of the total company revenue. Initially, the costs seem to be on reasonable level, but from a business case perspective, the investment in finance transformation will lead to close gaps between performance and objectives or sets priorities from redefining the finance operating model to investing in new finance systems, processes and enhancing finance talent management. The investment in finance transformation should contribute to higher profitability, improved control, improved return on investment, and make risks more manageable (Burgess and Bryant, 2001; Deloitte, 2013; Duganier, 2005; Sopra Steria, 2015).

However, companies find it difficult to create a business case for finance transformation (Essaides, 2016; Gattenio and Hackett, 1997). One of the key reasons for this is the lack of complete understanding of the innovations (Muzumdar, 2017). The return on investment (ROI) projection determines the programme effects on organisational performance; clarifies the decisions, priority, and sequence of each deliverable; and is a component of the business case process set up to achieve more successful transformation (Kaufman, 2015). Over the past decade, chief financial officers (CFOs) in general have made progress in reducing the overall costs of finance. According to Driscoll (2015) ten years ago, the typical large company spent about 1.5% of its revenue on running its finance organisation. In recent years, the best companies spent 0.6% or less. The American Productivity and Quality Centre (APQC) defines large companies as having more than 100 million dollars in annual revenue (Driscoll, 2015). According to the IBM Institute of Business Value and respective C-Suite studies, one of the benefits of a finance transformation is to reduce the cost of finance operations by up to 40% (IBM, 2018c). From a full-time equivalent (FTE) perspective, approximately 20 FTEs per million dollars of revenue are needed to be in the peer group (Trintech, 2017).

The PwC Finance Effectiveness Benchmark Report 2017 (PwC, 2017) states that 35%–46% of processing time for key finance processes can be eliminated by automation and eliminating waste, setting a new trend towards simplification. For example, improved data quality and automation can reduce data-gathering tasks for finance functions. With the use of a new

generation of technological tools, resources, and platforms, including the cloud, big data, AI, and RPA, transformations have the potential for a wider reach, an improved performance, and delivering greater benefits within a finance transformation. Approximately 40% of finance effort can be aligned to more value-driven activities through automation (PwC, 2017). Successful companies know how to follow the most significant trends in the scope of their businesses. They are discovering the potential and would consider a finance transformation in the near future because the transformation would help them to increase their efficiency in finance (Brian, 2018; Ernst & Young, 2016a; Hoe, 2009; Tucker, Foldesy, Roos, and Rodt, 2017).

According to an International Data Corporation (IDC) report, the IT spending by financial services companies has reached £480 bn globally in 2016, while large financial institutions have billion-dollar tech infrastructure investment plans in place, as the process of change is expensive and the potential for improvement is high (IDC, 2016).

Achieving transformational success for finance requires changes in people, processes, and the technology to support those processes (HostAnalytics, 2017; Schmidt, 2017). Benefits include reduced costs, improved data quality, increased business agility, and improved overall business performance. Another key benefit is allowing finance to become a better business partner, providing better support to the line of business executives. The start of a finance transformation initiative depends on the goals and objectives of the organisation, and where the initial pains are.

The following market examples illustrate typical needs and results of finance transformation:

*Example I:* A company leveraged a cloud-based enterprise performance analytics solution to transform the organisation's finance and accounting processes to provide real-time visibility (Gupta, Copleston, and Malhotra, 2017).

*Example II:* A global beverage company has undergone a global finance transformation initiative to achieve efficiencies in the areas of the finance operating model (process-related); closing, consolidating, reporting of accounting data in terms of transparency; and planning, budgeting, and forecasting (technology related). In total, regional finance centres have been established, and processes and tools have been standardised to drive accelerated business performance across the enterprise.

The finance transformation delivered a direct profit and loss effect and a substantial portion of the company's overall goal of USD 500 million in savings. In addition, the initiative improves the ability of finance to support the 2020 vision of doubling the size of the company (Riedmatten et al., 2013).

*Example III: Cognitive computing in finance, focus on the banking sector – Cognitive systems find insight locked in massive amounts of data. Cognitive computing is changing what is possible with financial service data by capturing and even creating completely new interactions between humans and machines. Using the IBM cloud capabilities, the organisation used Watson and can now examine random data, such as news headlines, tweets, and stock trends, to predict market sentiment and direction, ultimately leading to profits for individual and institutional investors. Beneficially, there is no longer a need to read the newspaper the next morning to make investment decisions (IBM, 2016a).*

*Example IV: Key challenges for a worldwide operating freight and logistics company – The solution for the finance blockchain contains the goal of a single source of truth and the creation of greater trust and visibility, while redefining benchmarks for cost and processing time, resulting in a 30% reduction in processing cost, a 75% reduction in dispute cycle time, and a 60% to 80% reduction in the cost per invoice (IBM, 2018a).*

Finance transformation not only includes the optimisation of systems, technology, and processes but also makes more use of the workforce within the transformed areas. In most cases, CFOs are the key players in driving the adoption of new technologies, such as cloud, analytics, mobility, AI, blockchain, and RPA. These technology innovations present CFOs with an exciting opportunity to reimagine the finance function and help to transform the finance function to become more efficient (Ernst & Young, 2016a). Moreover, CFOs are building or adjusting the finance function with the right people with the right skills to complement and gain the most out of new technologies. The success of a CFO in terms of a finance transformation will depend on combining the intelligence of clever technologies with the brains, emotional intelligence, and interpersonal skills of talented people (Ernst & Young, 2016a). To respond to the rapidly changing business context and drive the business forward,

CFOs need to find the right balance between technology and people and continually work to focus each on the activities that best suit their skill sets (KPMG, 2015). “People are still essential to transforming the finance function but technology changes the kind of people we need and how we deploy them” (Capgemini, 2016, p. 7).

The technology and associated tools used in finance are changing continuously. The use of cloud computing, process automation, and analytics are all potential innovations within a company’s finance transformation (Ernst & Young, 2016a; Sinnett, 2013). However, technology alone will not lead to enterprises performing successful transformation (Andersson, Movin, Mähring, Teigland, and Wennberg, 2018). It is necessary to understand and plan the impact the transformation will have on the organisation, including people and skill requirements. Finance leaders themselves face challenges as they shift their organisations from transactional processing to business partnering (Deloitte, 2012a).

While a substantial amount of research has been conducted by investigating the challenges and drivers of information technologies for finance, the idea of finance transformation is under-researched. No study has yet researched the need for finance transformation from IT innovations by applying new technologies. However, the implementation of IT innovations are essential for enterprises to maintain and strengthen the competitiveness of enterprises. Thus, this research combines aspects in a unique way to give a holistic view on how the transformation process is applied, whereas previous research focused on the details of single work packages.

The variables identified in the data analysis are determinants for the success of a finance transformation process. The literature provides only limited insight into the answer of doing the right things. According to Moeller (2010), many companies still struggle with issues about data (integrity, sourcing, completeness, and cleanliness), process (lack of consistent end-to-end processes and clear handoffs, leading to much rework), control effectiveness, and technology (fragmented and isolated IT systems). Studies on finance transformation are important to find new ways regarding how to operate more efficiently. Based on Read and Scheuermann (2003), after a successful finance transformation, a company improves performance in growing business in a controlled environment, improves profitability with a

sustainable operating model, creates a smarter, leaner cost structure, and develops accurate analytics and forecasts for decision making and risk management.

The research will be a valuable contribution to theoretical knowledge through the in-depth review of various concepts and themes of finance transformation. This is achieved through a review of the academic and industry-based literature and the researcher's recognition of the effects of external and internal drivers on the adoption and implementation of finance transformation. The research contributes to a better understanding of the role and importance of finance transformation. The researcher aims to highlight key drivers of finance transformation, in the context of implementation benefits and challenges, and offers prescriptive guidance on how the transformation can be achieved.

The main contribution to knowledge and practice of this research is the creation of a finance transformation framework and recommendations for its effective implementation. Specifically, this research offers academics and finance industry practitioners a better understanding of factors critical to the process and design of a future finance transformation, supported by empirical evidence.

## **1.2 Research Aim and Objectives**

The aim of the research is to understand the process of finance transformation and to advise on how to implement the process more efficiently to better attain business objectives. To do this, the aim is to construct a framework for finance transformation to determine a well-designed finance transformation. This research does not focus on a specific industrial or commercial context, rather it considers medium and large global organisations and is conducted across different industrial sectors.

The overall research aim, as stated above, will be approached through the following objectives:

1. Identify and analyse design elements in terms of main activities for finance transformation and determine what leads to a well-designed finance transformation.
2. Identify and classify the different stakeholders involved in finance transformation and understand their needs and determine how these can be met.

3. Identify and analyse implementation approaches for finance transformation and determine good practices for implementation.
4. Identify potential key factors and risk-associated aspects of an enterprise success or failure within large finance transformations.

The identified factors and aspects will help to redesign key processes and technology platforms and restructure organisations to improve their overall effectiveness and efficiency. The goals are to articulate the different activities and drivers of a finance transformation.

5. Construct and verify a finance transformation framework.

The framework will highlight factors to consider when approaching the general finance environment, considering options, advantages, and pitfalls.

The research addresses the following questions to achieve its aim and to break down the predefined objectives:

1. What determines a well-designed and successful finance transformation?
2. What is the perceived importance of data concepts standardisation, centralisation, consolidation, and simplification for the creation of a financial platform?
3. What are the possibilities and limitations that exist about the transformation to an efficient financial platform?
4. What are the implementation approaches for finance transformation?
5. What are the relevant risk factors that mitigate the success of a finance transformation?

The key to answers to these questions is a properly conceived research model, which complies with all the relevant academic and scientific requirements. A brief overview of the approach to research follows in the next section.

### **1.3 Approach to Research**

The first step of this research will be an extensive literature review that will enable widening the author's knowledge and provide background to the primary research.

To achieve the overall aim of this dissertation, the author will use mixed methodology, combining quantitative and qualitative approaches sequentially. As this research seeks to provide an analysis of finance transformation expectations and experiences, the main practical element of the research will be to perform a survey with participants who are different stakeholders involved in a typical finance transformation. The main target is to receive expert knowledge from the participants. The chosen target audience has been selected based on the researcher's knowledge that the respondents have insight into aspects of finance. The number of participants in the survey should allow drawing meaningful and statistically sound conclusions.

Then, the primary data will be used to construct the finance transformation framework. This will then lead to a discussion set against the existing literature, with the aim of contributing new insight into the finance transformation paradigm. The researcher seeks to provide additionally evidence in terms of the verification of the quantitative results and the verification of the finance transformation framework by using a qualitative approach.

### **1.4 Contents**

The structure and content of this dissertation is as follows. The first chapter introduces the reader to the research topic. The background to the topic and the justification of the importance of the research are explained, followed by the research questions, which are based on the overall research aim and objectives. This initial understanding of the topic will be then enhanced by an extensive literature review.

The research contains an in-depth literature review in Chapter 2 to understand what is already known about finance transformation and what the current topics are in the prevalent specialised literature. The literature review focuses on four key areas, which are preponderantly significant in the investigation of the research aim as follows:

- Procedures: illustrate definitions and investigate the process of finance transformation;
- Parameters: explore reasons, drivers and challenges of finance transformation;
- Managing Change: investigates which activities are necessary to succeed;
- Risk: discusses risks and the indicated areas of performance improvement.

The focus of Chapter 3 is on the research methodology and describes in detail how the primary research was conducted to address the gaps identified in the literature review. In Chapter 4, the analyses and findings will be presented. In Chapter 5 the findings will be discussed. The subject of Chapter 6 is the framework for finance transformation based on the results of the conducted research and the literature, followed by the verification of the finance transformation framework in Chapter 7. In Chapter 8 the conclusion to the thesis is given, limitations, and recommendations are given to researchers for further research.

## **2 Literature Review**

### **2.1 Introduction**

Multiple enterprises are under pressure to improve financial and operational performance as expectations of owners, executive management, or shareholders increase. A change is necessary to either maintain the companies' competitive leadership or to address financial challenges and changes in the business environment due to e.g. economic downturns, loss of market share, service maturity, or regulation that might impact performance. Moreover, the challenge is to drive business in real-time while the increasingly massive volume of data needs to be deployed as an appliance or delivered via the cloud.

This chapter summarises available literature on finance transformation. The first part of the literature review starts with the definition of finance transformation and briefly summarises its historical background and current development. Additionally, the progress of a typical finance transformation process will be illustrated. The reader will gain deeper insight into this topic and will be introduced to different phases, levels, and steps for the process of a finance transformation. The second part of the literature deals with dimensions, reasons, and approaches to launching a finance transformation programme. Numerous areas in which finance transformation can positively influence corporate performance will be critically reviewed. Associated issues and challenges round off the second part. The third part deals with the topic of managing change that is part of the proposed framework to support process quality and process performance improvement. The fourth part of the literature review outlines the difficulties of finance transformation, risk-associated aspects, obstacles that are overcome, and areas for improvements.

### **2.2 Defining Finance Transformation**

Transformation in general is one of those buzzwords in business that can mean almost anything “from a quick-and-dirty restructuring to a full-scale corporate rescue” (Maceda, Garstka, and Ormiston, 2014). The full potential of transformation in the most literal sense has been defined based on Maceda et al. (2014) as “a cross-functional effort to alter the strategic, operational, and financial trajectory of the business, with a stated goal of producing

game-changing results”. Clare (2016) stated that transformation is the process of “profound and radical changes that orients an organisation in a new direction” and takes it to the next level.

Finance transformation is one of the components of overall business transformation. It involves the remodelling of the entire business (Bansal, 2013). The finance component is aligned with the objective of the research relating to the changes brought about by transformation and whether it can improve the financial performance of the enterprise business. Overall, the finance transformation transforms adjourned corporate performance into perceptible corporate success (Keuper and Neumann, 2008). Furthermore, finance transformation is about leveraging new technologies and business models to deliver more efficient and effective services. Finance transformation is an approach that affects both public and private companies. Regardless of whether a company is owned by capital markets, by affiliates, or by private persons and whether the company is large or small, or national or international, the idea of finance transformation is a generic approach to effective and efficient corporate management (Keuper and Neumann, 2008). Finance transformation describes more than just a recent phenomenon; it is a paradigm shift of company management regardless of the ownership structure (Burrows, 2017; Daruvala et al., 2012; Deloitte, 2016a).

A financial platform is a landscape and component model of finance functions, systems, and processes that are typically used in enterprise finance transformations. Based on the model of Mella (2012), capitalistic enterprises as operating systems of transformation carry out four (parallel) efficient transformations – productive, economic, entrepreneurial and managerial (organisational) transformation – beside the financial transformation one. Thus, finance transformation can be seen as an important own transformation within an enterprise transformation. However, the connections and the coordination efforts within the overall transformation should not be neglected.

It is important to note that a finance transformation is a programme that is considered a joint mission of finance and IT. It is not enough that one part of the requirement and solution is less surveyed than the other, but the connections between the two are to be developed in the form of a uniform technology architecture. Furthermore, it is necessary to ensure personnel continuity in the management of the programme as well as for all key stakeholders.

Moreover, an ongoing review of the programme objectives using a business case view and an early definition of a (target) operating model reduce the effort for the integration, where end users will work on an integrated system. One integrated system will ensure standardised data elements (e.g. materials management records, standardised reporting, and standardised business process flows across organisations). The reporting structures will enable accurate, accessible, and timely reporting to end users at all levels (PwC, 2013).

There is a strong relationship between how the finance function model operates in practice, and the level of transformation ambition. If the business’s primary goal is improving the efficiency of the finance function, the sourcing model of choice is often outsourcing (Kops and Lyon, 2014). The process efficiency, flexibility, scalability, and continuous improvement that business process outsourcers can provide are all cited as key benefits. Where broader business transformation is required, the finance function tends to use both shared services and outsourcing, often referred to as hybrid structures according to Kops and Lyon (2014). The goal of a financial platform is to build a group-wide finance template to ensure uniform technologies, methods, and processes.

According to Murphy (2011), the minimum number of FTE for finance transformation is between a hundred and a thousand FTEs or more, while the typical programme length varies between five and ten years.

Today, various finance transformation definitions exist. The following table summarises the different definitions of finance transformation proposed by the most important authors in historical order.

Table 2-1: Definitions of finance transformation.

<i>Definition</i>	<i>Source</i>
Finance transformation is about “motivating” the enterprise “to embrace change”. Approximately 40% of the time spent is for “selling the change” and 60% of the time should be spent on “creating a vision of the new finance function and implementing change”. Changes include the development and implementation of process, system, and organisational changes, which improve finance efficiency, effectiveness, and service while remaining compliant with statutory and regulatory requirements.	Gattenio and Hackett (1997)

<i>Definition</i>	<i>Source</i>
A finance transformation is about “leveraging the finance professional’s analytical talent that is required on all fronts”.	Iversen (1998)
Finance transformation means that all areas of the company are economically and financially oriented towards effective and efficient corporate management.	Keuper and Neumann (2008)
“Ask a gathering of chief financial officers what finance transformation means, and you're likely to get as many definitions as there are finance chiefs in the room”. However, this author suggests to “define what finance transformation means for the company and pursue projects that address the most pressing priorities”.	Silvers (2010)
Finance transformation is an umbrella concept that focuses on improving performance, stewardship, and control of the enterprise. Results have a greater effect on strategy formulation and execution across the enterprise via finance.	Gould (2013)
The finance transformation team is responsible for leading a programme to realise the “operational excellence agenda with finance organisation roles like reporting, compliance, internal control, risk management, performance management and strategic partner”.	Chang, Ittner, and Paz (2014)
“The term finance transformation is used to describe strategic initiatives aimed at improving finance within an enterprise. It can involve a variety of tasks from shortening a budget cycle to implementing new accounting software to reducing overhead costs”. However, “the general goal of any transformation is the same: to align finance with the overall company strategy to become more efficient and provide better service to internal customers”.	Lau (2014)
“Finance transformation is often part of larger multi-function transformation initiatives where the role of the CFO is driving the administrative agenda, and IT, HR, procurement, and other transformations affect the finance function”.	Rupprecht (2015)
A financial transformation is a strategic project including tactical or operational aspects that are enterprise-wide, led by the CFO, and generally take 3 to 5 years. Key properties are a broad scope, multiple objectives, and a substantial effect on the enterprise.	Kumar (2016)
“Financial transformation describes the journey which the Finance department undertakes as part of becoming a trusted business partner”.	Moodley and Bayat (2017)

As shown in Table 2-1, literature does not provide one single and commonly accepted definition of finance transformation, since multiple areas within a company can be affected and each company needs to individually define the scope and objectives of its own finance transformation.

This research was conducted using the following definition: *finance transformation deals with integrated management of transformation initiatives within finance or where finance is involved.*

## **2.3 Historical Background and Development of Finance Transformation**

Software companies such as Microsoft, SAP, and IBM have experienced transformation in finance over the last 40 years (FEI, 2016; Iversen, 1998; Keuper and Neumann, 2008). Kilmann (1989) defined enterprise transformation as fundamental, serious, large-scale, and long-term change that demands new ways of perceiving, thinking, and behaving by the members of the organisation. The focus at that time was broad encompassing the transformation of the full enterprise rather than the individual finance unit.

In the last century, a valuable finance transformation trend was the shared services delivery model that started in the 1980s in the US and in the early 1990s in Europe. Shared services has been a success story and has been recognised as the key component of a best practice finance function (Kops and Lyon, 2014). Organisations have established multiple back-office finance functions that are likely to benefit from a shared services structure. The labour arbitrage has driven much of the near shoring and off shoring over the last ten years, primarily to Eastern Europe and India.

Finance transformation and its implementation are necessary in today's economic environment (CGMA, 2012) to master the challenges for the Finance Department, both in human resources and in its infrastructure and technology. According to the research over the past decade conducted by the Chartered Institute of Management Accountants (CIMA, 2011), the need for increased finance function transformation was predicted.

Illustrated in Figure 2-1 are the development and increasing deployment of Information Technologies within finance departments. The following figure represents the most common trends and practices from labour arbitrage as the starting point of finance transformation towards the application of blockchain technology, which is considered to be the state-of-the-art technology, and which is considered a service that will strongly increase its importance in the near future.

In the past, the focus was to follow shared services, near shoring, and off shoring models (labour arbitrage) where labour and the cost of doing business is inexpensive, and overall, they seek operational efficiency using the stringent shared services best practice approach. Today, the focus is more on a pre-built set of industry assets delivered as a service, the design thinking approach, and the stringent process automation using robotics automation of partial or end-to-end processes.

The leading practice for the next years will be cognitive automation with the goal to leverage the power to harness and understand vast amounts of unstructured data to create value and responsive finance with new insight from technology, such as Watson. Computers have started to interact in natural human terms across a range of applications and processes (IBM, 2015). The most recent trend is to leverage autonomous decision making (reasoning and remembering), new insight, data discovery (learning), and personalised, conversational support (engagement).

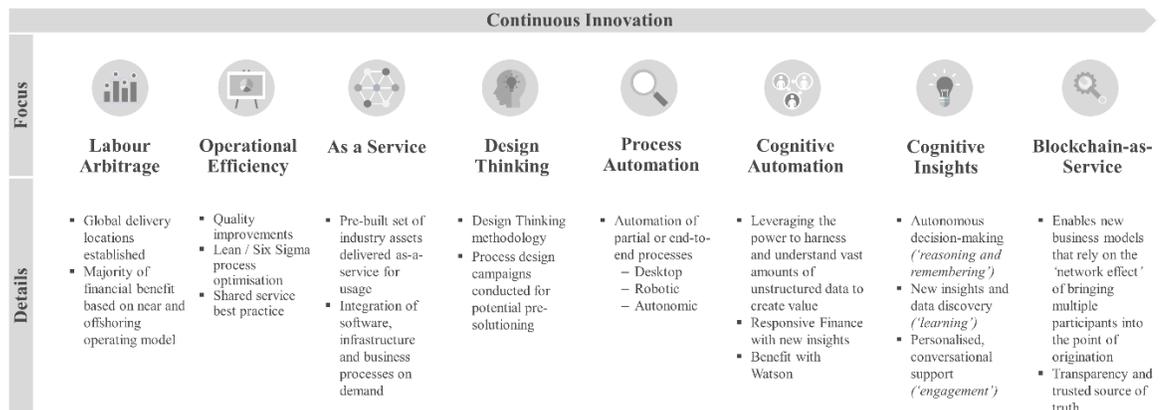


Figure 2-1: Continuous innovation journey and evolving aspects of transformation.

Source: Corson (2016); Gupta et al. (2017); IBM (2016a); PwC (2013); Subramanian and Singh (2017); Treleaven, Gendal Brown, and Yang (2017).

The blockchain, as one of the financial transformation solutions, is today considered a targeted application of intelligent technology towards individual processes (Nofer, Gomber, Hinz, and Schiereck, 2017). A blockchain is an immutable digital ledger system implemented in a distributed fashion, commonly without a central repository and usually without a central authority. It enables users to record transactions in a public ledger to the community, such that no transaction can be changed once published (Yaga, Mell, Roby, and Scarfone, 2018).

On a blockchain, different activities can be settled (i.e. regulatory compliance, cross-border payments and settlements, custody and asset tracking, and trade finance and post-trade/transaction settlements; (IDC, 2018). Blockchain as a decentralised and trusted data storage can be employed to advantage for finance (Muzammal, Qu, and Nasrulin, 2019). Blockchain can further revolutionise the historical ERP and the whole finance function in corporations (Dimbean-Creta, 2018).

The blockchain enables a business model that relies on the network effect of bringing multiple participants to the point of origination to create transparency and a trusted source of truth (Dhillon, Metcalf, and Hooper, 2017; Morabito, 2017). Innovation like the blockchain is likely to be transitory and is considered a potential new efficient environment for finance and a shared source of finance data (Lee and Deng, 2018). Information that is held on a blockchain exists as a shared and continually reconciled database, but it is important for continual innovation so that the degree of maturity of applicability increases and the need to use the blockchain becomes intensified.

## **2.4 Process of Finance Transformation**

In this section, the process of finance transformation will be presented, containing phases from strategy (vision) to execution (implementation).

Mohr, Büning, Hess, and Fröbel (2010) stated that, especially in times of crisis, a company's willingness and ability to transform is a competitive advantage. Building a positive image of transformation, which starts with the vision and strategy of the company, is essential. Each finance transformation programme has a certain degree of individuality. Primarily, it is important to build up the dialogue between the affected stakeholders and a joint mission of business and IT Departments.

According to Hargrove (2014), successful transformations position finance to be a valued, capable, and trusted partner to the operating units, with deep knowledge of the business. To achieve this, the finance organisation must align with business strategy and identify the most cost-effective way to accomplish transaction processing activities to focus on those that support the mission achievement (e.g. decision support and risk analysis). Strategy is the key driver in the digital era, not technology (Kane, Palmer, Phillips, Kiron, and Buckley, 2015).

Keuper and Neumann (2008) separated the finance transformation into four main business content-related elements, more likely as exclusive and exhaustive categories. First, organisational management is one element. Second, merger and acquisition management is another element of the finance transformation. Third, risk and finance management is one of the most important elements of finance transformation, and the fourth comprises the treasury and controlling elements.

In Figure 2-2, the different phases from a business perspective, adapted from Cooper (2001), are illustrated to process a finance transformation. The first four phases proposed by Cooper (2001) are adjusted by adding a fifth phase, the implementation phase, where the vision is put into effect, and activities are executed. The implementation phase is the most important part of the design thinking approach, but it is the one most often forgotten (Johnson, 2016). Thus, the phase model had been adapted to reflect all relevant transformation phases.



Figure 2-2: Phases of a finance transformation.

Source: Adapted from Cooper (2001).

The five-phased approach has been tailored to address companies' specific requirements. The finance transformation involves a transformation baseline or an understanding of the current

state or “As-Is”, meaning the answer to the question: “Where are we?”. The transformation vision is understood as a vision for the desired state or “To-Be”, meaning the answers to the question: “Where should we be?”. Of course, it involves a carefully considered analysis of the internal and external factors affecting the organisation or business, considering alternatives, options, and selection based on predefined criteria.

Within the literature on models of the finance transformation phases, authors tend to add mission, goals, and critical success factors to the vision. Within the third design phase, the solutions will be designed to implement the various initiatives that the transformation strategy has identified. The fourth phase deals with the finance transformation delivery plan and the business case. The last phase will be the major implementation phase itself, where the process calls to execute, which brings about the change from the baseline to operation.

The approach ensures that finance transformation objectives are grounded in business outcomes and accelerate the time to value. The finance transformation journey, as illustrated in Figure 2-2, can be categorised as rapidly assessing the finance function and developing an actionable vision, strategy, and blueprint to address the CFOs’ broad mandate and prominent role. Activities help redesign key processes and restructure organisations to improve overall effectiveness and efficiency, while striving to become a value integrator (IBM, 2010).

As depicted in Figure 2-2, the main phases (two to four), especially designing finance transformation, can be drilled down further to different sub-phases, steps, and activities. Aspects like As-Is vs To-Be and global vs localisation can be combined into a finance target operating model. The finance target operating model methodology produces a roadmap for finance reinvention by driving specific actions (these will be assessed later).

Rabinowitz (2006) recommended 12 steps for the process of a financial transformation and formulated these steps into prerequisites that a transformation roadmap needs to follow. The roadmap is more detailed than the general breakdown of transformation processes into phases, where both assumptions and milestones have been formulated.

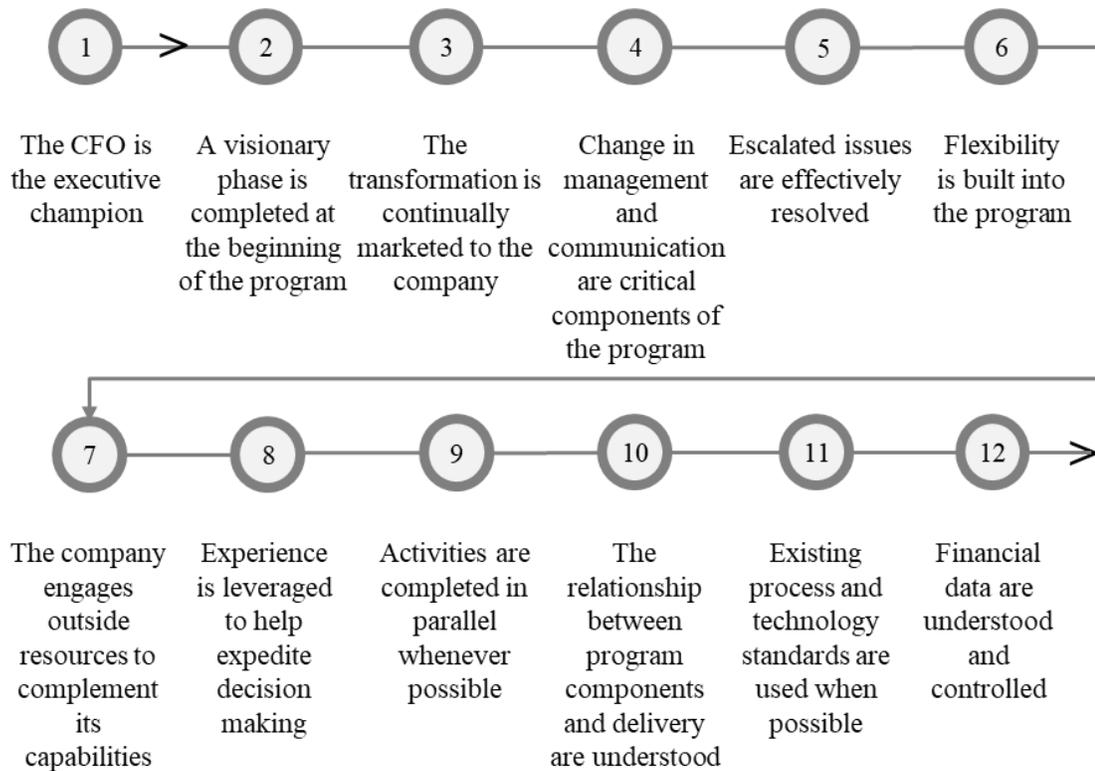


Figure 2-3: Recommended financial transformation steps.

Source: According to Rabinowitz (2006).

Rabinowitz explained what is mandatory, but the author does not derive activities for implementation. It is more like a general guidance on what the prerequisites for a finance transformation are. Regulations, systems, and processes in finance are not static. Finance specialists, including many CFOs, actively look at the future of finance and the leading best practices. The design and running of excellent finance operations and platforms ensure a reliable, controlled, and flexible service that can deliver change. This enables improved control, cost, and service. The focus of the thesis is the area of finance and accounting services, specifically investigating the transformation of the financial enterprise resource planning (ERP) platform to transform the organisation.

Illustrated in Figure 2-4 is the typical progress of a finance transformation. The dark grey line indicates the progress based on time and the higher efficiency of implemented activities. First, the finance transformation is triggered, and there is a first reduction in efficiency because most activities are in parallel with the As-Is definition and in parallel with the To-

Be activities, resulting in higher effort. After the first requirements and solutions are implemented, operational turnarounds are available and recognised by the stakeholders. Point four indicates an inflection point as a new strategy and model are deployed and synchronised. The efficiency curve starts to flatten. Going forward, the changing point on the typical progress of a finance transformation results in two different scenarios. Hopefully, growth through adaptive finance innovation solutions or, unfortunately, the failure to transform and the decline stage.

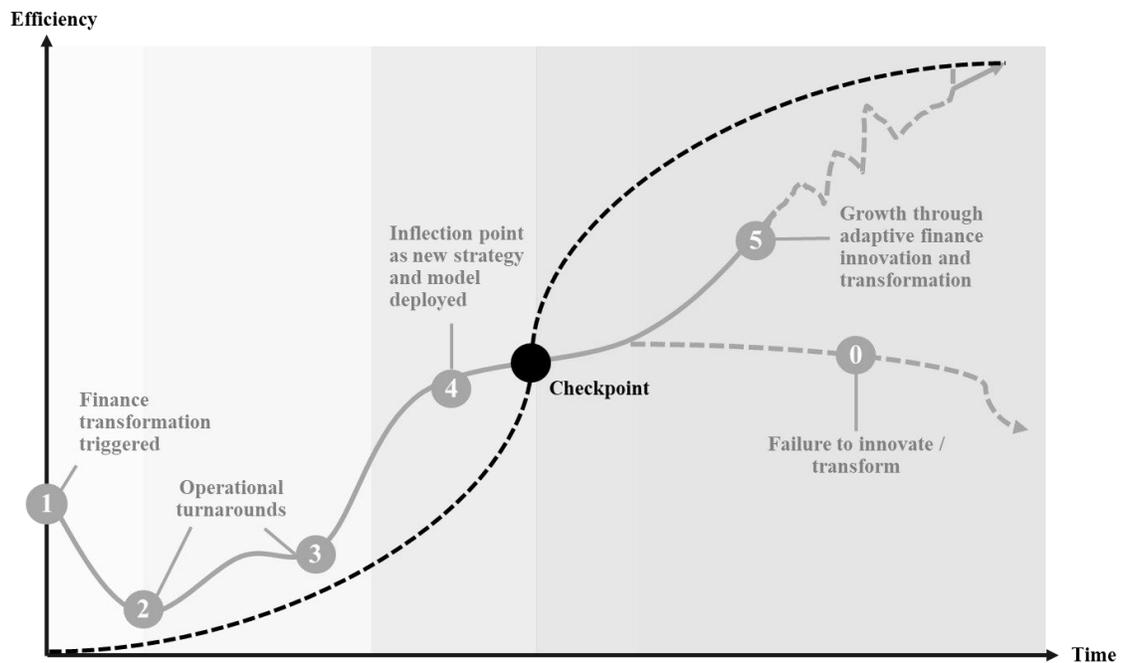


Figure 2-4: Typical progress of a finance transformation.

Source: Adapted from Walter, Shanahan, Reeves, and Goulet (2013).

According to Schawel and Billing (2014), based on the product lifecycle theory of Vernon (1992), the black dashed line indicates the most common possible progress of a finance transformation in theory. Up to the checkpoint, it is a challenging, time-consuming progress. The fruits are harvested only after the checkpoint. There are a limited number of indicators of a broken process indicated or mentioned in the literature. The research gap here is the missing description of symptoms to watch for and their effect on the business. The most suitable implementation of a good process is the full coverage of the end-to-end process view within a finance transformation.

## 2.5 Dimension, Reason, Driver, and Challenge of Finance Transformation

In this section, the information and explanation of the dimension of a finance transformation will be presented, followed by the reasons and drivers for finance transformation and finalised with issues and challenges that occur in a finance transformation.

### 2.5.1 Dimension of finance transformation

In effect, transformation consists of three dimensions: degree of change, duration of change (time), and scope of change. These are displayed in Figure 2-5. Compared to a one-step transition (short-term), transformation implies long-term, serious, and fundamental changes. Similarly, transformation simultaneously entails several aspects of large-scale change (Kosonen, 1994).

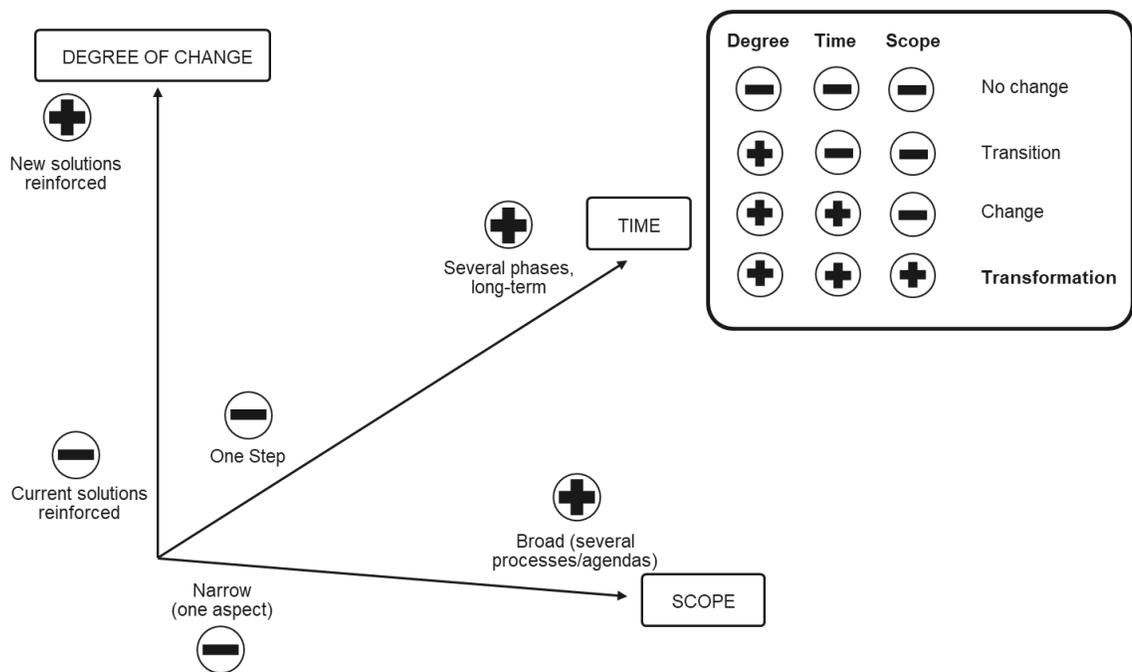


Figure 2-5: Key dimensions of business transformation.

Source: Adapted from Kosonen (1994).

Corporate transformation is embedded into the corporate strategy. Transformations are either initiated by changes in the corporate strategy or strategy shifts due to an extensive

transformation, depending on whether the strategy is approached from the design or emergent viewpoint. In their work on business transformation, Gouillart and Kelly (1996) defined transformation more broadly. On one hand, they argued that business transformation refers to the shifting of the company's conception of itself (i.e. what it is and what it can achieve). The authors referred to this dimension of transformation as reframing. Second, transformation affects the way the company and its operations are organised to match the new conception of self. This dimension, called restructuring, is centred on competitiveness and business strategy. Third, transformation is about revitalisation and changing the company's alignment with its environment. Moreover, renewal deals with the people side of the transformation. It is about investing individuals with new skills and new purposes, thus allowing the company to regenerate itself (Gouillart and Kelly, 1996).

The design of a global finance operating model supports the enterprise, with a holistic focus on seven main components: policy, process, performance measurement, organisation, data, people, and technology (Greig, 2007; Letarte and Gittleson, 2009; Procházka, 2017; Silvers, 2010).

The transformational aspects focus on developing a larger vision for finance operations to transform the role into that of a more effective business partner. The key dimensions, which various finance solutions aim to improve upon are illustrated in Figure 2-6.

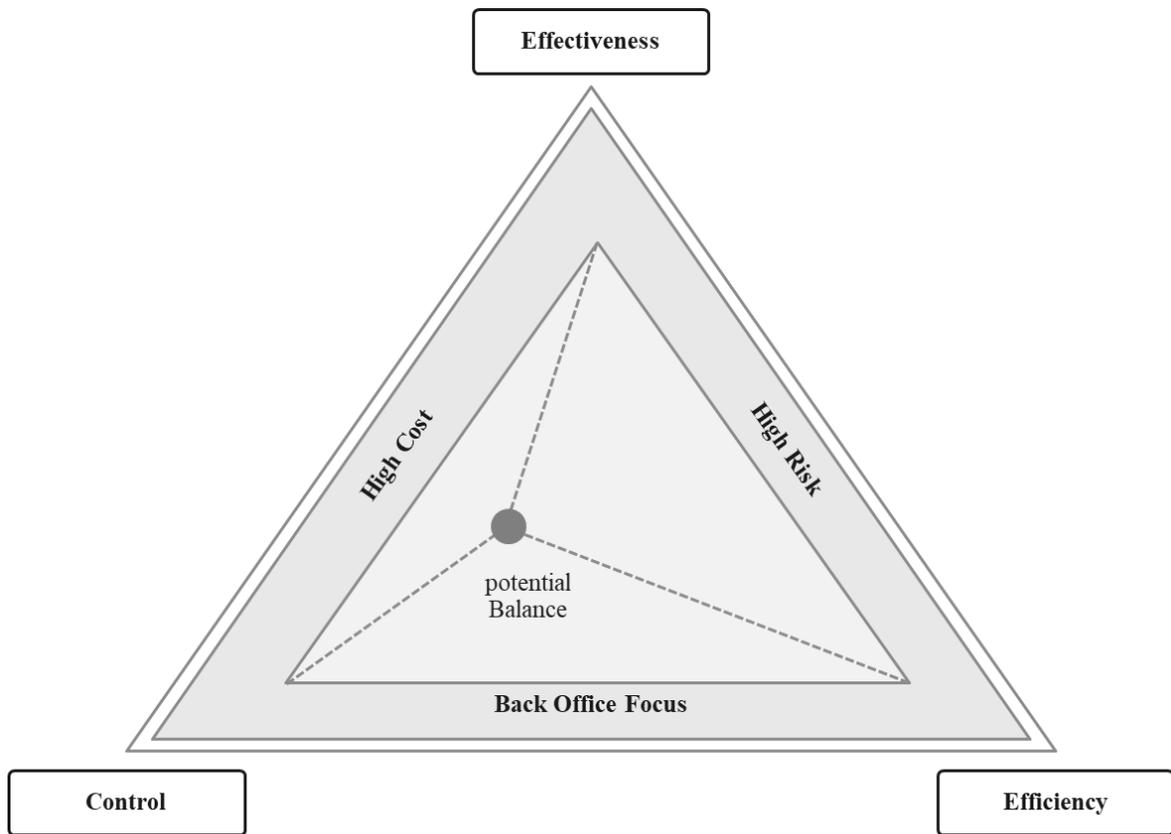


Figure 2-6: Key dimensions of finance transformation.

Source: Adapted from Chadha, Corson, Dhingra, and Akaishi (2016).

Finance must balance its three key priorities: cost reduction, compliance requirements, and efficient operations. To be effective in driving forward the business (effectiveness), to promote strong governance and control in the organisation (control), and to be efficient in the operation of the finance (efficiency), the potential balance must be carried out. Too much control will result in lower effectiveness and efficiency.

The effectiveness will include driving the business forward (general), delivering effective finance support service to business units, providing timely and accurate reporting and business information, and strengthening business decision making throughout the organisation. The challenge is to find the potential balance within the triangle problem, having sides unequal in length, to cover aspects such as promoting strong governance and control in the organisation, designing an appropriate finance framework, and managing finance risk across the organisation.

## **2.5.2 Reasons and drivers for finance transformation**

Due to the increasing competitive pressure (globalisation), pressure on companies to optimise finance processes increases. The most prevalent reasons and drivers to perform a finance transformation are described in this section.

Finance transformation empowers finance leaders to gain full control over the financial processes (Blackline, 2018). This can be achieved by automating accounting workflows and providing a secure workspace to complete financial activities including streamlining financial reporting. However, the blockchain relies on a decentralised infrastructure without being controlled by any one person or group (Dimbean-Creta, 2018; Käll, 2018). Automation removes much of the complex, manual, and error-prone steps inherent to dated practices and frees finance departments to add more value to the business by shifting focus from processing activities and transactions to analysing them (Blackline, 2018).

The finance sector has undergone a major transformation in recent years. The tightening of the legal regulatory framework, an accelerated change in corporate structures, and increasing capital market pressure are examples of current developments that are changing the requirements for CFOs. The wide range of questions to be solved in the context of a finance transformation shows that it is more a long-term change process than a short-term project initiative. True regulators of the economy are not exclusively public regulatory authorities, and financial activities increasingly shape and transform the world. The financial sphere contributes to rule setting (Huault and Richard, 2012). Companies with a state-of-the-art finance process can lead this process.

According to Banham (2018), the main reason for performing a finance transformation is the higher efficiency and time savings in finance activities using the potential of financial automation. The following reasons apply for finance transformation, as shown in Figure 2-7. These reasons will be critically reviewed and discussed in Chapter 4, based on the analysis of the data gathered by the researcher.

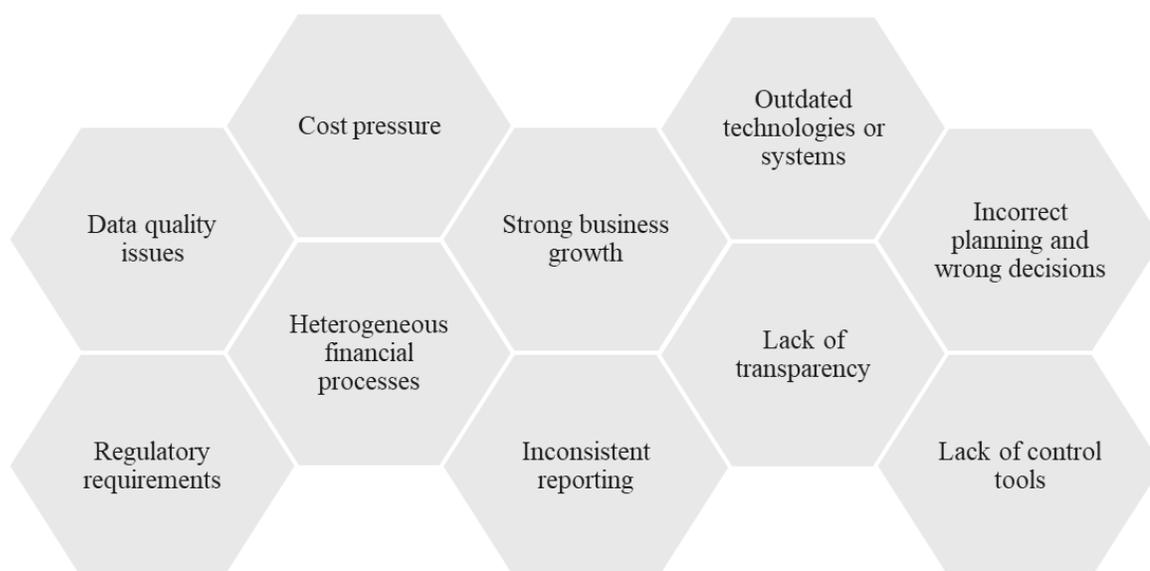


Figure 2-7: Reasons for finance transformation.

Source: Banham (2018); CIMA (2011) ; IBM (2016a); Keuper and Neumann (2008); Murphy (2011); PwC (2017).

According to Keuper and Neumann (2008), due to increased competitive pressure, the margins for errors became increasingly smaller, while this affected the dimensions of finance aspects and time. Thus, a modern financial function becomes a comprehensive competitive advantage along all essential support services within the company. When the risks increase, the decisions must become better in quality. Finance transformation plays a significant role here.

Declining business, which is generally recognised as a major reason for a large transformation, is usually not sufficient. Bothwell, Taylor, Scanlon, and Opseth (2012) stated that finance process improvement is a compelling issue for many enterprises. Growth targets are more aggressive than ever, and this means that finance must provide the best-possible financial analysis in a shorter time to assist operating managers in the selection of growth tactics. According to Milne, Henn, and Neufcourt (2013), CFOs are willing to improve the financial systems with a stronger ROI than ever before. The combination of low-cost hardware, cloud services, mobile tablet devices for enterprises, and new software for business intelligence and enterprise performance management enables the company to run faster and achieve more accurate results, while improving the overall productivity of the office of

finance. Linder (2004) concludes that the most important value given to the company is the increase in financial flexibility.

The main decisive aspects and reasons, according to Groenke and Wenning (2013), are the following:

- Transparency about the current performance of the Finance Department (maximum);
- Focus on control-related information as a single source and appropriate levers to reduce costs and improve service;
- Goal-oriented transformation of the financial organisation towards a world-leading “best in class” organisation;
- Increasing flexibility and changeability of the organisation.

To exemplify this, consider the automotive sector. According to a proposal from the policy, in Germany from 2030 onwards, only cars can be sold that no longer emit CO<sub>2</sub>. Accordingly, only fuel cells and electric cars should drive. This has an enormous effect on the financing transformation for automotive manufacturers and suppliers. For the automotive industry, the following aspects are driven for transformations related to finance activities:

1. Continued regulatory pressure: In 2018, regulators could bring charges against more captive finance companies.
2. Loan terms continue to lengthen: As vehicle prices and loan amounts grow, consumers have been stretching loan terms to manage monthly payments.
3. Digital demands: Consumers want more connectivity, are focused on active safety and ease of use, and are increasingly using digital sources in making their purchase decisions.
4. Shifting industry landscape: Suppliers will add more value in alternative powertrain technologies and in innovative solutions for active safety and infotainment. Europe needs to restructure and adjust its capacity to meet demands.

Rouse (2006) identified four main drivers for the transformation. First, a new market and/or technology opportunity are observable and transparent. Second, anticipated failure exists due to the market and/or threats. Third, other players’ transformation initiatives are visible within the market or from competitors. Last, crises resulting from declining market performance, such as in revenue, profitability, and cash-flow problems, are drivers for finance

transformation. Approaches are dependent on organisational culture, maturity, available resources, and willingness for change. Even smaller enterprises need to ensure that they are constantly updated about the technological changes that have already been established by larger enterprises. An overview is given in the following table of the general drivers for finance transformation.

Table 2-2: Drivers for finance transformation.

<i>Driver</i>	<i>Description</i>
Generality	Clearly defined goals and requirements in the sense of a transformation story (Rouse, 2006); integration of various subprojects into a finance transformation programme; full transparency of the risks of subprojects and the definition and control of countermeasures; consistent change management, which is interlinked with the competences related to the CFO's issues; realisation of cost savings to achieve cost efficiency and high-quality finance activities (Hagel, 2013; Kumar, 2016).
Volatility	Volatility in markets, prices, and stocks; radical changes of economic conditions (e.g. financial crisis), handling of non-transparent markets (Ernst & Young, 2016b); changes due to core product demand, cancellation of major customer contracts; product lifecycles are shrinking.
Innovation	Technological innovations, such as information and communication technologies, robotics process automation, and cognitive solutions (Fuessler and Levy, 2016).
Risk, Compliance and Control	Increased focus on risk, compliance and controls, multiple compliance requirements, limited visibility of the enterprise-wide risks; manual processes cultivate a silo-based approach to compliance; increased risk of fines and delays and high cost to establish and maintain compliance (KPMG, 2016); risk information is irrelevant, no consolidated view of risks, no strategic context or ability to manage cash.
Regulation	Increasing complexity of regulations and policies and higher duties from not leveraging trade agreements (Ernst & Young, 2016a).
Strategy, Operating Model	Industry consolidation and globalisation; higher focus on performance standards and service quality; ability to provide support to other divisions or departments; competitive advantage is dissipating more rapidly, and companies need to transform, otherwise risks are misjudged (PwC, 2017).
Business Insight	People are tied-up with transaction processing versus providing business insight to customers; handling multiple versions of truth since data are not integrated, for example, between planning and consolidation systems; no single source of data and limited capabilities to link strategy to execution (IBM, 2016a).

<i>Driver</i>	<i>Description</i>
Transaction Processing	Business processes are not integrated; time-consuming end-to-end processes, complex finance and operational regulations; alignment of organisational structure with future needs; inconsistencies in the setup and use of standards, redundant master data, or inconsistent data (Sutcliff and Donnellan, 2006).
People	Changing workforce and increasing global mobility and talents (Lyon, Madrian, Furness, and McCorkell, 2016).

The transformation of modern finance systems can often reflect an organisation’s cultural change and can be a catalyst to deliver revenue growth. Today’s executives expect clarity, faster results, and transparent operations to drive growth and deliver profit. The commercially focused Finance Department can provide robust cost control and risk management and can add value by creating synergies between accounting, planning, cash management, and forecasting. Introducing the latest technical innovations for finance can have a positive effect on the overall corporate performance. Embracing change and effectively delivering it can play a key role in achieving further commercial success.

Armstrong (2014) argued that focusing on the goal of the core of finance simply reduces costs with minimal consequences and preserves finance’s core governance role. This is usually carried out because the enterprise has made a divestiture, because revenue or revenue growth is falling, or because a cost-cutting mandate has been set. However, to increase the finance scale, it is necessary to expand the services finance offers in response to new business requirements in a flexible way. Those requirements result from corporate growth, a substantial acquisition, or successful entrance into new markets. There are two goals in parallel of making finance more efficient while providing better services (Armstrong, 2014).

When finance systems and processes are not optimally integrated, manual intervention is needed that leads to inefficiency and error. Thus, finance transformation can dramatically improve the processing of data, the quality of the data, and the last automation potential.

Many enterprises are performing finance transformation, but few have successfully completed the transformation process (Dennis, 2013). Finance transformations can take many forms, varying from company to company, but all enterprises need to reshape their operating model. The operating model can be adjusted or realigned so that customer

preferences and requirements drive every activity in the buying and selling chain. Doing this requires integrating all business and finance activities and optimising the use of data related to those activities (Anderson and Anderson, 2010). According to the Institute for Robotic Process Automation (IRPA):

Robotic process automation is the application of technology that allows employees in a company to configure computer software or a robot to capture and interpret existing applications for processing a transaction, manipulating data, triggering responses and communicating with other digital systems. (IRPA, 2018, p. 1)

Moreover, research of the Corporate Executive Board Company (CEB) finds that three-quarters of large global companies are or have recently undertaken a finance transformation (Dennis, 2013).

### **2.5.3 Issues and challenges of finance transformation**

Finance transformation has been observed in the past, focusing primarily on savings, cutting costs, gaining efficiencies, and establishing the right controls and risk management procedures. After the global economic crash of 2008, referred to as the post-crisis world, companies have done a risk reset. Finance transformation includes a new focus on enabling corporate strategy, capital agenda, and competitive advantage in the market (Paice and Gronenthal, 2014). The main targets for enterprises are the support for key decisions, eliminating redundancy, and consolidating activities based on an effective framework for management. Cressy, Cumming, and Mallin (2013) illustrated the effect of regulation and financial structure on ethics and governance. Ethical issues may arise where the corporate governance structure of enterprises is less robust. Finance plays a critical role in developing and implementing service strategies (Kasmerski, Koudal, and Silvers, 2007).

The figure below represents the financial activities and issues that are the ones with the most critical gaps to close in finance transformation. The two axes are importance and the performance gap for finance activities and issues (Loughridge, 2010).

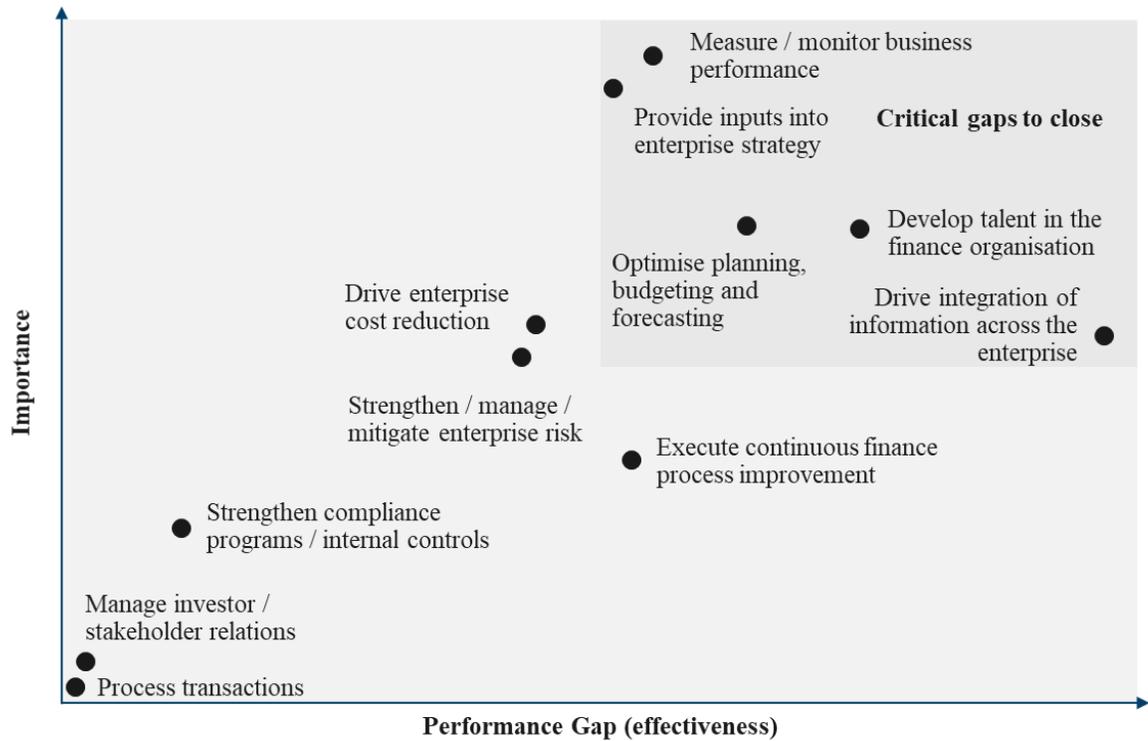


Figure 2-8: Key performance gaps from CFO study.

Source: According to the IBM IBV CFO Study, 2010.

In this thesis, the focus will be on activities to close the most critical gaps. These are highlighted in the top right-hand quartile of this graph. In the following table, the most important issues and challenges are categorised and illustrated that are in the context of a finance transformation.

Table 2-3: Finance transformation issues and challenges.

<i>Issues</i>	<i>Challenges</i>
Generality	Working environment in a different culture; organisational redesign (Kops and Lyon, 2014).
Volatility	Commitment to budget plan; consider human behaviour and reinforce existing code of conduct rather than reducing the number of rules (KPMG, 2016).
Innovation	The way humans interact; new technologies, such as blockchain and distributed ledgers (Joachim, 2017).
Risk, Compliance, Control	Multiple compliance requirements, while high cost to establish and maintain compliance arise; common finance data definitions (data governance); limited visibility of the enterprise-wide risks cause of limited alignment between front and back-office applications and activities (KPMG, 2016).
Regulation	Increasing complexity of regulations and policies (Ernst & Young, 2016b).
Strategy, Target Operating Model, Talent	Corporate philosophy of information standards; strategic and operational analytical capability; performance optimisation with operational data standards and risk management (PwC, 2017).
Transaction Processing	Workflow and collaboration; providing historical and forward-looking views on data including benchmarking; maximise cash flow through improved billing, accounts receivables, payables, and general ledger activities (IBM, 2016a).
Business Insight	Lack of IT systems integration; handling a high volume of data; adaption to business changes in case of realignments or organisation changes, capabilities to respond quickly to business needs (IBM, 2016a).

Fuessler and Levy (2016) argued that CFOs should care about advanced analytics and cognitive computing, while transformation through cognitive technologies in finance organisations is determined to be the “most effective” having higher analytics maturity. Cognitive computing solutions offer valuable capabilities that can transform how organisations think, act, and operate. It enables powerful, fast, and accurate solutions. Cognitive-based systems accelerate, enhance, and scale human expertise. For example, cognitive computing can improve cash, enhance productivity, and increase quality in the order-to-cash process. For the order-to-cash process, finance teams can apply cognitive computing more deeply in collections, cash applications, and dispute/deduction management. This could improve working capital, enhance productivity, and reduce defects.

Transformation programmes are prone to fail because they affect multiple enterprise architecture layers, involve many stakeholders, last several years, and tie up considerable amounts of corporate capital. To handle their complexity, scholars recommend structuring business transformation projects into portfolios of interdependent, yet smaller and thus manageable projects. So far, little guidance on how to do so exists. To share first-hand experience and stimulate research, it is planned to present and reflect on finance transformation case studies. The finance IT roadmap serves as the foundation for transforming finance IT setup to tackle future challenges of financial management from an integrated business, process, and IT perspective.

## **2.6 Managing Change**

In this section, the role of organisational culture, the changes in people and their acceptance of (new) technology for the success of a finance transformation is discussed. Change management is considered the biggest barrier to finance transformation success, as pointed out by Lyon and Lawson (2012). The aim of change management is the preparation, the support of individuals or teams in making organisational change moving from the current situation to the new one.

While most finance leaders stressed the need for good communication, several focused on the essence of change, the organisation's ability to absorb new ways of working. Moreover, change management is complicated by the fact that finance activities e.g. in shared services and outsourcing operations typically cross geographic borders and involve different cultures. The typical problems cited included poor communication of the change process, ineffective programme management, and insufficient resources to manage the change process (Lyon and Lawson, 2012).

### **2.6.1 Organisational culture**

Organisational culture is “necessary for effective functioning and performance” of the enterprise (Yesil and Kaya, 2013). A significant number of employees need to change what they do and how they behave to execute a new target strategy or align to a new target operation model. The result will be a higher level of performance after a transformation

(Faeste, Hemerling, Keenan, and Reeves, 2014). A culture oriented towards digital technologies empowers people to deliver results faster, and the company's culture will strengthen financial performance in near term and long term (Hemerling, Kilmann, Danoesastro, Stutts, and Ahern, 2018).

According to Philip and McKeown (2004), the transformation requires a “fundamental reestablishment of current perceptions, practices, attitudes and behaviours of all stakeholders of the organisation”. Hence, enterprises are requested to integrate new capabilities in order to differentiate from the competitive environment. To this end, workforces need to build up skills associated with digital technologies, e.g. robotic process automation (RPA) and artificial intelligence (AI). However, business improvements need changes to behaviour as well (Dewar et al., 2011; MIT Review, 2018), as other ways of collaboration and a different mindset are required. For finance functions, this could mean that specialists e.g. solution architects should broaden their knowledge and have an eye on both IT and business needs.

Organisational culture within an enterprise can strongly support innovations but can also impede transformations. The major obstacle to surmount e.g. AI inside of companies is not a technological one, but one of culture and change management (Gerbert, Ramachandran, Mohr, and Spira, 2018). The organisational change needs to be promoted by leaders to integrate innovation and willingness to change into their corporate mission statements. Desired performance improvements can be realised if culture and behavioural dynamics are included in the finance transformation (Clements, Donnellan, and Read, 2004). Providing an unrivalled knowledge of business change, combined with deep technological know-how and operations in an agile environment leads to a centric innovation culture. Enterprises are requested to incentivise the right behaviours and skills to successfully embed to the new culture, resulting in multidisciplinary and innovative transformation working environment (Hemerling et al., 2018). Thus, a company, that is able to change and strive for innovation, demonstrates competitive advantages (Kane et al., 2015).

Creating a high-performance culture is typically an objective within a finance transformation, but this aim has not a clear return on investments. Conceptualising organisational culture is a difficult activity, there is no common agreement on what the concept means, how it should be observed and measured. According to Faeste et al. (2014) cultural change is the most

critical element for sustainable success. Employees that deal with the change of culture should be fully committed to it and leaders need to communicate this within the organisation. The target culture and behaviour need to be described and understood by the whole organisation. It is not sensible to treat culture as an afterthought because as it will erode the transformation.

Schein (2017) postulates that culture is what a group learns over a period of time by solving its problems of survival and its problems of internal integration. Such learning is simultaneously a behavioural, cognitive and emotional process. Any definable group with a shared history can thus have a culture and therefore, there can be many subcultures within an organisation. For finance transformation processes, this could mean that different departments or stakeholders have their own or even contrasting subcultures, which need to be accounted for the overall success of the transformation. Thus, a clear communication strategy is needed.

Effectively changing the organisation is an iterative process (Dewar et al., 2011). For efficient transformation, multiple smaller transformation projects with stepwise approaches can therefore be superior to one large transformation. However, it is not enough to establish a culture initially and then sustain the culture during the transformation journey. Igniting a passion for outstanding performance is elementary for the sustainability of an organisational culture in terms of success. A culture of innovation and an open-minded environment support technology adoption (Lee, Trimi, and Kim, 2013; Pakdil and Leonard, 2015). Besides that loyalty and ownership are much more relevant than financial measures (Heskett, 2012) in the finance function.

Hogan and Coote (2014) argue that a clear communicated organisational culture will be beneficial for the innovation process where employees are open and responsive to new ideas and gain a flexible approach to solve problems. In the target organisation employees will share information between functional areas and will establish guidelines for behaviour that new employees can follow and thus bring the new culture to life.

## 2.6.2 Changes in people

Transformation processes within finance require changes in people. The main target in terms of people is to create an operating environment that drives productivity, speed, and innovativeness (Ernst & Young, 2016b). Changes in the field of finance regularly lead to uncertainty among employees in an enterprise. Monitoring and control are often expected instead of opportunities for self-management and are perceived as fair performance of benefits. An effective change and communication strategy can significantly improve the odds of transformation programme success (Fisher, 2015).

In terms of a finance transformation, the building of a completely virtual workforce is a very ambitious target. According to IBM (2018b), a mix of a virtual workforce and exceptional people drives transformational success. Investigating technology and an agile environment are two important attributes to develop the organisational performance to the next level.

Research has shown that people are at the core of any transformation, but often change management and communication work streams are the first programme elements to be red-lined during budget negotiations, and change management is often neglected (IBM, 2018b; Jones, Aguirre, and Calderone, 2004). Change management ensures that all parts of the organisation have buy-in, participate in, own, accept, and execute the identified processes.

Technology is only one part of the finance transformation solution. Organisational transformation requires a fundamental shift in philosophy to combine process automation tools with a focus on reimagining processes, empowering the best employees and embracing a culture of continuous improvement. Failing to transform core business processes leaves companies at a competitive disadvantage.

According to Blackline (2016), the concept of continuous accounting represents a fundamental shift in the way that accounting and finance are done by empowerment with real-time intelligence, enabling skilled accountants to spend more time on strategic research and analysis and to become proactive business leaders instead of reactive operators.

For successful transformational change to occur, a common set of managerial approaches are required. The steps identified by Todd and Perperl (2003) include:

- analysis of the need for change;
- creation of a vision;
- creation of a sense of urgency;
- identification of leadership or the guiding team;
- development of an implementation plan;
- creation of structures to support the change;
- effective communication; and
- reinforcing or institutionalising the change processes.

The execution plan of the finance transformation must cover all aspects of the change and should involve all internal stakeholders. Otherwise, without collaboration, any change process introduced is bound to fail or not to achieve its desired outcomes. Only interested parties and other key leaders will participate in the execution of the plan. Kotter (2017) argued that the plan must include short-term wins to motivate employees through experiencing the importance of the change and to provide direction. Kitchen and Daly (2002) argued that there should be consistency in communication from all key leaders, and communication between all parties must be good and frequent.

However, according to Maurer (2010) transformational change can contribute to employee resistance. It can be a major obstacle in digitalising and transforming the enterprise. Some employees are reluctant to embrace change and tend to maintain existing patterns of behaviour. Furthermore, adopted changes can fail in their capacity to challenge current work practices, processes, and employee relationships. Whenever a change initiative is announced, there is invariably resistance. Resistance typically falls into different categories, each of which may be diffused by proper information, process and work design, and high-level sponsorship (Deloitte, 2012b). A trigger for resistance arises when work roles are transformed, leading to less satisfaction or a reduction in worker status (Deloitte, 2012b). Besides that, resistance can occur from change that may affect power relationships in an organisation. Thus, transformation is not always good. The future state is unknown when the transformation begins. To manage transformation with pre-determined, time-bound and linear project plan is often the result of the interaction of expectations from higher management.

However, finance process automation helps by completing unskilled tasks and enabling skilled individuals to provide strategic services to both the Finance Department and the entire organisation. Automation frees accountants to be exceptional. In addition to driving process and technology excellence, lean cultivates a learning environment for the organisation that focuses on continuously improving and thus creating value (Faeste et al., 2014).

According to a McKinsey Global Institute survey on people (Manyika et al., 2017) the following four benefits of people optimisation exist to drive accounting:

- Finance has the necessary skill sets to drive business strategy, but these skills are underused. To unlock this value, companies need to automate the tedious and manual accounting work that consumes so much of accountants' time and effort;
- Higher level accounting is complex, and only strengthened by automation. The emerging idea that automation will replace full accountants will fail;
- Productivity increase due to the removal of manual bottlenecks and freeing employees to investigate exceptions rather than process transactions;
- Improved engagement so that employees feel more satisfied with their work, which leads to reduced turnover;
- Focus on value-adding activities to better support the broader business.

The main vision for accounting is the situation of automated manual processes and connected data, and financial close activities are performed continuously throughout the month (Manyika et al., 2017). After a finance transformation, the enterprise has created enviable work environments by giving professionals the opportunity to utilise their strengths, the communication to convey their value, and the constructive feedback to enable growth and improvement (Spanicciati, 2016; Zoni and Pippo, 2017). The risk for enterprises is gradually relinquished because others are already transforming their business models and gaining a competitive advantage from digital investments (Tucker et al., 2017).

Trust can also define the way people interact with technology (Hoff and Bashir, 2015). Automation can be used to acquire and analyse information, make decisions, carry out actions, or monitor other systems (Parasuraman, Sheridan, and Wickens, 2000). However, low adoption and use of IT by employees are still major barriers to successful IT implementations in organisations (Venkatesh and Bala, 2008). Additionally, the introduction

of automation into critical systems has created new pathways for error, sometimes with grave consequences, especially in the accounting environment.

Technological innovation not only serves as an important competitive tool but also plays an important role in improving enterprise performance. Although the relationship between innovation and financial business performance is not simple and well understood, prior research indicates a strong interaction between growth in sales and different innovations (Dasgupta, Gupta, and Sahay, 2011).

Today, leaders in most large enterprises are aware of finance transformation. These leaders are forced to reassess business strategies and organisational models to survive. However, leaders and their organisations suffer from fear of failure and practise incumbency, especially when embarking on an ambitious change initiative.

Transforming finance to support current and future business requirements is an organisational imperative. To succeed, companies must radically reassess their finance organisation strategy to address changing priorities and escalate stakeholder requirements.

Driving innovation in finance transformation is not only focused on the ability to securely store, access, and use considerable granular data. The aim is to combine or converge different datasets to identify patterns. Whether used through the cloud or other digital technologies, data technologies have certainly enabled enterprises to move towards insight. Better visualisation for analytics creates a digital experience in how people engage with information. It creates flexibility for people in how they can derive insight from the data and tie it back to what is happening in the business, making it more reasonable and understandable.

To deliver high performance, CFOs are operating outside their traditional roles (Rael, 2014; Thornhill, Lewis, Millmore, and Saunders, 2000). According to Sutcliff and Donnellan (2006), CFOs are more engaged with other senior executives in helping to identify value-creation opportunities and in supporting the business in leveraging those opportunities rather than managing routine finance operations.

An increasingly digital work environment and a new generation workforce is challenging hierarchical communications, skills, and long-held beliefs about the ways of working. A

focus over the next years will be to leverage new technologies that make organisations more customer centric. This poses a significant disconnect between the desire of leaders to embrace technology and their organisational structures and functions and the ability to follow suit.

Advanced robots are gaining enhanced senses and dexterity, allowing them to perform a broader scope of manual tasks (MGI, 2013). Robots change the nature of work across industries and occupations (Frey and Osborne, 2017). According to Tabibi, Nasiripour, Kazemzadeh, and Ebrahimi (2015), organisational culture is a factor influencing information system acceptance and can be a suitable opportunity for the successful application of IT. These authors stated that managers can prepare the organisational environment for acceptance and implementation to move towards the appropriate culture.

According to Frey and Osborne (2017), the likelihood of automation for chartered and certified accountants is 95%, meaning a high risk of computerisation over the next 20 years. On one hand, this means a tremendous amount of work in reskilling people. On the other hand, there are big challenges and opportunities in robotics automation as part of a financial transformation.

### **2.6.3 Technology acceptance**

Technology acceptance is a part of the change process. According to Davis (1989), the technology acceptance model is used to explain an individual's acceptance of an information system. Factors that are usually manifested are social, cultural, and political factors. Social factors include language, skills, and facilitating conditions. Political factors are mainly the effect of using technology in politics and political crises.

Technology acceptance is needed for the development of any new technology. The consideration and recognition of the individual's need and acceptance at the beginning of any businesses change is beneficial for the future development (Taherdoost, 2018). Alameri (2013) pointed out that training can help to reduce and overcome resistance to technology.

The risk that the target users within an organisation may not adopt the new systems must not be neglected. Trust-related constructs are one of the most significant additions to the field of technology-enabled service adoption (Wentzel, Diatha, and Yadavalli, 2013). The degree of

technology acceptance is necessary to determine within a finance transformation to reduce the risk of unsuccessful designs and to reduce the huge risk of automating every process. The main question of acceptance is in terms of the automation potential in or out of the organisation. The interactions by the people of the organisation are different. Commonly, platforms or innovations are naturally launched with an external orientation (Nicoletti, 2017). There is a lack of formal or defined requirements from regulators on use of process automation and the technology for automation.

Newly implemented finance tools and systems cannot improve organisational performance if they are not used by the people. Unfortunately, resistance to end-user systems by managers and professionals is a common problem. To better predict, explain, and increase user acceptance, organisations need to understand why people accept or reject IT systems and tools. Errors in the requirement analysis and the design specification activities have been identified as a major contributor to costly (software) program failures. For finance people and end users it is beneficial, if solutions architects and developers can verify requirements by predicting workplace acceptance of a new system based on user evaluations of its specifications, measured during the earliest stages of the development, ideally before building a working prototype (Davis and Venkatesh, 2004). Prototyping and respective user acceptance tests can be solutions to reduce the risk of low technology acceptance, because these solutions are captured when only a relatively small proportion of costs have been incurred and there is greater flexibility to modify or extend system's design attributes. During user acceptance testing, finance users test software to verify and approve required tasks in real-world scenarios, according to specifications (Hambling and van Goethem, 2013). Acceptance tests ensure that the system effectively processes transactions in the user environment, that required controls and procedures are in place and work effectively, and that finance practitioners are adequately trained and familiar with the detail handling and procedures.

Testing financial applications requires an end-to-end testing methodology involving multiple software testing, where the involvement of the business from early stages is most beneficial. Business scenarios from finance experts are derived in such a way that all business requirements are covered, and specific test use cases can be created to increase the user acceptance after implementation. Training people on new or changed system functionality is

essential. Insufficient knowledge may result in software being poorly utilised and may lead to inefficient working practices. Most usability issues in terms of an ERP implementation that users are confronted with, are related to the completion of system transactions (Topi, Lucas, and Babaian, 2005).

Accountants and other finance professionals need to increase their understanding of current technologies and data analytics, because technology is changing faster than business practice or educational training can keep up. Technology can drive many changes in working environments and it is critical that the finance professionals are proactive in understanding how new technology trends can transform finance (Coyne et al., 2017). Brands (2014) argues that the future of professional accountants lies at handling the intersections of finance, technology, and information (data). According to Özer and Yilmaz (2011) professional necessities force accountants to use IT and these authors state that accountants' volitional control on IT usage is high.

The treatment and handling of employees in diverse teams takes place in different ways. The authors Mohamed and Handley-Schachler (2015) argue that segregation of duties between employees responsible for performance and employees responsible for accounting and information systems is an essential part to mitigate the risk of fraud, which in principle should be very limited. Risk of fraud declines dramatically if multiple employees are involved in different phases of a financial transaction or in an end-to-end process. Finally, it should be noted that, without a human checking its work, there could be dramatic and catastrophic results.

## **2.7 Risk Factors for Finance Transformation**

The design phase should include a risk assessment to identify and understand the consequences and mitigate the risks identified to support a successful transformation. The CFO and chief risk officer (CRO) need to take a holistic approach that integrates business risk management and performance management, including compliance, where required, as part of the overall business strategy and execution (Jackson, 2016).

Risk management services are designed to help organisations evolve from basic compliance and ad-hoc responses to optimised business risk management, in which the value of risk management far outweighs the costs (IBM, 2008).

In Figure 2-9, the main categories for a risk assessment are considered.



Figure 2-9: Aspects of a risk assessment.

Source: Ernst & Young (2016b); Grable and Lytton (1999); IBM (2008); Silvers (2010); Wolters and de Vries (2016).

Generally, risk can be hedged if accurate data are available. Due to the increasing regulatory aspects for risk management, the researcher tried to find appropriate literature on risk management as part of the finance transformation process. The methods used to evaluate their effectiveness remain poorly examined.

However, an appropriate method for the evaluation of risk is risk assessment. Such risk assessments allow the analysis the financial data risks from the management, reporting, consolidation, and technology perspectives. The following methods can be used to carry out a risk assessment: what-if analysis, checklist, a combination of both, hazard and operability study to identify threats and hazards, a failure mode and effect analysis, or a fault tree analysis (Grable and Lytton, 1999).

Designing a proprietary regulatory risk model is essential for finance transformation. Limited literature exists on the topic of designing, building, and implementing proprietary risk models

that would include and accommodate the latest methodologies and regulatory expectations. To accurately measure the level of a companies' risks associated with finance transformation, it is necessary to access the companies' regulatory capital consumption and key financial data, including the cost of risk and reserves. When these are included in a finance transformation, the resulting model allows the company to anticipate risk scenarios and changes in its risk profile. Quantitative modelling then applied various statistical techniques to ensure the sustainability and robustness of the implemented models.

Röglinger, Bolsinger, Häckel, and Walter (2016) focused on designing a transformation programme in the semiconductor industry. Drawing on the enterprise architecture perspective, the authors worked to develop a finance IT roadmap project and suggested involving multiple enterprise architecture layers. The scope of the transformation is not just about focusing solely on IT. Research has shown that treating a transformation programme as purely IT driven is a critical failure factor and that a holistic approach that considers multiple architecture layers (e.g. the business model, processes, application systems, and IT infrastructure) is a success factor of organisational design and transformation (Braun and Winter, 2007). However, many of these programmes fail due to time and cost factors. In complex transformation programmes, where many subprojects have to be controlled, failure is more probable. For a successful transformation, targeted transformation management must be developed and implemented. Transformation must yield both understanding of fundamental change, and the methods and tools that can make change possible.

Within the literature, the researcher has not found information on the question regarding what will happen to companies that are not transforming finance to improve their finance functions. Hence, risks that could occur if no transformation is made are not analysed.

## **2.8 Areas for Finance Improvement**

Finance transformation can be referred to in numerous different areas of finance. A review of typical improvements is presented in this section. Lin and Nordman (2016) summarised 10 finance-focused activities for potential finance transformation as follows:



Figure 2-10: Finance-focused activities.

Source: According to Lin and Nordman (2016).

Contrary to conventional wisdom, IT investments alone will not transform a finance organisation or instantly make companies more efficient. However, when strengthened by clearly defined governance and control considerations and robust plans and preparation to enable end-user adoption, return on IT investments surpasses the expectations.

A successful finance transformation rebuilds finance to work closely with other business units to deliver actionable information, analyses, and ultimately, advice with as few resources as possible while adhering to the policies and controls established for the organisation. This also describes a finance function operating at the optimal efficiency level. Finance transformation programmes are typically complex and successful programme delivery requires the selection of the most appropriate software and its effective deployment. Change may involve new software implementation, upgrade, re-implementation, re-engineering, or the harmonisation of disparate systems. Irrespective of the reasons for change, the adopted project management methodology should comply with commonly accepted practice to ensure successful delivery.

Technologies enable various layers of effective control and execution throughout the finance transformation process. Identified in the above review, the following areas for potential finance transformation improvement in Figure 2-11 are part of the research and investigation.

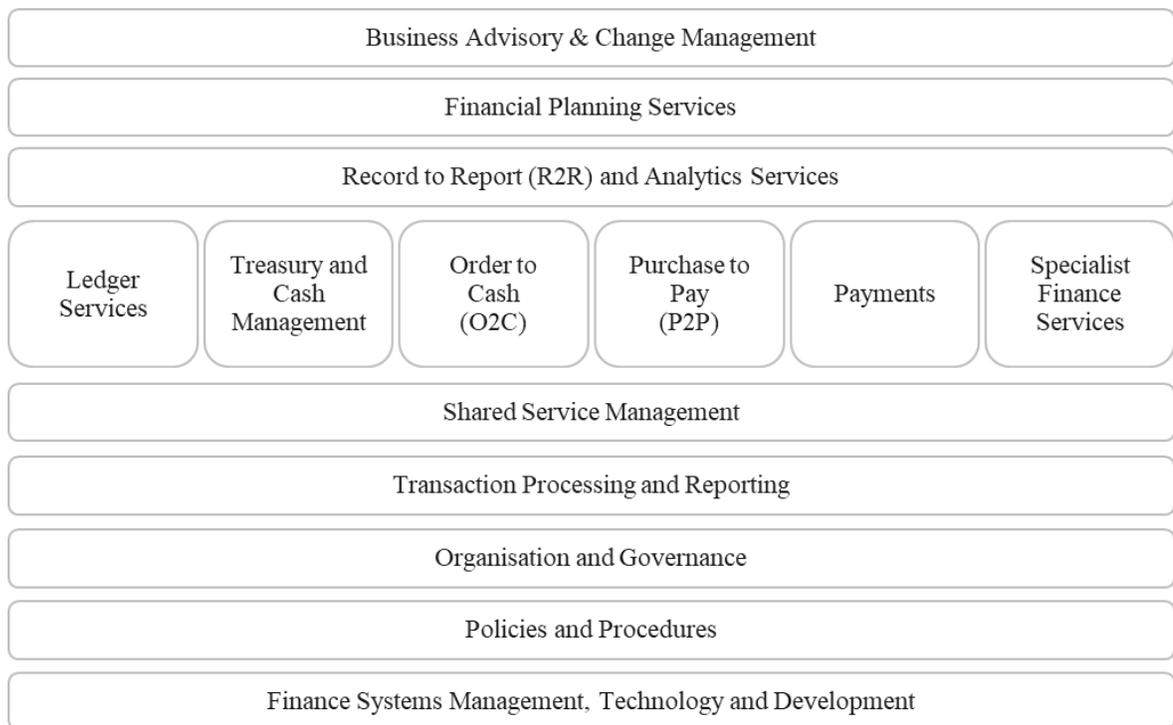


Figure 2-11: Finance transformation activities: Areas for potential improvement.

Source: IBM (2010); Keuper and Neumann (2008); KPMG (2013); Rupprecht (2015); PwC (2017).

The goal is to create new ways of operating and growing a commercial venture within the rapidly evolving globally networked economy. With different work and more complexity, the nature of finance work has shifted dramatically in the past decade. Governance-based work, such as accounting, auditing, and budgeting, has become no more than the norm for successful finance performance, while business demands for guidance-based support, such as advanced analytics, business case development, and planning, have rapidly increased. At the same time, mergers and acquisitions and overseas expansion have drastically increased the complexity at many corporations, making both governance-based and guidance-based work more challenging and expensive during a time of constrained budgets. Together, these forces put finance chiefs in an unwinnable situation, expecting them to provide more analytical support to the business in more complex environments while reducing costs.

Based on Armstrong (2014), nearly 75% of CFOs are transforming their finance departments, but it also shows that 70% of these efforts will be unsuccessful. The reason is that most finance transformation programmes focus far too much on achieving a specified level of

finance cost as a percentage of revenue, while simultaneously delighting internal customers. This kind of focus leads to poor finance transformation decisions. Armstrong (2014) proposed four common mistakes that characterise unsuccessful transformations, as follows:

- Mistake 1 – Focusing the transformation on hitting a cost target;
- Mistake 2 – Underestimating the influence of business complexity on cost;
- Mistake 3 – Expecting to cut costs and improve service simultaneously;
- Mistake 4 – Equating customer satisfaction with value delivered.

According to Lin and Nordman (2016), for finance transformation, it is necessary to determine the key business (financial) issues that need to be addressed with financial data analytics. Second, a business case must be built. Third, an integrated financial data strategy must be established. To link financial performance with the operational performance, “automating 30-year-old practices is not enough”. Best practices, proven and optimal practices in the business (e.g. “driver-based and rolling forecasts”) need to be adopted (Lin and Nordman, 2016).

The focus on common data definitions and analytics depends on a foundation of uniformly understood data, and finance leaders need to do more in this area to implement enterprise-wide information standards to enforce common finance data definitions and data governance and implement e.g. a standard financial chart of accounts. The full cycle of financial data in companies requires integrated information. Analytics relies on the integration of various data types (e.g. financial, operational, and external). Doing this well and quickly is the key, and top finance leaders should focus on this aspect to integrate information across their organisation (e.g. one single truth and one dataset for finance). Finance leaders need to integrate their financial planning with strategic and operational planning (Brandon and Welch, 2012). This allows for a better understanding of how different aspects of the business are performing in conjunction with one another.

The selection of the technology architecture and software for deployment shall be carried out in a rigorous, thorough, even-handed manner to ensure that the decision is consistent with the organisation’s long-term best interests.

In the current age of data handling via the cloud and rising regulatory data requirements, concerns about operations with data, service attacks, and computer viruses increase. In

finance departments, the “CFO is ultimately responsible for protecting data” and improved data security is according to Rajagopal (2013) a key activity of continuous improvement. Although data security and integrity are becoming more important to businesses, many enterprises do not assign this topic publicly to any executive or board member. Granting data access to third parties is common in case of business relationships but results in very little control over the data. Companies move towards service-based operating models and need to have or to develop adequate governance and security capabilities to manage data (Ernst & Young, 2016b; Murphy, 2011). However, companies try to reduce investments for security as the success of the spent costs are hard to measure. As a worst case failed data security could even result in a cyber-attack, having direct negative impacts on the financial performance.

The finance function should be run in a way that the organisation operates effectively within a secure whole system landscape and presents a positive picture in terms of data handling and data integrity within an operating environment with multiple stakeholders.

Successful transformation needs a structured planning and design combined with a rigorously employed change management that is critical and may lead to the establishment of a culture of continuous improvement that is required to manage future challenges for finance.

Finance needs data science knowledge. A badly or not sufficient elaborated design can result to implementation problems that can be solved by better analysis at the issue definition and option analysis during the solutioning of each individual requirement. An iterative transformation roadmap can be developed to meet companies’ unique needs, based on maturity and desired pace of change.

## 2.9 Research Gap and Conclusion

The research questions are derived from the research gaps identified during the literature review. This section outlines the research gap and the conclusion related to the researchers' research questions.

The prevailing literature investigation revealed that finance transformation contains the strategy, design, and implementation of innovative and complex transformational solutions that can result in an enterprise-wide platform for change. A finance transformation needs a clear driver. Typical drivers are a declining business, changing consumer behaviour and customer expectations, emerging technological opportunities, and market shifts. It is important, however, to name the driver for the transformation precisely. This must then be communicated transparently (Sensler and Grimm, 2015).

Many stakeholders must be reached for the affected transformation, and the necessity for the transformation must be apparent. For Kotter (2008), this aspect is the first step towards a successful transformation. Kotter (2008) called it "establishing a sense of urgency". It is not sufficient to make a general communication. The drivers and the goals of the transformation must always be communicated to target groups.

The following Table 2-4 demonstrates how the research questions were influenced and developed by the literature review.

The researcher has investigated a large number of various academic and practice journals, including reports, surveys and case studies. The selection process was based on the relevance of the literature to the research topic supported with empirical data. The journals cover a period beginning from the mid-2000s, that the researcher considered an important juncture in the evolution of finance transformation, to date. The gaps specific to academic research literature are summarised in Table 2-4. The table contains the main themes, further descriptions and key arguments, the research gaps and therefore the influence on and development of the research questions. The key literature contributions extend over the last two decades and demonstrate the main trends in research into the major aspects of and challenges to the development of finance transformation management.

Table 2-4: Research literature gap.

<i>Literature topic</i>	<i>Key theme descriptions and key arguments</i>	<i>Research gap</i>	<i>Research authors</i>	<i>Research questions</i>
Understanding of finance transformation	<ul style="list-style-type: none"> <li>▪ The literature provides various definitions for finance transformation;</li> <li>▪ Finance transformation can be a quick-and-dirty restructuring program to a full-scale corporate rescue;</li> <li>▪ The majority of academic literature is still of a visionary and theoretical nature.</li> <li>▪ The focus in last century was broader, the transformation of the full enterprise was in the focus, and not finance siloed;</li> <li>▪ Development and increasing deployment of Information Technologies within finance departments;</li> <li>▪ Blockchain can further revolutionise the historical ERP and the whole finance function in corporations.</li> </ul>	Lack of understanding of what FT is and how it should be defined.	List of authors: Burrows (2017); Clare (2016); Daruvala et al. (2012); Deloitte (2016a); Gattenio and Hackett (1997); Gould (2013); Keuper and Neumann (2008); Kops and Lyon (2014); Maceda et al. (2014); Murphy (2011); PwC (2013); Rupprecht (2015); Silvers (2010).	RQ 1: What determines a well-designed and successful finance transformation?
		Lack of good understanding of the potential exhausted of FT and the importance of the change within the finance department.		
		Limited information how the finance function model operates in practice.		
		Lack of information in terms of design elements for successful finance transformation.		
		Lack of a holistic approach to finance transformation and the impact to other functions.		
Process of finance transformation	<ul style="list-style-type: none"> <li>▪ FT as "just another specific transformation process";</li> <li>▪ Essential start of the transformation with the vision and strategy of the company, alignment with business strategy needed;</li> <li>▪ Four-phased approach to address companies' specific requirements, vision, insight, design and invest phase;</li> <li>▪ Finance transformation steps identified by multiple stakeholders;</li> <li>▪ The finance transformation programme has a certain degree of individuality.</li> </ul>	Lack of information how companies can individually define scope and objectives of its own FT.	List of authors: Cooper (2001); Hargrove (2014); IBM (2010); Johnson (2016); Keuper and Neumann (2008); Mohr et al. (2010); Rabinowitz (2006); Schawel and Billing (2014); Vernon (1992); Walter et al. (2013).	RQ 1 and RQ 4: What are the implementation approaches for finance transformation?
		Sparse information on key activities, expected outcome, success factors and drivers that are relevant to consider improving finance transformations.		
		Rare investigations on the process, technology, and system management within the context of the establishment or reorganisation of an enterprise financial platform.		

<i>Literature topic</i>	<i>Key theme descriptions and key arguments</i>	<i>Research gap</i>	<i>Research authors</i>	<i>Research questions</i>
Dimension, reason, driver and challenge of finance transformation	<ul style="list-style-type: none"> <li>▪ Finance must balance its three key priorities: cost reduction, compliance requirements, and efficient operations;</li> <li>▪ Higher efficiency and time savings in finance activities using the potential of financial automation;</li> <li>▪ Margins for errors became increasingly smaller, while this affected the dimensions of finance aspects and time. Thus, a modern financial function becomes a comprehensive competitive advantage along all essential support services within the company;</li> <li>▪ CFOs are willing to improve the financial systems with a stronger ROI than ever before;</li> <li>▪ Transparency about the current performance of the Finance Department (maximum);</li> <li>▪ Focus on control-related information as a single source and appropriate levers to reduce costs and improve service</li> <li>▪ Goal-oriented transformation of the financial organisation towards a world-leading “best in class” organisation;</li> <li>▪ Increasing flexibility and changeability of the organisation.</li> </ul>	Limited information on FT expectations from finance professionals on the operating level. Too much focus on CFO level and expectation to reduce cost rather than be innovative.	List of authors: Banham (2018); Blackline (2018); Chadha et al. (2016); Groenke and Wenning (2013); Kasmerski et al. (2007); Keuper and Neumann (2008); Linder (2004); Loughridge (2010); Milne et al. (2013); Rouse (2006).	RQ 1 and RQ 2:  What is the perceived importance of data concepts standardisation, centralisation, consolidation, and simplification for the creation of a financial platform?
		Limited literature with a deductive approach on finance transformation.		
		Limited literature on the differences between finance transformation and other transformations. The unique features and dependencies are not really provided.		
		No literature determines a well-designed finance transformation.		
		Lack of information on conceptualism of FT.		
Managing Change	<ul style="list-style-type: none"> <li>▪ The transformation within finance require changes in people;</li> <li>▪ Target is to create an operating environment that drives productivity, speed, and innovativeness;</li> <li>▪ A completely virtual workforce is a very ambitious target;</li> <li>▪ Change management is often neglected;</li> <li>▪ Transformational change can contribute to employee resistance;</li> <li>▪ Reliable organisational models are needed to survive;</li> <li>▪ Technology acceptance is needed for the development of any new technology.</li> <li>▪ Consideration and recognition of the individual’s need and acceptance is beneficial for the future development;</li> <li>▪ Training can lead to continuously to diminish and overcome resistance to new technology;</li> <li>▪ Organisational culture is “necessary for effective functioning and performance” of the enterprise; a culture oriented towards digital technologies empowers people to deliver results faster, and the company’s culture will strengthen financial performance in near term and long term.</li> </ul>	Limited insight on the best approach and activities to manage change and transform the finance part of the enterprise.	List of authors: Alameri (2013); Ernst & Young (2016b); Fisher (2015); Hemerling et al. (2018); IBM (2018b); Maurer (2010); Taherdoost (2018); Yesil and Kaya (2013).	RQ 1 and RQ 5:  What are the relevant risk factors that mitigate the success of a finance transformation?
		Poor clarity on how finance transformation is to be embedded within the organisational structure of the organisation.		
		Lack of information how finance departments are changing.		
		Limited information on people’ capabilities to cover finance trends.		
		Limited information on the “best in class” target operating model in terms of organisation and operations.		
		Lack of information on specific organisational culture for finance.		

<i>Literature topic</i>	<i>Key theme descriptions and key arguments</i>	<i>Research gap</i>	<i>Research authors</i>	<i>Research questions</i>
Risk Factors	<ul style="list-style-type: none"> <li>▪ The design phase should include a risk assessment to identify and understand the consequences and mitigate the risks identified to support a successful transformation;</li> <li>▪ Increasing regulatory aspects for risk management;</li> <li>▪ Involvement of multiple enterprise architecture layers;</li> <li>▪ A programme that is purely IT driven is a critical failure factor;</li> <li>▪ Programmes fail due to time and cost factors;</li> <li>▪ Failure is more probable for complex transformation programmes, where many subprojects have to be controlled.</li> </ul>	<p>Lack of information of risk aspects for finance transformation</p> <p>Lack of information where companies are not transforming finance to improve their finance functions.</p> <p>Limited information on failure or error prevention</p> <p>Limited literature exists on low-performing finance transformation where the issues are described but not further analysed.</p> <p>The literature does not provide any guidance on actions to be taken and neglects risk factors.</p>	<p>Braun and Winter (2007);</p> <p>Grable and Lytton (1999);</p> <p>IBM (2008);</p> <p>Jackson (2016);</p> <p>Röglinger et al. (2016).</p>	<p>RQ 5:</p> <p>What are the relevant risk factors that mitigate the success of a finance transformation?</p>
Areas for Finance Improvement	<ul style="list-style-type: none"> <li>▪ IT investments alone will not transform a finance organisation or instantly make companies more efficient;</li> <li>▪ Clearly defined governance and control considerations and robust plans and preparation to enable end-user adoption;</li> <li>▪ Business demands for guidance-based support, such as advanced analytics, business case development, and planning, have rapidly increased;</li> <li>▪ Governance-based and guidance-based work more challenging and expensive during a time of constrained budgets;</li> <li>▪ Effective change and communication strategy can significantly improve the odds of transformation programme success;</li> <li>▪ Achieving a specified level of finance cost as a percentage of revenue, while simultaneously delighting internal customers;</li> <li>▪ The full cycle of financial data in companies requires integrated information.</li> </ul>	<p>Limited information on possibilities and benefits in terms of transforming towards an efficient financial platform.</p> <p>Limited information on limitations that exist about the transformation to an efficient financial platform.</p> <p>Lack of information in terms of the full cycle of financial data in companies that requires integrated information.</p> <p>Lack of information on target governance model for future finance function and financial data handling towards “one data for finance”.</p>	<p>Armstrong (2014);</p> <p>Brandon and Welch (2012);</p> <p>Fisher (2015);</p> <p>Lin and Nordman (2016).</p>	<p>RQ 3:</p> <p>What are the possibilities and limitations that exist about the transformation to an efficient financial platform?</p>

Accordingly, the research literature gaps (Table 2-4) highlight key issues and arguments related to the following finance transformation themes: 1) the understanding of finance transformation, 2) process of finance transformation, 3) dimension, reason, driver and challenge of finance transformation, 4) managing change, 5) risk factors, 6) areas for potential finance improvement. The academic literature contributions related to each of the themes of finance transformation literature gaps are listed in Table 2-4. The conclusions drawn from this literature review have been incorporated as a foundation for the development of the quantitative and qualitative research sections.

The development of the research questions has been influenced by the literature review. First, the researcher has chosen the appropriate topic and issue for the research, one that actually can be researched. Based on the list of potential questions the researcher has chosen the best questions, that is neither too broad nor too narrow. The number of academic sources helped the researcher to discover whether the research question is too broad, too narrow, or manageable. The research gaps are critical to determine the need and necessity of conducting the research. Based on the research gaps the researcher raised the research questions.

The overarching research question has not been fully answered and hence is valid for further research. Research questions 2 and 4 have been partially confirmed based on the literature review but valid for further research, research questions 3 and 5 are still valid and require further research.

To the knowledge of the researcher, there are no recommendations in literature explaining how to rapidly assess the finance function and to develop an actionable vision, strategy, and blueprint to address the CFOs' mandate. There is no activity list to be considered when formulating the strategy and finance transformation roadmap. The areas of finance transformation are mentioned and described, but no detailed information exists regarding how to improve finance transformation and their activities. Hence, the development of a framework for finance transformation is considered as important part for the transformation journey. Finance transformation is a process, and according to Roberts (2012), the goal is finance efficiency. To the researcher's knowledge, there is no previous research based on a deductive approach investigating and describing a well-designed finance transformation. Based on the data gathered for the research, analysis will be undertaken, and afterwards

conclusions can be drawn to measure the importance of activities, outcomes, and success factors of a finance transformation.

The following boundaries were set for finance transformations for this research:

- Only involve large private enterprises based on the APQC definition (Driscoll, 2015) will be used;
- Only companies requiring handling regulatory compliance, risk management, and cost reduction, which are the biggest worries of senior finance executives will be included;
- Only companies looking for full-scale solutions that enable faster and better decisions to improve financial and operational performance (no silo approach) will be investigated;
- The tax process life cycle will not be in the scope of the research. The tax effect on finance transformation is very individual and complex due to country-specific localisation aspects and the complexity of different organisations (Norton, 2011).

These boundaries have an impact to the selection of the methodology and methods chosen for this research.

## **2.10 Summary**

In search of a better understanding of finance transformation, the research focuses on the literature on the existing finance transformation practices, the process-related aspects, the reasons for them, the change process, and the success factors critical to finance transformation, along with the possible benefits and challenges to finance transformation.

Therefore, based on the academic research findings discussed in this chapter, a clear research gap has been identified in Section 0. From this literature review, the research questions and objectives have been formulated (see Section 1.2). The research questions have been answered to a small extent. Partial answers to the researcher's questions are given in the literature review.

The research gap can be summarised as follows:

- Lack of identified activities for finance transformation (process, system, and organisation). This is a weak point. It is unclear what potentials can be exhausted;
- Insufficient information about the tasks of the different stakeholders involved in finance transformation in particular;
- Lack of clear finance transformation implementation guidelines and difficulties in understanding how to embed change into the existing organisational processes;
- Lack of clear information on the optimal process for a finance transformation;
- Insufficient information about the mobilisation of people and the initiation of the finance transformation;
- Lack of understanding and conceptualism of a finance transformation framework and what its benefits and its value are.

These aspects have not been widely analysed in the literature. The reasons to carry out research on finance transformation are mentioned above, showing the different lacks in existing literature.

A good design for finance transformation may lead to a good implementation afterwards. Literature on design principles for finance transformation is limited. For a successful finance transformation, planning and design is a key element in achieving the goals. Design guidelines with sets of recommendations towards good practice in design are helpful and necessary to specify the transformation design lever. A strong design may lead to strong trust to manage the finance transformational journey successful.

The researcher supports to close the research gap by applying appropriate methodology and methods, which are described in detail in the next chapter.

### **3 Research Methodology and Methods**

In this chapter, the research methodology and methods are outlined. The justification for the research design is considered in a holistic manner, which involves the underlying philosophy and the description of the methods. The present chapter details the overall approach that was adopted to answer the research questions and attain the research objectives. The chapter has seven sections. Section 3.2.1 highlights the basis of the research paradigm and the philosophy chosen for this study, followed by the research approach. Section 3.2.3 follows with a presentation of the target audience using the stakeholder analysis to identify potential participants for the data collection. The third section contains a description of the research design, including the research method, piloting, sample selection, research survey, and research interviews. It illustrates the preparation of the data-collection process. Section 0 presents the data-collection elements and the performed data-collection process, followed with the data analysis part in Section 3.5. Section 3.6 discusses the quality of this research regarding issues such as validity and reliability. The last section highlights the ethical considerations.

#### **3.1 Introduction**

Collis and Hussey (2009) consider the methodology as the “overall approach to the entire process of the research study”. In essence, the research methodology focuses on investigating the research problem and therefore varies with its nature (Remenyi, Williams, Money, and Swartz, 1998). Thus, identifying the most appropriate methodology is important, not only to ensure that the research objectives are met but also to establish the credibility of the work. Since research strategy, philosophy, approach, and technique are inherent components of the methodology, it is important to have consistency between research questions and approaches (Saunders, Lewis, and Thornhill, 2016). There are several research strategies applicable to business and management research. The predominant options are case study, experiment, survey, and action research (Bryman and Bell, 2015a; Hallebone and Priest, 2009).

The research questions are:

1. What determines a well-designed and successful finance transformation?

2. What is the perceived importance of data concepts standardisation, centralisation, consolidation, and simplification for the creation of a financial platform?
3. What are the possibilities and limitations that exist regarding the transformation towards the efficient target financial platform?
4. What are the implementation approaches for finance transformation?
5. What are the relevant risk factors that mitigate the success of a finance transformation?

## **3.2 Research Approach**

The following sections discuss the most appropriate research approach for this research in relation to the research questions and objectives and adopts the terminology of the research onion (Saunders et al., 2016). Creswell (2014) asserts the importance of illustrating the research approach as an effective strategy to increase the validity of the research.

### **3.2.1 Research philosophy**

Research philosophy reflects significant assumptions about the ways that researchers view the world. Each philosophy is often referred to as a paradigm and can be defined as a “standard belief system” or “worldview” that guides the investigator, according to Koltko-Rivera (2004). According to this author, the philosophy considers three aspects of paradigms: ontology, epistemology, and axiology. The research philosophy is the science concerning the mindset regarding how data about a phenomenon should be gathered, analysed, and used (Blaxter, Hughes, and Tight, 2013). It is the approach to understand and write the knowledge that is gained by conducting the research.

This section briefly introduces research philosophies and provides a rationale for the one adopted for this research. The different characteristics of the research paradigms can be summarised as follows.

Table 3-1: Research philosophies used in this thesis.

<i>Paradigm</i>	<i>Selection</i>	<i>Justification and further description</i>
Ontology	Realism	<p>The thesis was built on the realism stance of the researcher. This position influenced both the research methodology as well as the specific research instruments developed and used within this study. Ontology deals with the question of what exists and what people can actually know about the world (Saunders et al., 2016). The world of view: The researcher’s position is that reality within a finance transformation is mainly based on requirements, solutions, and events. Thus, the researcher is between observable facts (positivist) and individual meanings and actions (subjectivist).</p> <p>There is a need for transformation in finance because most of them are not performing well. Organisations require finance to provide more information to support strategic decision making (Kono and Barnes, 2010). The researcher’s intention is to improve future finance transformation and the critical realist position is beneficial to critically reflect aspects and to propose a holistic approach for finance transformation. In general, the emphasis on objects is equal to feelings or thoughts that are in place.</p>
Epistemology	Critical Realist	<p>The researcher’s own epistemological stance is that of “critical realist” (Creswell, 2014). Critical realism considers that the objects of scientific knowledge exist and act independently of peoples’ beliefs about them. According to Zachariadis, Scott, and Barrett (2013), the “real includes objects and structures with inherent causal powers and liabilities” resulting in mechanisms that may not be visible whereas beliefs are always provisional and fallible. The researcher’s intension is also to get human elements that have individual impact to knowledge and practical feedback for critical consideration and improvement of future finance transformations.</p>
Axiology	Managerial	<p>In general, the selected finance topic is part of many large enterprises. The value and contribution to practice is reasonable and appropriate. The selected thesis topic is about a standard management problem. The value and contribution to practice is reasonable and a worthwhile contribution has been made. The aim of the thesis is to inform CIOs, CFOs, and other finance stakeholders. The researcher’s view of the role of values is used in a managerial way. The values are set, and the point of view are from a manager perspective to be able to manage different situations. The researcher wants to advise manager and organisations to best manage a specific problem and give answers how to manage individuals. It is not of an emancipatory project or learning.</p>

According to Jonker and Pennink (2014), research in accounting and finance is generally accepted as social-scientific, as appropriate standards of scientific enquiries are applied to social issues rather than to natural phenomena.

Ontology is the researcher's view of the nature of reality. Which assumptions are made about the way in which the world works? Ontology is the study of existence and, in this context, is concerned with what the world discerns to be real. Reality is a difficult concept but is concerned with the construction of existence in several objects (Ryan, Scapens, and Theobald, 2002). Researchers as realist try to find causes, effects, and explanations and predict events and test hypotheses and theories (Saunders et al., 2016) and seek to understand and describe rather than explain (Grix, 2010). The researchers stand is in opposition to the other two positions, objectivism and subjectivism. Objectivism is about whether reality exists and whether a human being is conscious of it or not. Subjectivists believe that everyone has a different understanding of what human beings know. To comprehend others is to understand their meaning of what they do and to understand them in their own special terms (Bridges and Smith, 2007). From a realism point of view, reality is independent of conceptual schemes and perceptions. Truth is driven and exists through individuals' correspondence to reality (Remenyi et al., 1998). Knowledge comes through human interactions.

Finance transformation includes a new focus on enabling corporate strategy, the capital agenda, and competitive advantages in the market (Paice and Gronenthal, 2014). The truth can be captured if the researcher uses appropriate methods and concepts. Explanatory finance models allow information to be constantly updated, reinterpreted, or extended but, in general, is still between objective and realistic. The reality exists independently of human thoughts and beliefs or knowledge of their existence and can be interpreted through social conditioning, which is a characteristic of a critical realist. Subjectivism, on the contrary, perceives that social phenomena are created from perceptions and are consequent actions of social actors concerned with their existence (Lessem and Schieffer, 2010).

A company-wide financial platform enables the alignment and execution of the vision for finance and addresses the different design elements for the organisation, process, and other dimensions and is underpinned by key strategic and operating principles. In general, there are multiple individual views on how a financial platform can result as a lever for better

finance transformation. From a principle point of view, reality is important in the quantitative part of the research as well. Consequently, the researcher takes great care to prevent the researcher's own presence, behaviour, or attitude from affecting the results. The results will be written formally based on the result matrix/figures, and most likely, the figures are not interpreted in different ways. Realism research targets finding causes, effects, and explanations and tries to test developed hypotheses by making predictions and combining it with a qualitative confirmation, finding reasons and incorporate critical reflection.

Epistemology is about the nature of knowledge and how one can acquire and understand knowledge. It is about the researcher's view on what constitutes acceptable knowledge (Saunders et al., 2016). What is the relationship between the knower (the researcher) and the know(able)? In the fast-changing economic environment, the development of solutions and continuous adaption is indispensable. Knowledge is shaped by data, evidence, and rational considerations (Creswell, 2014). The scientific paradigm is foundational, as scientific propositions are founded on data and facts (House, 1991). The discoverable knowledge is absolute and value free. It is not situated in a political or historic context. A deductive and inductive approach is undertaken.

The reason for any new or adapted operating model or financial platform is likely to have a new strategy or new business model or a significant failure in the performance of the existing operations for one or more stakeholders within the finance transformation.

The researcher's view on role of value/ethics in research methodology (Dudovskiy, 2016; Saunders et al., 2016) is axiology. The researcher's axiology is of managerial nature. The value and contribution to practice is reasonable and appropriate. The aim of the thesis is to inform CIOs, CFOs, and other finance stakeholders. The researcher is independent from the data and maintains a closer objective stance instead of being subjective. Additionally, to the deductive approach, the inductive approach will follow the bottom up approach, where theory will be built from the data (see the creation of the framework based on the primary data). In general, the selected topic for this thesis is about a standard management problem. The value and contribution to practice is reasonable and appropriate. The author aims to inform.

### **3.2.2 Research approach**

The key research concept for the thesis is to perform a survey (quantitative section) and collect a variety of experienced statements of people who are professionally related to finance in terms of agreement and importance to measure indicators. The purpose of the survey and the overarching research question is to find what determines a well-designed and successfully performed finance transformation. The idea is to explore some of the most important variables and to assess their influence on the outcome of the transformation. A finance transformation framework has been constructed based on the quantitative results, supported partly by the literature and the experiences of the researcher in his professional career. This study uses qualitative methods (qualitative section) to verify the quantitative results and verify the finance transformation framework. Thus, a sequential mixed method approach is undertaken.

Kelemen and Bansal (2002) recognised the occasional failure of business management research to communicate with practitioners, and they highlighted how relatively little management research is published in practitioner journals. According to these authors, it is possible that the interests of researchers may not always coincide with those of management practitioners. Nevertheless, academic research tends to be functionalist and written in a style that breaks off most practitioners (Modell, 2009).

Most of the research in the area of finance is based upon the deductive approach (Leitch, Hill, and Harrison, 2010). This doctoral journey aims to provide a deeper understanding of the determinants of the finance transformation process by analysing and focusing on expectations from individual participants. The research pursues a mixed-method approach to allow further researchers to operationalise the findings and test those towards a broader number of enterprises or population (Bryman, 2007).

The overall structure of the research approach follows the template of Creswell and Plano Clark (2010) using the step-by-step approach, which is outlined in Figure 3-1. This includes four phases: the definition of context and scope, the planning phase, the data collection and analysis, and the interpretation of the findings and their use.

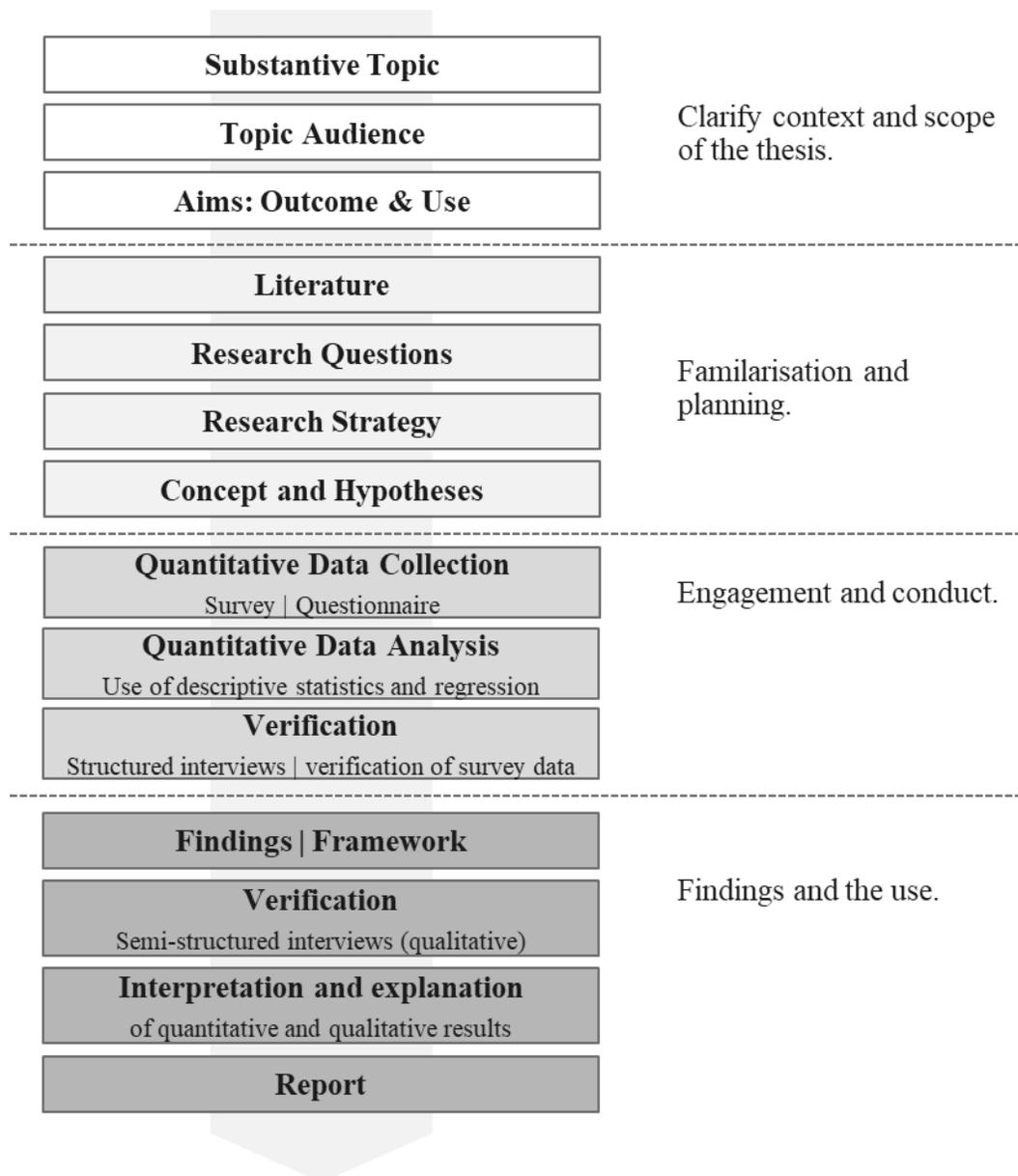


Figure 3-1: Structure of the research approach.

Source: Adapted from Creswell and Plano Clark (2010).

The primary research conducted focuses on the forced competition using quantitative and qualitative methods. A finance transformation framework, which outlines the building blocks and recommendations for the planning, design and execution of finance transformation, is constructed based on the findings of the questionnaire. The verification of the framework is finally conducted using semi-structured interviews within this study to discuss the quantitative findings and the proposed framework in more detail while integrating the literature and the experiences of the researcher.

### **3.2.3 Stakeholder analysis**

An enterprise-wide finance transformation process involves not only the Finance Department itself but also numerous business partners and affects even top management. Different stakeholders foster the necessary operational business IT alignment, which is a success factor for transforming strategic plans into operations (Wagner and Weitzel, 2012). Involving multiple stakeholder groups (compare Table 2-1) also helps create a shared understanding of the transformation programme target and therefore drives transformation success (Abraham, Aier, and Winter, 2015). Due to the variety of processes operated and services offered by the company's finance IT setup, the finance transformation programme also had to consider multiple management layers. Indeed, top-down initiatives often fail due to a lack of coordination among organisational levels (Fonstad and Robertson, 2006). Tiazkun, Leaver, and Vitti (2008) stated that eight different key stakeholders that are involved in a finance transformation in different finance processes, see Table 3-2. People from finance and IT operations are more involved in finance processes as controllers or tax employees.

In a finance transformation, multiple stakeholders are involved for multiple processes that are in scope; thus, these aspects are challenging for a successful finance transformation. Many need to be involved in the research data-collection process to facilitate a holistic view of financial transformation.

Table 3-2: Key stakeholder analysis of a finance transformation.

Source: Adapted from Tiazkun et al. (2008).

Functions, Key Stakeholder	CFO	CRO	Controller	Treasurer	Financial Planning Analyst	Tax	Finance IT / Operations	Audit
Financial Close	✓		✓				✓	✓
Mergers and Acquisitions	✓							
Requisition-to-Pay			✓				✓	✓
Order-to-Cash			✓				✓	✓
Budgeting, Forecasting and Planning					✓		✓	
Workforce Management / Payroll			✓					
Shared Services	✓						✓	
Industry / financial benchmarking	✓		✓					
Tax process automation	✓	✓				✓	✓	✓
Treasury Management	✓	✓		✓			✓	✓
Enterprise Risk Management	✓	✓					✓	
Financial Regulatory Compliance	✓	✓				✓	✓	
Internal Control / Audit Management	✓	✓						✓
Industry-specific finance processes	✓						✓	

### 3.3 Research Design

Research design is the road map that connects the mixture of quantitative and qualitative data to the research questions and ultimately to the findings and conclusions (Saunders et al., 2016) concerned with collecting, analysing, interpreting, and reporting the research findings (Creswell and Plano Clark, 2010).

As described in Section 3.2, this mixed method study strives to enhance existing theory of finance transformation by shifting the focus on the strategy, design, implementation, and organisational perspective, specifically, the professional activities of the CFO. On the other hand, it seeks to provide understanding about the status quo of the activities of the finance professional by identifying relevant parameters and trends.

In principle, the research design refers to the overall strategy, ensuring effectively addressing the research problem. It contains the data collection, measurement techniques, and the analysis of data. The deductive part of the research implies testing of theories. The researcher's aim is to construct a framework to enhance the views of various stakeholders and to contribute to the finance practice.

It usually involves collection and conversion of the data into a more numerical form so that statistical calculations can be made, and conclusions be drawn. In the research design, the researcher decides on all elements of the research: philosophical assumptions (Section 3.2.1), research method (Section 3.3.1), data collection (Section 0), data analysis approach (Section 3.5), and a written record of the findings (Chapter 4) with the aim of aligning the empirical evidence with the research questions (Brandimarte, 2011).

### **3.3.1 Research method**

Following the research philosophy, the study applies a sequential mixed method design.

Mixed methods research is an approach that combines quantitative and qualitative research methods in the same research inquiry. Such work can help to develop rich insights into various phenomena of interest that cannot be fully understood using only a quantitative or a qualitative method (Venkatesh, Brown, and Bala, 2013). Mixed methods are used widely in research for accuracy, building up a complete picture of a specific topic, and extending sampling possibilities (McEvoy and Richards, 2006).

The researcher conducted a sequential mixed methods study – a quantitative study (the survey) followed by a qualitative study (semi-structured interviews) – to understand differences in work attitudes, behaviours, and performance across two groups of finance and IT professionals and to verify the framework.

The sequential mixed method design has explanatory design characteristics because the purpose is to use the qualitative results to further explain and interpret the findings from the quantitative phase.

Ultimately, the chosen research method allows:

- a) the use of a questionnaire to collect quantitative data (in quantitative research section);
- b) the use of structured interviews for the verification of the quantitative data (in quantitative research section) and;
- c) the use of semi-structured interviews to collect qualitative data and to verify the framework and quantitative results in more depth (in qualitative research section).

Semi-structured verification interviews were conducted with additional external professionals to strengthen the conclusions drawn from the quantitative data analysis and extend the presented arguments and thematic interpretations.

The results of the thesis show a robust evaluation of recommendations and potential success factors with a high validity for academics and practitioners (Salehi and Golafshani, 2010). In the literature the prevalent arguments for integrating qualitative and quantitative approaches and combining them are first to achieve “cross-validation or triangulation” and second is to “achieve complementary results” by using the strengths of one method to enhance the other (Sale, Lohfeld, and Brazil, 2002).

“QUAN → qual” indicates the quantitatively-driven project, in which a quantitative project is conducted first followed by a second qualitative project, which is designed to expand on findings from the first project; “→” meaning that data collected sequentially (Creswell and Plano Clark, 2010; Sale et al., 2002; Tashakkori and Teddlie, 2010). Further notation is “QUAN” stands for quantitative, “qual” stands for qualitative, and capital letters denote high priority or weight of the quantitative section, and lower case letters denote lower priority or weight for the qualitative section (Onwuegbuzie and Collins, 2007).

The mixed methodology begins with the research problem in mind and seek the best mix of approaches to answer their question. In this case there is sound rationale for a questionnaire study followed by semi-structured interviews, and the design will be followed by this approach. The use of qualitative research alone is uncomfortable for the researcher and the researcher believes that mixed methods are more valid than just quantitative or just qualitative research.

The researcher has chosen the research method of a survey to gain the answers of finance members of the target audience for measurement. The researcher intended to gain a wide range of responses from a variety of the target population. There are benefits of creating a survey, for example, it allows easy comparison when analysing the results, and the researcher can gain large amounts of data. However, there are a few drawbacks, such as the lack of depth in the answers and being unable to find the reasons behind respondents' choices.

The reason of using the survey method is to gain a deeper understanding of the needs and requirements of the target audience. Conducting accurate and meaningful surveys is one of the most important facets of market research and is an organised effort to gather information from the target audience. The survey research is practical; a large amount of information can be collected from many participants in a short period and in a relatively cost-efficient way. Surveys are used to assess needs, evaluate demand, and examine effects (Salant and Dillman, 1994). The survey allows identifying key activities, key factors, and risk-associated aspects towards an efficient finance transformation. The number and background of respondents reflect multiple perspectives on this topic and allow collecting information via open-ended questions. The survey also contains questions with multiple given answers (selection list). These can be analysed and ranked, and priorities can be concluded.

The key features that apply for the researcher's survey are as follows:

- the topic is quite popular in business research and the audience is broad due to no sector limitation and proposed target audience;
- the representativeness of the survey is entirely dependent upon the accuracy of the sample size (see Section 3.3.3);
- the survey allows the collection of quantitative data that can be analysed quantitatively;
- the survey gives the researcher independence and the ability to structure the collection process in advance.

According to Muijs (2004), the most popular quantitative research design is survey research. Surveys are used to describe a method of gathering information from a sample of individuals that are highly flexible and can therefore appear in a variety of forms, but all are characterised by the collection of data using standard questionnaire forms.

The following table summarises the research spectrum.

Table 3-3: Summary of the research spectrum.

<i>Research Spectrum</i>	<i>Description</i>
Research Concept	The key concept is to perform a survey related to finance and collect a variety of personal experiences of people. The purpose of the survey is to find what defines well-designed and performed successful finance transformations.
Research Approach	The researcher's approach is sequential mixed method approach.
Research Methodology	Mix of quantitative and qualitative methodology, sequentially: Quantitative – measurements and testing using statistical significance testing based on the survey data and to verify the survey data. Qualitative – for the verification of the finance transformation framework.
Data-Collection Method	Surveys – used to assess needs, evaluate demands, and examine effects. Interviews – used to verify the survey data and verify the framework.
Data-Collection Techniques	The questionnaire contains multiple-choice and rating questions to allow the statistical analysis of the data. Structured interviews – used to verify the survey data. Semi-structured interviews – used to verify the finance transformation framework.

The purpose of “development” in a mixed method approach is according to Onwuegbuzie and Collins (2007) appropriate for sequential design and not for the concurrent design.

### **3.3.2 Piloting**

Conducting a pilot study does not guarantee success in the main study, but it does increase the likelihood of success (van Teijlingen and Hundley, 2002). Before conducting the main survey, the researcher decided to run a pilot survey as a critical form of preliminary evaluation to capture key emerging research themes not included in the original draft of the survey. The pilot affected several decisions related to conducting the main study. The focus of the pilot study was to develop an understanding of the context, process, and technology of finance transformation in a turbulent environment. The suitability of the selected research method and the acceptance of the survey as a tool by the participants were valuable to

proceed. The questionnaire was based on 12 participants, and their role was chosen from the stakeholder analysis.

Feedback from the pilot survey participants formed a baseline for making necessary amendments before the survey was distributed to the main sample. Lastly, the researcher designed a clear, simple layout for the survey and avoided technical jargon wherever possible.

The performed pilot study was a valuable experience, as it forced the researcher to confine the research aim and objectives to a manageable scope. The scope has been defined more clearly and was reduced based on the iterations and rephrasing of the objectives and research questions. The pilot answers were clear, which in turn, required a low degree of interpretation to extract the essence of the statement. Therefore, the researcher considers for the main study the use of questionnaires to make determinations with higher precision and to confirm the framework variables and possible relationships and dependencies.

The sample for the pilot test was selected from academics and industry professionals. These respondents also suggested some questions that the researcher had not considered during the construction of the pilot survey. The researcher is aware that some questions or pre-formulated answers may not have the same meaning to all respondents. Therefore, the questions and answers have been phrased as clearly and unambiguously as possible. The researcher used the feedback to revise and rephrase the questions for the main survey.

With reference to the findings, a tentative framework has been created based on the different subsections and a certain degree of understanding that has been reached. However, the levels of generalisation and validity of the pilot study were low due to the low number of respondents. There were still open points; for example, why has a finance transformation been performed? How was it done? How successful was it, and were there any unintended consequences? It was not clear what metrics would be used to judge the success of a financial transformation. Available answers have been revised in wording to better clarify what was meant by each answer and to reduce the complexity towards simpler answers. These open points have been closed in the main study based on the revised survey.

### **3.3.3 The sample**

Purposive sampling was used to target the audience of the survey respondents from the stakeholder analysis. Potential respondents with finance background have been selected for each stakeholder group from the researcher's network. The chosen target audience was selected based on the information provided by the potential respondents on their job roles and responsibilities and the researcher's knowledge that the respondents have insight into aspects of finance and have or had roles and responsibilities in finance activities. The expert sampling is a form of purposive sampling used when research requires one to capture knowledge rooted in a particular form of expertise. Using purposive sampling in combination with the mixed methods approach which generates both quantitative and qualitative data – is suitable and occurs occasionally (Tashakkori and Teddlie, 2010; Teddlie and Yu, 2007).

Different levels of seniority, different sizes of companies, different sectors, involvement in finance transformation, and the performed role are possible differentiators towards a large environment of experts that can be surveyed. The number of participants in the survey should allow drawing meaningful and statistically sound conclusions. The data analysis compares the means of the two populations, those with involvement in finance transformation and those without involvement.

The sample size for the performed quantitative data collection is as follows. In total, the researcher has sent out the survey link to 164 potential respondents via email or social media, such as LinkedIn or Xing. In total, 88 responded, one of whom declined to answer the questions. Thus, 87 (53%) gave at least partial responses.

Doody and Doody (2015) pointed out that the sample size was not predefined at the start of the research but is determined at the point of data saturation. In the context of achieving an appropriate level of research validity, the researcher aimed for purposive sampling to target an audience of survey respondents based on the stakeholder analysis. According to Bryman and Bell (2015b), purposive sampling is for special situations in which the judgement of an expert is needed and most often when a “difficult-to-reach population” needs to be measured. The researcher's plan is that the sample size should be established inductively, and the sampling should continue until saturation is reached. It is argued that the adequacy of the

sample cannot be solely determined on the number of participants but rather on the appropriateness of the data (Conrad and Serlin, 2011).

The following figure represents the original sampling group and potential respondents of the survey based on the stakeholder grouping style.

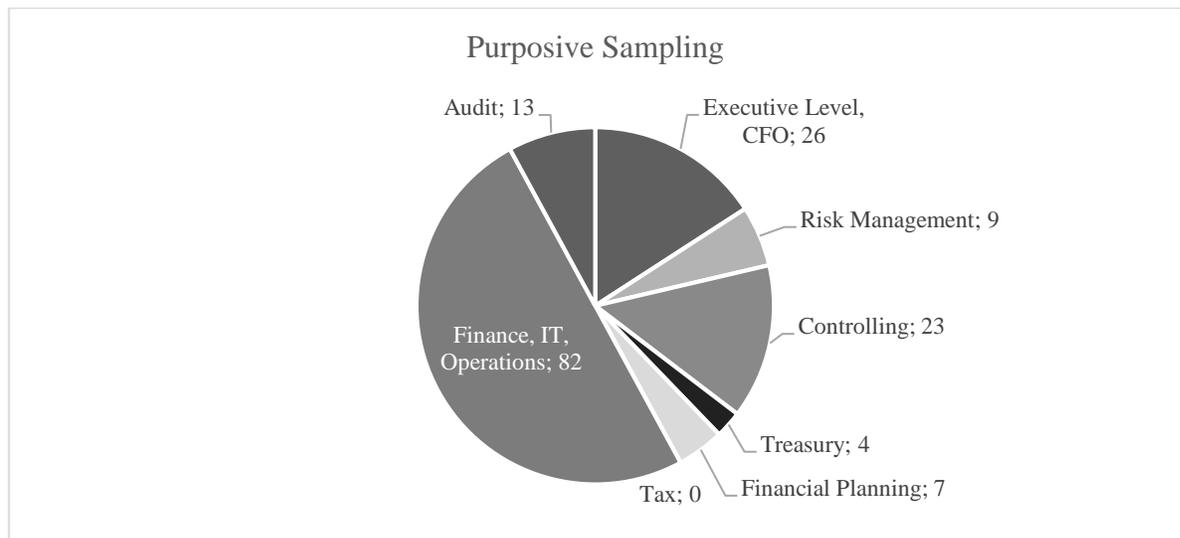


Figure 3-2: Potential respondents classified by their professional role.

The potential respondents of the survey have been selected based on the stakeholder groups and the provided information on job roles or responsibilities.

The structured interview sample group (see Table 3-9 and results in Appendix C) for the verification of survey data comprised partially from the main study and has been selected based on the stakeholder analysis and is purposive as well. In total, four different roles and types of organisations have been chosen.

The sample of the semi-structured interviews (see Appendix D), in total 10 interviewees, for the verification of the framework has been selected based on the different levels – organisational level, provider level, and technical level. These participants for the qualitative data collection were not part of the quantitative study.

In purposive sampling, elements are selected because these elements satisfy the specific inclusion criteria (Daniel, 2012). In this case only finance professionals have been selected.

On the other hand, exclusion criteria have been established e.g. for meaning that no respondents working in public sector have participated in the study.

### 3.3.4 Research survey

In this section, the analytical process of determining a research survey design suitable for this research and the structure of the questionnaire will be discussed. Literature informed the researcher to ask questions such as what a finance transformation looks like and how the implementation of a finance transformation is done.

The questionnaire starts with an opening section in which the researcher reviews the participants consent, purpose of the research, and reason for the sampling. This approach was chosen to ensure the provision of informed consent.

In the following table, the different subsections of the questionnaire are summarised with a short description of the purpose and the required content of each subsection.

Table 3-4: Subsections of the survey.

#	Subsection	Description
1	General	<p>Questions 1 – 5, 39 are general questions about the respondent. The idea is to get more information about the possible dependencies and differences for finance transformation in terms of variables such as sector, years of professional experience, type for business and type of organisation in terms of employees.</p> <p>The last question of the questionnaire offers the participant the opportunity to add any comments or suggestions on topics or further questions, which should be considered in the research.</p>
2	Introduction to finance transformation	<p>Questions 6 – 8: The researcher gets a first impression if the definition and knowledge about finance transformation of the respondents is mostly the same as stated. As financial management activities become digitised, current financial platforms need to be adapted. The respondents can agree that there is a need to change platforms in terms of functionality and specification. Furthermore, the respondents can select their role within finance transformation performed if they have ever been involved in a finance transformation process.</p>
3	Performance of finance transformation	<p>Questions 9 – 14: These questions are related to the performed finance transformation. The variables are importance of finance roles, the expectations</p>

#	Subsection	Description
		from a new system after a successful finance transformation, the level of success, to what extent was the finance transformation finished in time, information about resources and budget and the degree of disruption after the financial transformation in terms of malfunctioning systems.
4	Characteristics of finance transformation	Questions 15 – 20: The respondents can state which approach/decision should initiate a finance transformation, what should be the outcome of a successful finance transformation, how important are the attributes for the success of a finance transformation and how important are change management activities to achieve the goals of finance transformation. The last questions in this section summarises which challenges the respondent expects while transforming finance and what the drivers for finance transformation are.
5	Data and analytics	Questions 21 – 25: This subsection contains the different data concepts that are suitable to create a financial platform, needed to ensure information availability. However, it is important to establish the open information transparency across the enterprise, how information is primarily viewed. Finally, the participant will give answer to the most important operational analytical capabilities within a finance transformation process.
6	Process	Questions 26 – 29: The process subsection contains questions related to the business units that have guidance on what information should be kept and where and when the comparison of planned versus actual data is available. Using automated workflow processes for transactional activities are necessary. A strong, clear process ownership across the enterprises can be part of the implementation.
7	Technology	Questions 30 – 33: These questions are about common financial transaction platforms and tools that are used across the regions, lines of business, about drill down functionality into the operational and transaction systems and what might be the appropriate investment of building and implementing a system. Additionally, the question whether the enterprise utilise automated tools to extract, transform, load and perform data into the financial reporting systems or not.
8	Operating model	Questions 34 – 38: These questions deal with the operating model for finance transformation. Elements such as internal control, regular compliance, enterprise risk management and governance are aspects. Which alternative delivery models are part of, weather there exist a program to identify, recruit and train specialised financial staff? In terms of a high performing finance team, what are the activities, which have an impact on the organisation's performance?

In Table 3-5, information is shown how the respective sections of the questionnaire were related to the research questions. The survey questions were predominantly answered on Likert scale. The complete questionnaire including possible answers is presented in Appendix B.

Table 3-5: Link between research questions and questionnaire.

<i>Research Question</i>	<i>No. Survey Question</i>	<i>Survey Question</i>
No RQ assigned	1	I have read the above information (opening section), and I agree to take part in this survey. Participation is voluntary. Yes or No.
	2	In which sector are you working in your current position? Please select.
	3	How many years of professional experience do you have? Please select the appropriate range.
	4	Does your organisation have international business units, business partners? Yes or No.
	5	How many employees are working within your organisation? Please select the appropriate range.
	7	Have you ever been involved in a finance transformation process? Yes or No.
	39	Do you have any comments or suggestions on topics or further questions, which should be considered in this survey? Text field.
RQ1	6	As Financial Management activities become digitised, current financial platforms need to be adapted. Do you agree or disagree? For the following statement, please give your level of agreement. 1=fully disagree to 5=fully agree.
	8	What was your role? Please select.
	9	According to your view, how important are the financial roles in your enterprise? Please distribute the points where the highest number is a very important role.
	10	What do you expect from a new system after a successful finance transformation? Please score all possible answers in terms of agreement. 1=fully disagree to 5=fully agree.
	11	How would you rate the level of success of the finance transformation performed? 1=underperformed to 3=as expected on target to 5=exceeded expectations.
	16	What should be the outcomes of a successful finance transformation? Please score all possible answers in terms of agreement/disagreement. 1=fully disagree to 5=fully agree.
	17	For the success of a finance transformation, how important are the following attributes? Please score all possible answers. 1=not important to 5=very important.
	18	How important is formalised change management to achieve the goals of finance transformation? 1=not important to 5=very important.
	20	What are the drivers for finance transformation? Please score on a scale. 1=fully disagree to 5=fully agree.
	25	Within a Finance Transformation process, rate the importance of the following operational analytical capabilities? Please score. 1=not important to 5=very important.

<i>Research Question</i>	<i>No. Survey Question</i>	<i>Survey Question</i>
	37	What are the activities, which have an impact on the organisation's performance? Please score impact. 1=no impact to 5=significant impact.
	38	Do you have any concern regarding the finance transformation operating model/process? Yes or No.
RQ2	21	Please rate the suitability of the following data concepts to create a target financial platform. 1=not suitable to 5=very suitable.
	24	In your organisation, how important are consistent definitions of data for each of the following areas? Please score importance. 1=not important to 5=very important.
	26	Do all business units have guidance on what information should be kept and where? Please select.
	29	Do you have a clear process ownership across the enterprise? Please select.
	30	Do you have a common financial transaction platform and tools that are used across the regions, lines of business? Please select.
	33	Does your enterprise utilise automated tools to extract, transform, load and perform data cleaning and validation before data is loaded into the financial reporting systems? Please select.
RQ3	14	How would you rate the degree of disruption after the financial transformation in terms of malfunctioning systems? Please select.
	19	Which challenges do you expect while transforming finance? Please score. 1=low to 5=high.
	27	When is the comparison of planned versus actual data available? Please score.
	28	Are you using automated workflow processes for transactional activities like accounts payable, capital expenditure approvals, travel and expense processing? Please select.
	31	Do your planning and analysis tools allow drill down into the operational and transaction systems to provide supporting details? Please select.
RQ4	12	To what extent was the finance transformation finished on time? 1=behind schedule to 5=ahead of time.
	13	Were resources and budget for the finance transformation appropriately planned? Please rate. 1=exceeding budget to 5=below budget.
	15	Who will mainly initiate the potential finance transformation within your organisation? Please select.
	32	What is the appropriate investment of building and implementing a system? Please select.
RQ5	22	Is information primarily viewed as a corporate asset or as a business unit asset? Please score.
	23	To what degree is there an open information transparency across the enterprise? Please score.
	34	Is the Finance department within your enterprise responsible for the following areas? Please select the appropriate topics.
	35	Has your enterprise expressed the intention to perform or redesign a finance transformation? Please select.
	36	Does your enterprise have a program to identify, recruit and train specialised financial staff? Please select.

### 3.3.5 Research interviews

Semi-structured interviews have been selected as they provide direct human interaction and encourage the interviewee to expand and to discuss attitudes as well as facts (Campbell, Quincy, Osserman, and Pedersen, 2013; Gioia, Corley, and Hamilton, 2013). These interviews aim to verify the finance transformation framework in terms of the principle guidelines based on structure, scope and time, and categorisation to importance, completeness, value and correctness.

The interview questions are divided into four main categories: The first set of questions focuses on finance activities in the digital area driven by IT innovations, the second set of questions deals with the framework approach, and the third set concentrates on the organisational excellence procedures and the actors involved. The fourth area is dealing with the guiding principles in terms of scope, and time. Hence, the interview questions reflect the focus on the verification of the framework.

The following Table 3-6 contains the process steps for the semi-structured interviews, starting with the design of the interview questions and guide, followed by the data collection and data analysis of the qualitative section with short descriptions.

Table 3-6: Process of the semi-structured interviews.

<i>No</i>	<i>Process Step</i>	<i>Process Description</i>
1	Write down of the interview themes, topics and creation of sets of interview questions	The semi-structured interview questions need to be sorted out and linked to themes of the framework and the research questions. The following set of questions will be applied: <ol style="list-style-type: none"> <li>1. Introduction and focus on finance activities in the digital area;</li> <li>2. framework approach;</li> <li>3. Organisation excellence - Guiding Principles   Stage I (Structure);</li> <li>4. Operating Excellence - Guiding Principles   Stage II (Scope &amp; Time);</li> <li>5. Closing.</li> </ol>
2	Design of the interview questions	The researcher selected the most appropriate questions to be asked and created a link to the research questions. Different types of questions like open-ended or close-ended and potential answer ranges are created. Design questions with general and easy to understand terms that will allow for an open discussion. The researcher considers various ways of arranging the questions and design the interview questions.
3	Creation of the interview guide	Create the interview guide to send out to the interviewee prior to the meeting (max. 2h in advance) to share the list of questions in advance.

<i>No</i>	<i>Process Step</i>	<i>Process Description</i>
4	Identification and selection of the interviewees	The selection focused on the organisational view from informants such as COO, CFO, CRO, the provider view of the finance transformation or systems like the controller, human resources and thirdly on the technical view such as subject matter experts (e.g. cloud, data & security). The interviewees were asked in advance to receive informed consent on a voluntary basis.
5	Planning and Execution of the interviews	Schedule of the interview and confirmation of the interviewee followed by the conduction of the interview. The data collection for the verification of the finance transformation framework (qualitative section) took place in November to January 2019. Semi-structured interviews lasted between about 45 minutes and 60 minutes. If permission was granted, the interviews were audio-recorded.
6	Write down and translation of the interviews	All interviews were anonymised and if necessary, translated from German to English. The interviews were written down.
7	Coding of the interview	Essence of key attributes of verbal information with an open coding of agreement and disagreement.
8	Thematic sorting of themes - develop an interpretation of the data	Identification of similar themes and relationships across multiple interviews to verify the finance transformation framework. Themes are importance, completeness, value and correctness.
9	Findings	Summarise the findings based on the analysis of the questions and refer back to the literature.
10	Changes	Incorporate potential changes to the framework based on the results of the qualitative section of this thesis.
11	Discussion	Set the findings into discussion and establish a link to the research questions and demonstrate that the research objectives are achieved.

Further details on the data collection and data analysis are presented in the next two sections. See also Appendix D for details of the interviewees, the interview questions guide and an example of the interview results.

The interview questions are created to verify the framework and get further understanding, agreement and potential disagreement on the finance transformation framework. Presented in Table 3-7 is the link between the research questions and the interview questions.

All interview questions are linked to research questions to determine what is necessary to perform a well-designed finance transformation. Besides that, the interview questions are also linked to the quantitative section as well. To give an example interview question 9 “If you need to introduce the target architecture, what additions (elements/factors) would you include? Yes or No and please explain.” aimed at whether all has been taken into account in

the framework to answer the question that existing elements leads to a well-designed finance transformation.

Table 3-7: Link between research questions and semi-structured interview questions.

<i>Research Question</i>	<i>No. Interview Question</i>	<i>Interview Question</i>
No RQ assigned	13	Would you like to add anything? Please specify.
RQ1	1	Based on the constantly changing conditions in the corporate environment, the function finance has to adapt continuously. 1 = disagree to 5 = fully agree.
	2	As Financial Management activities become digitised, current financial platforms need to be adapted. Do you agree or disagree? Please give your level of agreement. 1 = fully disagree to 5 = fully agree.
	4	Have you thought about a target architecture? Yes or No.
	6	What is the degree of value for the (target) architecture for finance transformation in practice? 1 = no value to 5 = most value.
	7	What is the necessity of using that framework? Please specify.
	9	If you need to introduce the target architecture, what additions (elements/factors) would you include? Yes or No and please explain.
	10	What are the three most important building blocks for you (deal breaker) from this FT Framework? Is anything missing? Please specify.
RQ2	---	No specific question has been raised on data concepts as this question has been answered in the quantitative section.
RQ3	11	Where do most resources need to be? Please specify.
RQ4	5	According to your view, is the transformation framework approach suitable for you in terms of the planning, designing and execution? Yes or No and please explain.
	8	Is it essential to have a top down approach for this scenario and how is it eventually captured in reality? Yes or No and please explain.
	12	Do you see any problems with the stages? stage I = vision phase, stage II = design phase, stage III = implementation phase? Yes or No. If Yes, please explain why.
RQ5	3	What experiences have you made with a transformation journey? Please specify.

The interview questions aimed to ensure the fulfilment and a contribution for the research gaps (Table 2-4), specifically the research questions shown in 1, 3, 4 and 5.

### 3.4 Data Collection

Data collection has been conducted through surveys (quantitative section) with stakeholders from an unspecific sector perspective. The researcher used the survey strategy, more precisely online surveys, using questionnaires for data collection. The collected data for the main study contains information from respondents for each of the stakeholder roles. The respondents are from different organisations.

The questionnaire has been conducted to reflect experiences and to explore issues with a greater focus within the different elements of finance transformation. The data-collection technique using questionnaires contains rating and multiple-choice questions to allow the statistical analysis of the data. One of the advantages of the quantitative part of the method is the possibility to use tick boxes and to apply numerical scoring methods with no lengthy descriptive questions, thus greatly reducing the time spent on collecting data. The researcher's ability to address a dispersed industry population is valuable and can yield some very specific and highly detailed results that are easily comparable across the sample. Subsequently, the data is analysed by statistical methods.

In total, the questionnaire includes 39 questions that the researcher handed over to the respondents and that are categorised by different elements of the finance transformation framework. The framework contains a set of elements that assist the finance audience in assessing their vision, finance strategy, and design and implementation activities to improve the overall value of finance. Involving multiple stakeholders also helps create a differentiated understanding of the transformation programme target and therefore drives transformation success (Abraham et al., 2015).

At first, the survey was created in Excel. After some iterations, the researcher created the survey using the survey platform tool [surveymonkey.com](https://www.surveymonkey.com). Using the online tool strongly facilitated the data collection and assessment. The data can be analysed in real time. The minute a survey is completed, the responses can be viewed, and reports can be generated. The dataset has been analysed using SPSS.

However, the research method of surveys and the use of questionnaires also brings about some limitations of the study. One of the main drawbacks of questionnaires is often the low

response rate. Gilbert (2008) reported that response rates for postal questionnaires can be as low as 20%. Survey respondents may not complete the survey, resulting in low response rates, and this may hinder drawing sound conclusions. Incorrectly or illegibly filled out questionnaires or partly missing answers might inevitably influence the quality of the data obtained, resulting in a lower number of useable questionnaires. Furthermore, questionnaires do not offer the researcher the opportunity to clarify issues after the completion of the survey. Some questions may not have the same meaning to all respondents. However, to reduce the number of not completed surveys, the researcher reminded people to fill in the questionnaire. The originally targeted number of respondents was only achieved by approaching a higher number of potential participants. Saunders et al. (2016) also described the limitations of questionnaires regarding the expected outcome, which might, for example, highlight trends or attitudes but will fail to explain the underlying reasons for the outcome. The potential size and diversity of the sample will be limited by the respondent's ability to read the questionnaire. The pre-requisite for answering is English-speaking, however this might be reasonably expected from finance professionals.

The target audience of the questionnaire was defined based on the analysis and involves the following functions: CFO, CRO, treasurer, controller, financial planning analyst, general finance and IT operations, solution architect, and auditor. Many people are familiar with surveys, and some people feel more comfortable responding to a survey than participating in an interview. The questionnaire is conducted to reflect experiences and to explore issues with a greater focus on the different elements of finance transformation. The target respondents are people who have specific knowledge and background in finance, IT, or professional roles that can be associated with finance transformation.

In the researcher's analysis, the responses are anonymous and cannot be attributed to the respondent. The researcher's contact details were listed in case the respondents have any questions about the survey. Comments from respondents to Question 39 have been distributed via email. The questions were understandable. The different subsections are analysable in an appropriate manner. The survey contains different topics and competence aspects of finance transformation. The questions are formulated in precise and understandable way.

The survey questions for the main study were formulated in a more precise way. When formulating the results section, it is important to remember that the results of a study do not prove anything. Findings can only confirm or reject the hypothesis underpinning the researcher's study. However, the act of articulating the results helps to understand the problem from within, to break it into pieces, and to view the research problem from various perspectives. A systematic description of the researcher's results, highlighting observations that are most relevant to the topic is under investigation.

The questionnaire contains different topics and competence aspects of finance transformation. The different subsections can be analysed appropriately. The types of questions that are used in the questionnaire are open checklists, which are straightforward to analyse, ranking questions to assess the importance of factors, category questions (i.e. ticking boxes), and Likert scales, which are good for analysis and are easy to complete.

The time-related study was representative, as representative group of people with experience in finance and different stakeholders from different sectors have completed the survey. There have been no changes made to the survey during the time-related study. Please see Chapter 4 for the findings based on the analysis of the survey data.

The data collection for the verification of the finance transformation framework (qualitative section) took place in November to January 2019. Semi-structured interviews lasted between about 45 minutes and 60 minutes. If permission was granted, the interviews were audio-recorded. Only one expert did not allow such audio recording, as he generally does not feel comfortable in being audiotaped, for this case reliance was made on notes taken by the researcher. All interviews were anonymised and if necessary, translated from German to English. Notes were employed during and directly (no longer than 12 hours) after the interview.

The selection focused on the organisational view from informants such as COO, CFO, CRO, the provider view of the finance transformation or systems like the controller, human resources and thirdly on the technical view such as subject matter experts (e.g. cloud, data & security), see Appendix D for details.

### 3.5 Data Analysis

This subsection discusses the analysis technique applied respectively to the collected quantitative data. The purpose of this survey is to find what makes a well-designed and successful finance transformation.

A simple approach to quantitative data analysis can be performed using the various analytical methods available; therefore, researchers tend to use methods they are familiar with, relying on experience and a certain level of expertise (Robson, 2002). Thus, familiarity with IBM products and their data analysis functionality led the researcher to select the sophisticated SPSS software (Trochim, 2000).

After the completion of the survey, the collected data have been exported into Excel, then imported in SPSS. Basic univariate and bivariate statistical analyses were performed to interpret the data and support the recommendations pertaining to the research objectives. Univariate analysis is the simplest form of quantitative (statistical) analysis carried out with the description of a single variable and was used for the descriptive analysis of the survey data.

The researcher also used some elements of a more advanced statistical analysis; for example, the analysis measuring the interaction of two variables simultaneously. Steps in the quantitative data analysis entailed the following:

- Editing and coding survey data in Excel to upload into SPSS;
- Descriptive analysis, such as frequency distribution, means analysis, and cross-tabulation, to generate insight;
- t-test;
- Chi-square test;
- Analysis of variance;
- Factor analysis;
- Linear and multiple regression.

In quantitative data analysis, correlation is the most popular technique for indicating the relationship of one variable to another. In descriptive statistics, correlation describes the level of dependence of two variables. It defines a statistical relationship between two random

variables or two sets of data. To establish whether there is a relationship between two variables (cross-tabulation), the researcher used the chi-square ( $\chi^2$ ) test. In-depth multivariate analysis is out the scope of the quantitative analysis conducted in this study; it can be considered a potential future research opportunity in this subject.

As outlined in the research design section, the study uses qualitative methods to verify the quantitative results and to verify the finance transformation framework. The priority of the sequential mixed method approach is given to the quantitative method; therefore, the qualitative method is used as sensemaking mechanism (Tan & Hunter, 2002).

The study used semi-structured interviews as a qualitative data verification technique. In line with the critical-realistic underpinning of this study, interviewing enables the researcher to directly interact with the respondents to be able to contextualise the findings (Schultze & Avital, 2011).

Semi-structured interviews refer to a series of close-ended and open-ended questions, which do not require a specific sequence (Bryman and Bell, 2015a). In line with the sequential approach, the interview questions were developed from the results of the framework and quantitative data collection and analysis (Cressy et al., 2013). Hence, the interview protocol contained 13 questions, 4 close-ended questions and mainly open-ended questions to verify and understand the framework, building blocks and potential success factors. In addition, the interview protocol (see Appendix D) minimised the impact of the researcher on the data collection and ensured consistency across the respondents (Bryman and Bell, 2015a).

Ten interviews were conducted for the verification of the framework results. Based on the argument of Creswell and Plano Clark (2010), the interviewees were selected based on purposive sample and not from the questionnaire sample to ensure an in-depth discussion of the framework. Due to the sample criteria, the interviewees are considered experts in transformation projects. Interviews were conducted in English or German. Interviews were digitally recorded and transcribed if permission was given or notes used if it was not. The interviewees were kept anonymous. For the responses given in the ten validation interviews the responses to the open questions were codified into binary agree and disagree statements. For example, the COO's statement "Without having a framework as the target architecture, I do not need to start a transformation" results in an "agree". For the closed questions the

respondents were asked to give their response on a Likert scale, these were then analysed using descriptive statistics.

The coding is divided into the four verification themes importance, completeness, value and correctness. For example, interviewee I-1 (a COO) has given mostly positive statements (agreement) and some more critical statements (disagreement). These are presented and summarised in Section 7.2.

Table 3-8 contains the coding process of the semi-structured interviews. The open coding description explains how the answers to the respective interview question has been coded in the data analysis.

Table 3-8: Verification themes and coding process of the semi-structured interviews.

<i>No</i>	<i>Verification theme</i>	<i>Coding theme</i>	<i>Interview Question</i>	<i>Coding Description</i>
1	Importance and Necessity	Importance	Interview Question 2	Likert scale 1 = disagree to 5 = fully agree
			Interview Question 3	Agreement = Yes and disagreement = No
		Necessity	Interview Question 6	Open coding into agreement (necessity = yes) and disagreement (necessity =no)
2	Value and Suitability	Valuable	Interview Question 5	Likert scale 1 = no value to 5 = most valuable
		Suitability	Interview Question 4	Open coding into agreement (suitability = yes) and disagreement (suitability =no)
3	Completeness and Lucidity	Completeness	Interview Question 8	Open coding into agreement (completeness = yes) and disagreement (completeness = no)
			Interview Question 13	Open coding into agreement (adding = no) and disagreement (adding = yes)
		Lucidity	Interview Question 9	Open coding into agreement (missing = no) and disagreement (missing = yes)
			Interview Question 10	Open coding into agreement (resource distribution = no) and disagreement (resource distribution = yes)
4	Correctness and Applicability	Correctness	Interview Question 1	Likert scale 1 = disagree to 5 = fully agree
			Interview Question 11	Open coding into agreement (problem = no) and disagreement (problem = yes)

<i>No</i>	<i>Verification theme</i>	<i>Coding theme</i>	<i>Interview Question</i>	<i>Coding Description</i>
			Interview Question 13	Open coding into agreement (nothing to add = no) and disagreement (to be added = yes)
		Applicability	Interview Question 7	Open coding into agreement (essential = yes) and disagreement (not essential = no)
			Interview Question 12	Open coding into agreement (positive experience or example) and disagreement (negative experience or example)

The interview results were coded per interview using the open coding. Open Coding has been performed to look into a bit broader scale and code against one of the above verification themes, interview sentences or paragraphs. The aim is to identify positive (agreement) and critical (negative) statements. There are sentences or paragraphs from which the researcher could derive a positive signal e.g. interviewee I-4 (a Controller) said “I think there are no changes or adjustments needed using this framework. For our company, it looks beneficial for what needs to be considered for the transformation”, which are positive identified statements.

### **3.6 Reliability and Validity**

Reliability should be observed by the researcher throughout the entire research process. Reliability can be expressed if methodological coherence exists. The researcher confirms the congruence between the research questions and the components of the method (Morse, Barrett, Mayan, Olson, and Spiers, 2002).

According to Creswell (2014), one of the main reliability strategies is to define consistent sets of questions for the research survey. The researcher determines a set of measurable questions linked directly to the research objectives. Reliability is also assured by careful selection of the survey respondents, who are experts in the field.

The validity of research can be described as an “approximation of truth of a given proposition or conclusion” (Trochim, 2000, p. 12). The findings in Chapter 4 will be compared to the relevant literature, which is one of the main validity strategies. The research contains which research measures the researcher intended to measure. Both data collection and analysis

should focus on minimising potential bias and ensuring reliability. The reliability is assured by careful selection of the survey respondents, who are experts in the respective field.

Creswell (2014) listed some strategies for ensuring validity that have been used by various researchers and adopting at least two in any given research is recommended. The first strategy is collaboration. Moreover, the researcher consulted external industry-specific knowledge to review the survey questions and examine the process (research steps, decisions, and activities) and the results of the study to determine the accuracy. The second strategy is the sample, which is sized appropriately to achieve statistically significant and reliable results. Additionally, the survey consisted of participants who were in the best position to represent or have knowledge of the research topic.

The ethical causes and implications related to finance transformation are the right governance standards with the people involved to establish and/or align finance with the business. The challenge mechanisms are about having the appropriate balance of controls and the assurance that they are not constraints to the business as well as having the best fit of value-added activities from transactional finance processes. Finance transformation needs to be implemented when enterprises have significant audit constraints and/or failures. A factor that can affect the transformation quality is the lack of standards within a company. For people to participate, informed consent is required, and the participation is voluntary.

For the reliability and validation of the data, findings, and conclusions, the researcher has conducted structured interviews. These structured interviews were conducted with the aim of verifying the conclusions drawn from the empirical research study and extending the interpretation of the key findings. The identification of insight into the finance transformation issue from the perspective of participants is requested at the end of the interview. The selection of the interviewees has been done based on the stakeholder analysis.

The interview sample group (see Table 3-9) comprised two participants of the main study and two experienced external finance practitioners. In total, four different roles and types of organisations have been chosen. The interviewees were kept anonymous.

Table 3-9: List of interviews for the verification of data and findings of the survey.

<i>No</i>	<i>Role / Title</i>	<i>Organisation / Type</i>
1	Accountant	Accountancy
2	Partner	Consultancy
3	Researcher	University
4	Manager	Consultancy

The researcher requested one hour for each interview. Because of the researcher’s professional experience in the area, it was important to focus on the interviewee’s explanation of the quantitative results and findings. To avoid influencing the results of the interviews, the researcher did not interrupt the respondents.

The researcher introduced statements based on the interpretation of the data from the empirical study. Interviewees were asked to comment on each statement, based on their personal experience. In addition, the researcher engaged the interviewees in a broader discussion of the presented findings and the value of finance transformation.

Each interview was recorded, and the level of agreement with each statement has been stored in a short summary table. Each comment was ranked as either strongly agree, agree, disagree, or strongly disagree. It is also possible to indicate no direct comment to a statement.

For the findings based on the verification of the framework please refer to Chapter 7.

### **3.7 Ethical Considerations**

Even though the sample is drawn from the researcher’s professional network, the researcher might face problems of accessing data. The respondents might be suspicious due to the use of the collected data. The researcher must assure that ethical principles are followed that emphasise the importance of avoidance of harm to respondents as well as privacy, confidentiality, anonymity, and voluntary participation (Bryman and Bell, 2015a). To be able to follow the outlined ethical principles, the study was conducted in accordance with the university’s “Code of Practice on Research Integrity” (ENU, 2013), which emphasises the importance of honesty, rigour, open and transparent communication, care and respect, and accountability.

The respondents are mostly known to the researcher; therefore, anonymity is not feasible. However, the collected data does only contain few personal data and does not allow attributing answers to individuals. However, names, gender, religion, address, or email address, are not included in the questionnaire, which ensures confidentiality in this study. A broadly accepted software tool (SurveyMonkey) has been used to prevent identification of the respondents or to prevent that data can no longer be attributed to an identified or identifiable natural person. The potential respondent has been informed prior to completing the survey. The introductory statement has been used to introduce the survey and provide information regarding the purpose, intent, motivation, potential use of data, and methods of data collection. Any individual will not be identifiable in the findings. To ensure data protection, the collected data were stored on a password-secured storage device, which was only accessible to the researcher.

Furthermore, the research instruments were approved by the Edinburgh Napier University Research Integrity Committee before they were administered. The respondents were given the opportunity to not participate in the study by simply not responding to the request for the questionnaire or for the data verification interviews. For people who participated, informed consent was required, and the participation was voluntary. The participation in the survey contains the individual consent.

## **4 Data Analysis and Findings of the Survey**

### **4.1 Introduction**

The analysis of the data obtained through the survey is presented in this chapter. As discussed in Chapter 3, the quantitative data were collected by distributing a research questionnaire during a three-month survey period of 2017 and 2018. The questionnaire comprised 39 predominantly close-ended questions or multiple-choice questions pertaining to the critical aspects of finance transformation, except for a few open-ended items.

The questionnaire was divided into different sections, each devoted to an area of finance transformation relevant to this research (see Table 3-4). All sections are reflective of the research questions, see Table 3-5, which links the research questions to the questionnaire. Where applicable, the responses were scored on a five-point scale of importance or agreement: “critical”, “very important”, “important”, “slightly important”, and “not important”. The questionnaire can be found in Appendix B. The analyses presented here are univariate and multivariate analysis methods. In this chapter, a presentation of the findings is displayed, along with interpretation and reference to the literature.

Based on the data analysis of all respondents and the interpretation of the findings, some key directions and confirmations can be formulated. All respondents highlighted the need for finance transformation. The importance was highlighted from a strategy and conceptual point of view to identify key activities in finance transformation.

### **4.2 Response Rate**

The initial request to participate in the survey was sent in the beginning of December 2017 using email and social media, such as LinkedIn or Xing. The survey remained open for three months. There were 164 industry professionals selected to participate in this part of the research based on the stakeholder analysis. The population was identified from the stakeholder analysis and the network of the researcher. In total, 87 responded by returning a research questionnaire and accepted participation, giving a total response rate of 53%. The average time spent answering the survey was approximately 11 minutes. None of the

respondents contacted the researcher to clarify the questionnaire, even though the researcher offered the option to do so.

In the beginning of 2018, the researcher sent out a reminder to the respondents to increase the response rate, resulting in an approximately 30% increase of respondents. The response rate is nearly always a problem since it is often low, but according to the NRC (2011), surveys with response rates below 75% and above 50% yield reliable results. However, it is necessary to check the potential biases of the respondents. In total, 88 persons responded, one of whom declined to answer the questions. Thus, 87 participants gave at least partial responses. The high response rate of 53% does not automatically support the validity of the study if the non-response bias is high (Davern, 2013). The motivation for not participating in the survey is unknown to the researcher since the questionnaire did not capture the reasons for non-participation. However, the sample is a representative group of people with experience in finance. The questionnaire was answered by people, who have been involved in a finance transformation representing different roles, and others, who have not been involved. The respondents also differ in the levels of seniority and work for companies in different sectors and of different sizes. A representative sample size is important to ensure that all relevant stakeholders and their views are included in the sample and that the right mix of people are surveyed. Controls are placed on the types of respondents chosen for the survey in terms of quotas. The different types of surveyed people make sure that the sample is correctly balanced. The difference of respondents and non-respondents is presumed to be low, which supports the validity of the research findings for the context under investigation.

### **4.3 Demographic Profile of Respondents**

In Table 4-1, the demographic profile of the respondents is shown sorted by sector, years of experience, size determined by number of employees, involvement in finance transformation, and the role of the respondent.

In their current position, 30% of the respondents are working in the banking and insurance sector. This finding is not surprising, as the researcher has an extensive network in this sector. This may be a potential bias, which the researcher will address later. The second-largest

sector is the automotive sector. The sector “other” includes respondents from consultancy companies, as they are working in unspecific industries.

The respondents are people who have specific knowledge and background in finance, IT, or professional roles associated with finance. The idea is to receive information from different personal experiences of people. After the regrouping of the interval for the years, 54% have more than 10 years of experience in their professional career. The more experience the respondents have, the higher the probability that they have undergone a finance transformation process already.

Table 4-1: Frequency by sector, experience, employee, involvement, and role.

Sector	Frequency	Percentage
Automotive	7	11.1%
Banking & Insurance	19	30.2%
Other	37	58.7%
Total	63	
Years of Experience	Frequency	Percentage
≤ 10 years	29	46.0%
> 10 yeas	34	54.0%
Total	63	
Size by Number of Employees	Frequency	Percentage
≤ 1,000	11	17.5%
> 1,000	52	82.5%
Total	63	
Involvement in Finance Transformation	Frequency	Percentage
No	21	33.3%
Yes	42	66.7%
Total	63	
Role of Respondent	Frequency	Percentage
Consultant/Subject Matter Expert	23	53.5%
Designer	4	9.3%
Executer	6	14.0%
Initiator	3	7.0%
Other	7	16.3%
Total	43	

According to the respondents, the size of the enterprise in terms of the number of employees has reached the clipping level of finance transformation. According to Murphy (2011) the

minimum number of Full-time Equivalents (FTE) for finance transformation revolves from hundred to thousand FTE's or more, while the typical programme length varies between five and ten years. Moreover, 82.5% of all respondents (see Table 4-1) have indicated that their company has more than 1,000 employees; thus, the respondents have fulfilled the conditions for a finance transformation.

The questionnaire that was sent out to the respondents contains two main differences in experience in terms of a finance transformation. One difference was the respondents' involvement in finance transformation. The question "Have you ever been involved in a finance transformation process?" was answered positively from two-thirds of the respondents. This is contrasted by a third of the respondents who have not yet undergone a finance transformation but still work or have experience in finance.

In the survey, respondents, who had already been involved in a finance transformation, could select the role they had in such a process. From those respondents who have an assigned role in a finance transformation, more than 50% have covered the role of a subject matter expert (SME) or a consultant role.

The questions of the survey mentioned in this section are not directly linked to one of the research questions. However, the consideration of different groupings allows a differentiated assessment and interpretation of the findings in the next sections.

## **4.4 Findings – Research Question I**

This first question is about the determination of design elements and what leads to a well-designed and successful finance transformation. The different roles, expectations of the new system, motivation for the system, drivers, and effect on the performance of the organisation are considered.

### **4.4.1 Need for adaption of existing financial platforms**

The respondents have been asked if the current financial platforms need to be adapted due to the digitalisation of financial management activities. The respondents can agree or disagree on a scale from 1 to 5 that there is a need to adapt platforms in terms of functionality and specification. The mean score was 4.6 (standard deviation of 0.583;  $N = 63$ ), and by applying

a t-test, this was found to be statistically significantly more than the neutral score of 3, ( $p$ -value < 0.001).

#### 4.4.2 Importance of financial roles in finance

According to respondents' views, all financial roles are important, but the technical expert in a finance transformation was ranked as the highest and therefore the most important role (see Table 4-2). However, when using paired t-tests, no significant differences between pairs of rankings were found.

Table 4-2: Importance of financial roles.

Role	<i>N</i>	Mean Rank	St Dev. of Mean Rank
Steward and Controller	63	2.46	1.162
Business Partner	63	2.37	1.182
Trusted Reporter	63	2.43	0.928
Technical Expert	63	2.75	1.177

While the steward and controller assure the foundation of integrity with rigorous oversight and sustainable controllership, the focus on the technical expert shows that expertise and skills with a technical background and the supporting functionality to cover the digitalisation challenges are required to perform a finance transformation.

Based on the report of the Chartered Institute of Management Accountants (CIMA, 2008) technical skills are required to transform the business to meet the demands for better conformance. The challenges for finance professionals in the fast-shifting era of big data, analytics, and AI are improving and enhancing technical skills in analytical sciences, such as statistics, and in the use of analytical software platforms (CIMA, 2008).

Finance employees will develop and improve reports or financial data cubes, but they also need to understand finance, speak the language, translate requirements into meaningful insight, and create appropriate solutions for global or local requirements.

#### 4.4.3 Expectations from a new system

The respondents have been asked what they expect from a new system after a successful finance transformation. This question and the correspondent data have been analysed using

the error bar chart. An error bar is a line through a point on a graph, parallel to one of the axes, which represents the uncertainty or variation of the corresponding coordinate of the point (Eckstein, 2006). Based on results of the error bar chart, the highest factors that are significant are as follows (see Figure 4-1):

- better management information;
- more efficient handling of finance activities;
- improved control of finance;
- reduced costs;
- improved customer satisfaction; and
- more innovation.

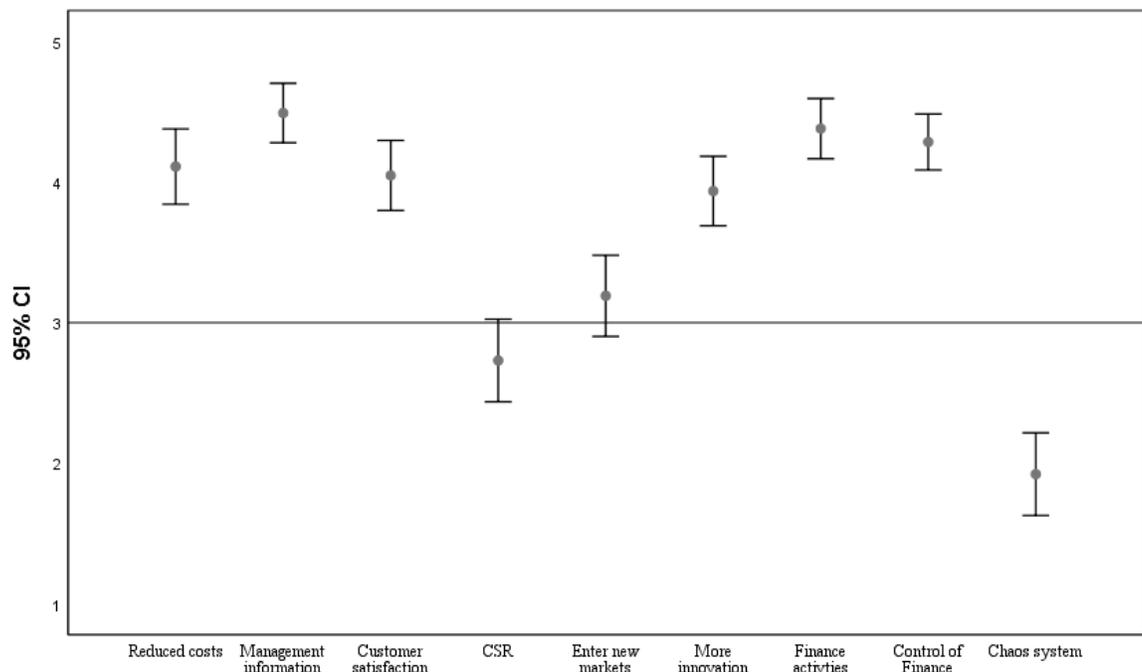


Figure 4-1: Expectation from a new system after successful finance transformation.

The attributes that were not confirmed are “new markets”, “better addressing of corporate social responsibility”, and having “chaos or [a] very disruptive new system” after a successful finance transformation.

Factor analysis was applied, which reduced the nine variables to three factors, which are presented in Table 4-3. The data reduction was successful, having a Kaiser-Meyer-Olkin (KMO) measure of 0.609 and a Bartlett’s test of sphericity with a *p*-value of < 0.0001, and 59.5% of the original variation was accounted for.

Table 4-3: Factor scores for motivation for a financial transformation.

Motivation	Marketing	Factor Control	Performance
Enhance corporate social responsibility	0.814		
Enter new markets	0.799		
Improve customer satisfaction	0.657		
Enhance brand management		0.794	
Reduce chaos		-0.687	
Improve control		0.669	
Increase innovation	0.326		0.754
Reduced costs			0.750
Increase efficiency		0.480	0.567
% of variance accounted for	21.6%	20.3%	17.6%

Independent t-tests were used to compare the motivation between large and small companies and by years of experience. No significant differences were found, except for marketing as a motivation. For marketing, companies with fewer than 10,000 employees were significantly more likely to cite marketing as a motivation (p-value = 0.016). The motivations in the three sectors (automotive, banking and insurance, and other) were compared using one-way analysis of variance and no statistically significant differences were indicated.

#### 4.4.4 Expected outcomes of a finance transformation

The respondents were asked what the outcomes of a successful finance transformation should be. The result is that “improved governance” and “establish a centre of digital/finance transformation excellence and network” are the two highest ranked means of all attributes.

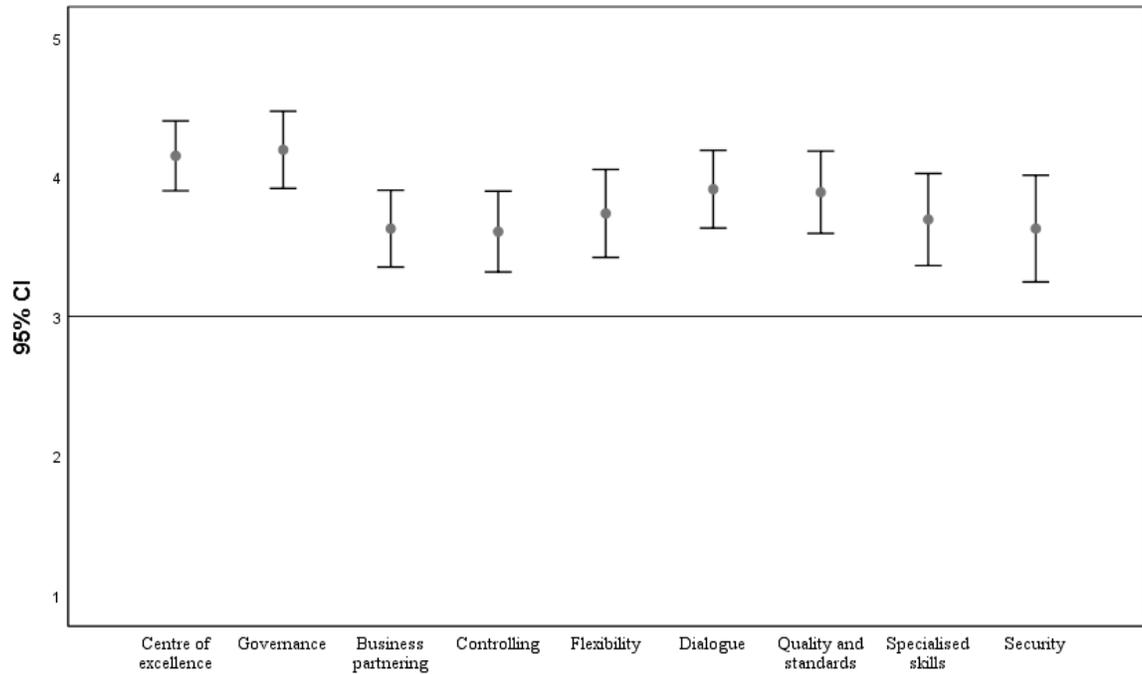


Figure 4-2: Outcomes of a successful finance transformation.

However, all outcomes are considered important, and all mean scores are higher than the neutral evaluation (see Figure 4-2).

Factor analysis was applied, which reduced the nine variables to three factors, which are presented in Table 4-4. The data reduction was successful, having an KMO measure of 0.611 and a Bartlett's test of sphericity with a  $p$ -value of  $< 0.001$ .

Table 4-4: Factors of expected outcome of a successful finance transformation.

Outcome	Factor		
	Organisation	Relationships	Security/Transparency
Improved skills	0.779		
Enhanced quality	0.776		
Better dialogue	0.740		
Improved flexibility	0.549	0.484	
Facilitate with business partner		0.769	
Control information		0.726	
Improved governance		0.313	0.722
Establish centre of excellence			0.648
Improved security			-0.543
% of variance accounted for	27.8%	18.4%	16.5%

Comparing by size of the organisation, those companies with fewer than 10,000 employees expected more organisational improvements than larger companies, ( $p$ -value = 0.005), and there were no significant differences in relationships or security and transparency. There were no significant differences in the outcomes expected by sector or by years of experience.

#### 4.4.5 Success factors for finance transformation

The respondents have been asked how important the given success factors are for a finance transformation from their point of view. The result of an error bar analysis show that all following factors are ranked higher than the neutral evaluation and are therefore significant for the success of a finance transformation (see Figure 4-3):

- Implement new systems with financial analysis capabilities;
- Reports can be created more easily;
- Enhanced governance;
- Allow secure payments and secure process; and
- More involvement with consultants or business partners.

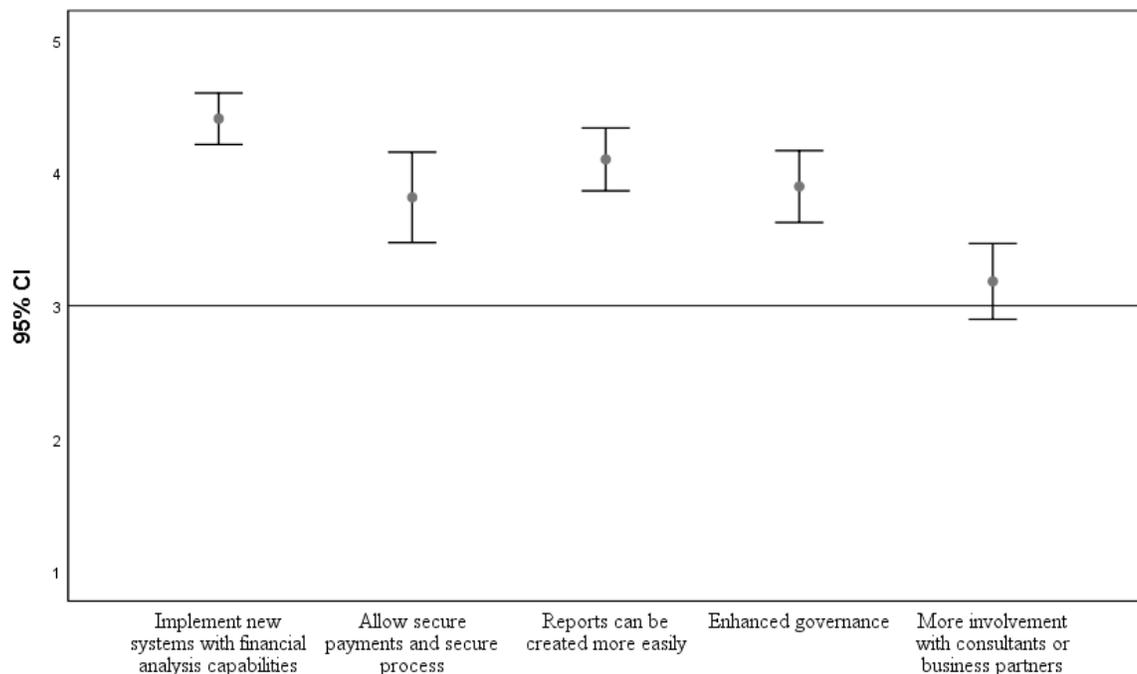


Figure 4-3: Important factors for success of a finance transformation.

The factor with the highest mean value is “implement new systems with financial analysis capabilities”.

Table 4-5: Factors for success by experience, size, and sector of the organisation.

Success attribute			Experience			Size by Employees			Sector			
			$\leq 10$ yrs	$> 10$ yrs	<i>p</i> -value	$\leq 10$ k	$> 10$ k	<i>p</i> -value	A	B&I	O	<i>p</i> -value
Improved analytics	51	4.41	4.65	4.26	0.040	4.35	4.44	0.661	4.75	4.25	4.45	0.362
Secure payments	51	4.08	3.95	3.74	0.543	4.41	3.53	0.010	2.50	3.75	4.03	0.044
Create reports	50	3.92	4.15	4.03	0.622	4.12	4.06	0.807	4.50	3.56	4.29	0.007
Enhanced governance	51	3.82	3.75	4.03	0.303	3.65	4.06	0.144	4.00	3.75	4.00	0.692
Involvement	50	3.16	3.30	3.07	0.423	3.00	3.24	0.421	3.75	3.13	3.10	0.473

A = Automotive, B&I = Banking and Insurance, O = Others

## 4.4.6 Change management

The respondents were asked how important a formalised change management is to achieve the goals of a finance transformation in terms of importance on a scale between 1 (not important) and 5 (very important). Of the respondents ( $N = 46$ ), 90% rated change management as important or very important. A mean score of 4.16 with a standard deviation of 0.857 was reported.

According to Keuper and Neumann (2008), the consideration of change management is a key element of a successful transformation. It refers to the process by which changes to a transformation programme are suggested, approved, and implemented in a planned and systematic manner. Frey, Pirker, and Eynde (2006) stated that change management addresses personal topics to promote the successful implementation of the desired changes in the finance environment in organisational, process-related, or technological terms. To respond to the challenges of new competitors, markets, and technologies, organisations must undergo continual change. These change programmes are strategic in nature, while others are more operational. Some are radical and take place only once, while others are more incremental and purposefully paced to promote continuous improvement and stability. Employees will be confronted with a changing environment of activities and systems. This results in one of the challenges for finance transformation because many employees have been working in the same environment for years, feel comfortable in their role, and are conservatively adjusted to possible changes in the organisation.

#### 4.4.7 Drivers for finance transformation

The questionnaire contained one question about the drivers for finance transformation in terms of agreement on a scale from 1 (fully disagree) to 5 (fully agree). The results are presented in the following figure.

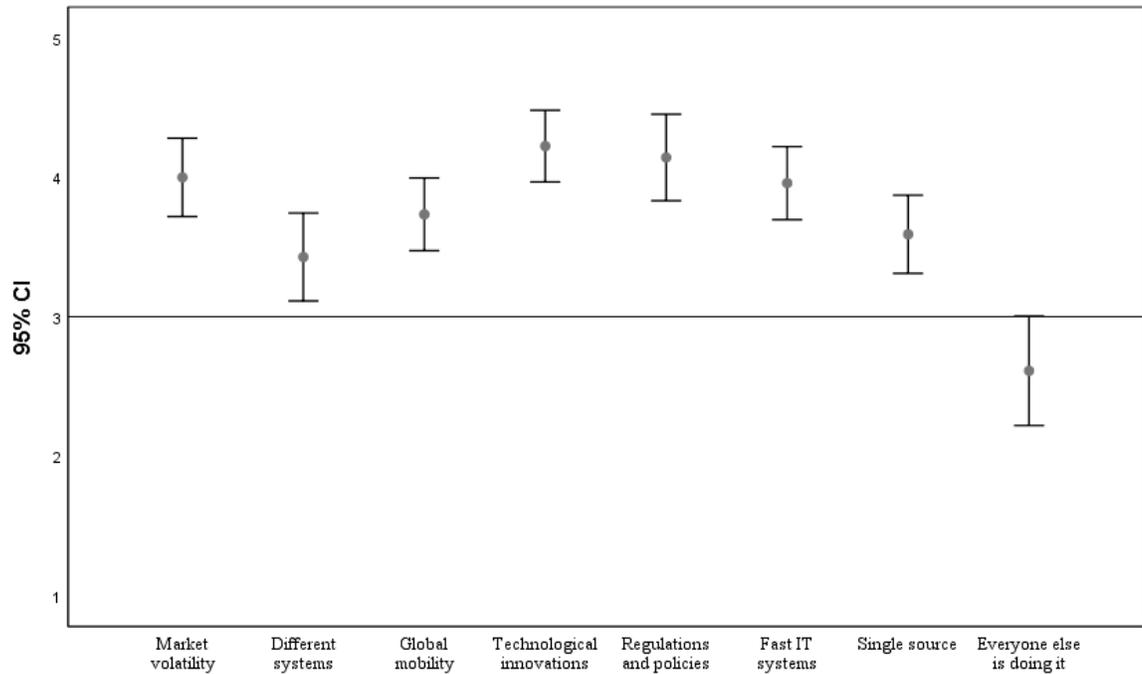


Figure 4-4: Drivers for finance transformation.

All answers are significant drivers for the finance transformation except the reason that “everyone else is doing it”. This seems not to be an argument that drives finance transformation. The respondents agreed on drivers such as the following:

1. Technological innovations and fast IT systems to adapt business changes will drive finance transformation;
2. Volatility in markets and increased globalisation, increasing regulations and policies, and increasing global mobility will drive finance transformation;
3. A single source, a clear way from strategy to execution, and handling different partner/tax systems in different countries will also drive finance transformation.

The drivers were combined using factor analysis with varimax rotation into three factors as shown in Table 4-6. The factors are labelled complexity, technical, and strategy and accounted for almost 62% of the original variation in the driver ratings.

Table 4-6: Factors driving the need for a finance transformation.

Driver	Complexity	Technical	Strategy
Different partner/tax regimes	.840	-.328	
Increased globalisation	.728		
Volatility in markets	.625	.311	
Increased regulations	.400		
Technological innovation		.808	
Suitable IT systems		.760	
Everyone is doing it			-.872
Single source		.392	.718
% of variance accounted for	23.0%	21.4%	17.7%

No significant differences were found in the factors representing drivers for finance transformation by sector. When considering experience, only the factor representing strategy showed significant differences from those with more experience registering higher scores. Complexity was rated significantly higher for smaller companies, and there were no other significant differences in the factors for drivers when size was considered.

#### 4.4.8 Operational analytical capabilities

The respondents have been asked to rate the importance of the following operational analytical capabilities within a finance transformation process:

- Electronic data capture at the source;
- Streamlined information delivery;
- Systematic data cleaning and auditing;
- Transparent business risks in performance reporting; and
- Automated calculation of key financial and operational metrics.

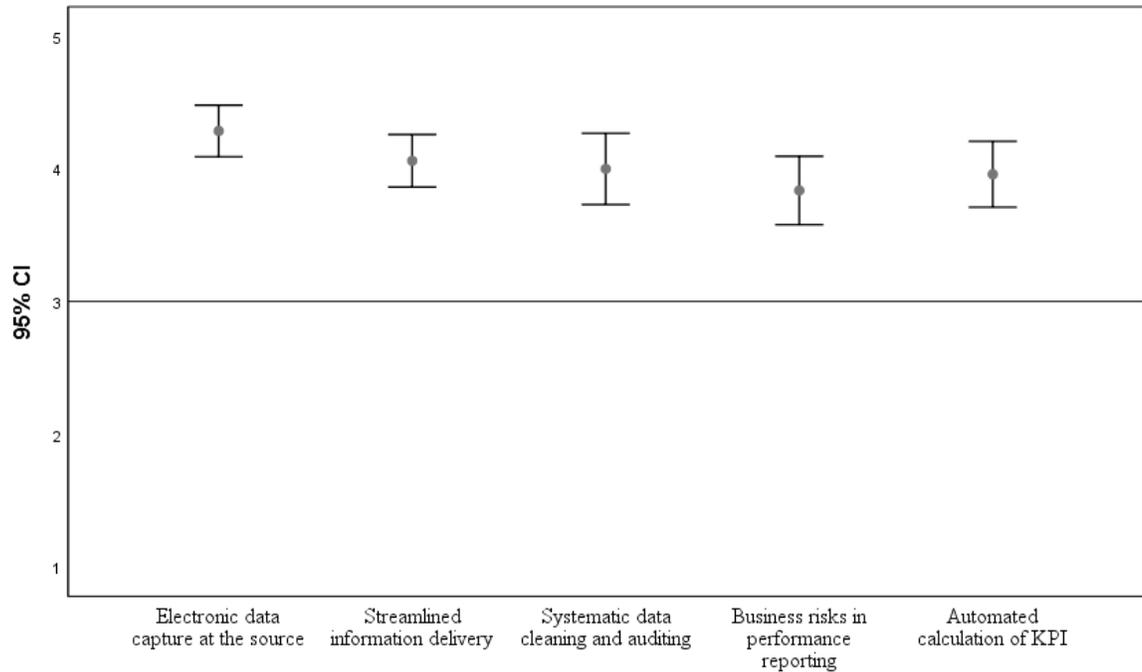


Figure 4-5: Importance of operational capabilities.

All capabilities are significant and have a mean score higher than 3 compared to the neutral evaluation (see Figure 4-5). The highest factor for the operational analytical capability is the “electronic data capture at the source”. Bebbington, Gray, and Laughlin (2001) stated that the design of the data capture system is both very important and very difficult to organise for the accounting records and for controlling the accounting data. Without the electronic data capture at the source, the chance is high to receive or have an incomplete record of transaction data. The sheer enormity of the number and complexity of transaction data would produce chaos without that functionality.

The capabilities were resolved into two factors, which explained 59.0% of the variation in capabilities. The new factors are displayed in Table 4-7.

Table 4-7: Factors reflecting operational capabilities.

Capability	Reporting	Risk
Clean data	0.715	
Streamline information delivery	0.651	
Automatic key performance indicator (KPI) generation	0.588	
Electronic data capture	0.358	0.816
Business risk	0.546	-0.721
% of variance accounted for	33.9%	25.1%

The was no statistically significant difference by company size for reporting. However, larger companies reported a slightly higher mean concern with risk than smaller companies ( $p$ -value = 0.056). No significant differences were found by years of experience. For the analysis by sector, those in the “other” sector rated reporting as significantly more capable than the automotive and banking and insurance sector ( $p$ -value = 0.004).

#### 4.4.9 Effect on the performance of the organisation

The literature review identified attributes that have an effect on the performance of an organisation. The respondents were asked to evaluate each attribute in relation to the effect on the performance on a scale from 1 (no effect) to 5 (significant effect). The results show all effects are desirable, as can be observed from Figure 4-6.

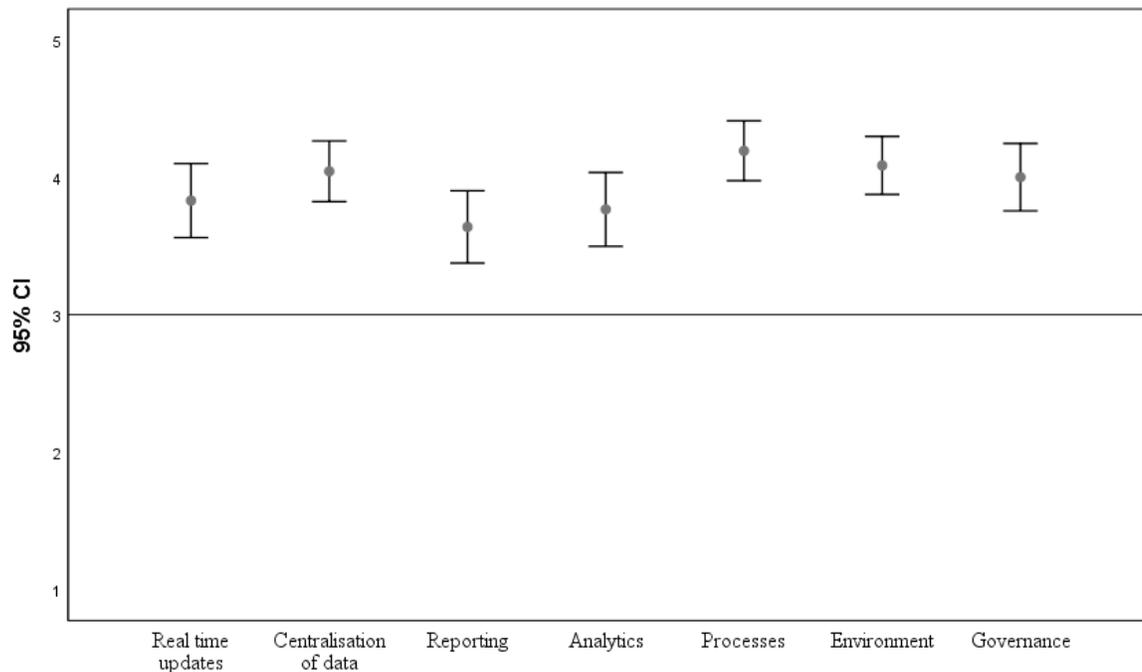


Figure 4-6: Effect on the performance of the organisation.

The attribute that has the most significant effect on the organisation’s performance is the creation of efficient, automated processes. The respondents highlighted this factor, and it can be interpreted as a prerequisite for good performance. Without a clear process, every activity is insufficient for handling. However, every given answer is ranked on a mean scale higher than the neutral evaluation and hence has an effect on performance. The interplay of the given

attributes makes it possible to strengthen the company's performance in the long term. Factor analysis with varimax rotation was used to reduce this data into three factors: labelled operations, data handling, and reporting and analytics, which explained 62.0% of the original variation (see Table 4-8).

Table 4-8: Factors reflecting effect on performance.

Impact	Operations	Data Handling	Reporting and Analytics
Environment	0.753		
Process	0.715		
Governance	0.533		
Real-time updates		0.700	
Centralisation of data		0.692	
Reporting	-0.437	0.578	0.531
Analytics			0.910
% of variance accounted for	24.1%	20.0%	17.9%

No significant difference was found in these effect factors when analysed by experience and by sector. Only those companies who were smaller in size reported significantly lower scores for operations ( $p$ -value 0.050).

#### 4.4.10 Aggregated answers

The questions regarding what defines a well-designed finance transformation have been divided into answer categories.

The summary includes nine different contributors to a well-designed finance transformation. The summary of the answers and findings is categorised per contributors on the right side of the author's own analysis. To conclude, aggregating the key themes from the literature with the insight gained through the survey provides a comprehensive and contemporary response to the first research question, as shown in Figure 4-7.

First, the need for a finance transformation must be determined in terms of a special need for adaption of existing financial platforms or a concept change of the system and process landscape. The necessary financial roles for a finance transformation and the following distribution of roles are part of the governance model.

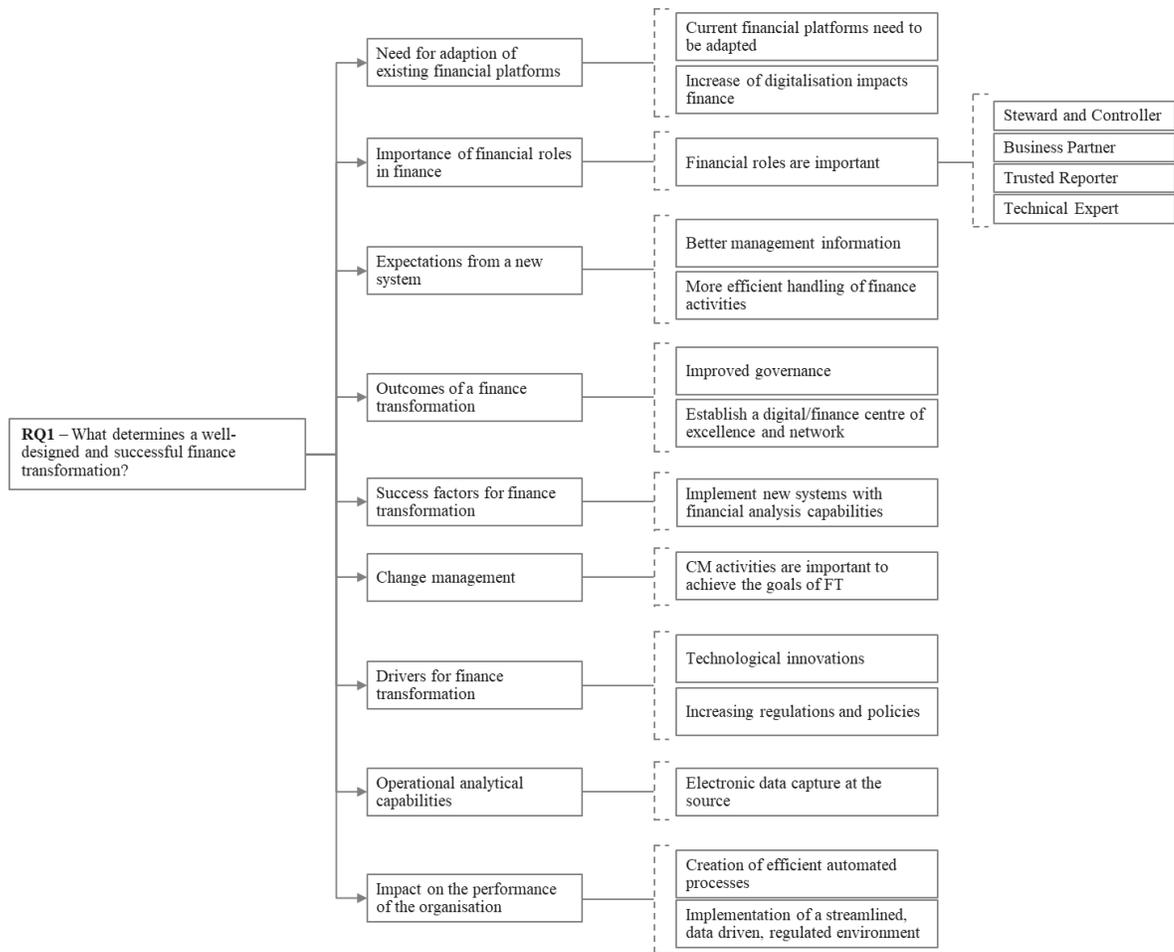


Figure 4-7: Aggregated answers to RQ1.

Source: Author’s own analysis.

The respondents highlighted the expectations from a new system, the expected outcome of finance transformation, and the success factors for an efficient finance transformation. Additionally, change management activities are important to achieve the goals of a finance transformation. Technology innovations and the increasing regulations and policies are primarily drivers for finance transformation. The electronic capture at the source is the highest ranked operational analytical capability after a successful finance transformation.

Overall, the effect on the performance is based on the creation of efficient automated processes and the implementation of a streamlined, data driven, and regulated environment.

Based on the analysis and the findings, research question 1 has been answered.

The findings of research question 1 will contribute to the finance transformation framework (see Section 6.2) by addressing all building blocks.

## **4.5 Findings – Research Question II**

This section focuses on the second research question, centred on data concepts that are suitable for financial platforms and their effect on the wider finance transformation potential.

**RQ2:** What is the perceived importance of data concepts standardisation, centralisation, consolidation, and simplification for the creation of a financial platform?

### **4.5.1 Suitability of data concepts**

The questionnaire contains a question on the suitability of the data concepts to create a target financial platform with a score of 1 (not suitable) to 5 (very suitable). The data concept of data standardisation is the critical process of bringing data into a common format that allows collaborative research, large-scale analytics, and sharing of sophisticated tools and methodologies. The data standardisation approach leads to data that are correct, clean, complete, formatted, and verified before committed to a system for analytical purposes. The idea is to ensure the accuracy and integrity of the information. Standardisation helps ensure operational efficiency at its highest level by cleaning that data either prior to migrations and other campaigns or at an initial point of entry for other systems. Knowing the data entry point is mandatory and understanding where and how the data are collected helps determine whether normalisation is needed. In addition, standards for non-financial data need to be maintained effectively across the enterprise.

The data concept of data simplification is the process whereby large and complex data are rendered useable. Complex data will be simplified before they can be analysed, but the process of data simplification is anything but simple, requiring a specialised set of skills and tools. Centralisation as a data concept means centralised processing of data in one database (a database that is located, stored, and maintained in a single location, one single truth in one data warehouse) or in a cluster of coupled databases. The data concept of data consolidation refers to the collection and integration of data from multiple sources into a single destination. During this process, different data sources are consolidated into a single data store.

In terms of suitability, all four data concepts have been rated by the respondents as significant and therefore suitable for financial platforms. That did not surprise the researcher, but the results of the t-test show that the standardisation (mean score = 4.33, standard deviation = 0.689) was higher than the neutral evaluation (see Table 4-9) followed by the concept of simplification (mean score = 4.18, standard deviation = 0.908).

Table 4-9: Data concept suitability.

Data Concept Suitability	<i>N</i>	Mean	St Dev.	<i>P</i> -value of Difference from 3
Standardisation	49	4.33	0.689	<0.001
Centralisation	49	4.06	1.029	<0.001
Consolidation	49	4.06	0.966	<0.001
Simplification	49	4.18	0.908	<0.001

Surprisingly, centralisation and consolidation are not ranked first or second in terms of mean. In the past, both concepts were important to transform data into legible reporting. This can be a result of the experience of the people. Adding value to ERP in terms of integrating financial and transaction systems (Oracle, 2014) is given using the centralisation concept, for example, to centralise and automate the chart of accounts management. Poor quality information limits decision-making effectiveness. Decision makers are struggling with multiple versions of truth and demanding timely, accurate, and transparent management information.

## 4.5.2 Consistent definitions of data

The respondents were asked how important consistent definitions of data are. There are several different data categories, such as business terms, master data elements, meta data, business rules, and transaction data elements. The respondents highlighted all, the means are higher than the neutral evaluation. However, the standard deviation error bars are overlapping, meaning no significant difference between the variables.

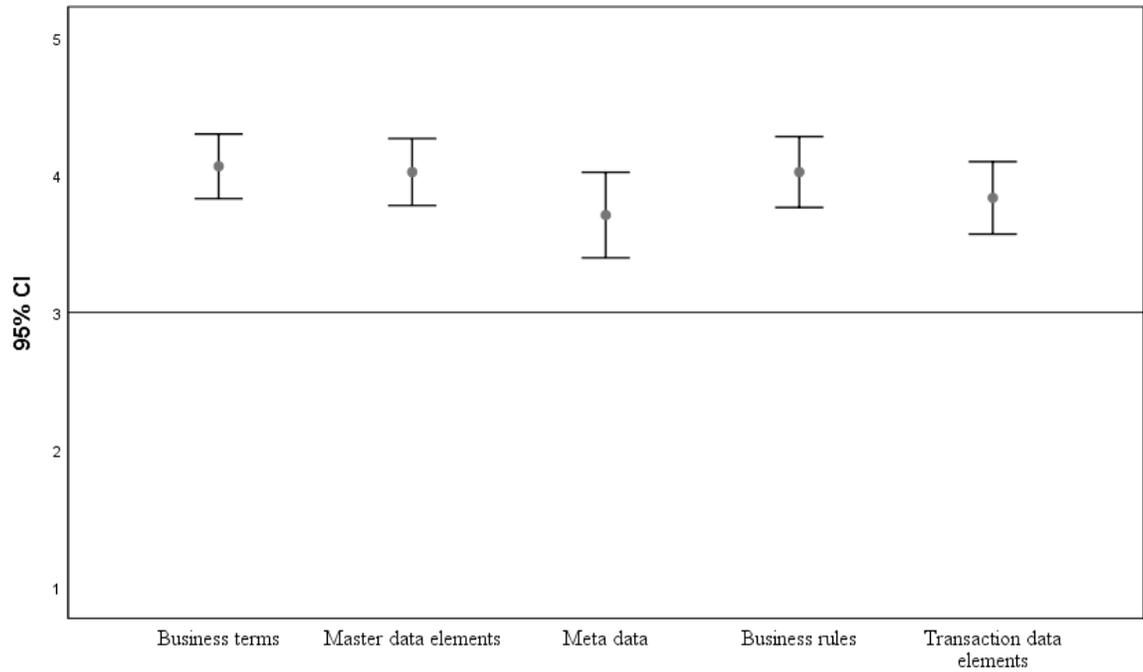


Figure 4-8: Consistent definitions of data.

The mean of three items is identical for business terms, data elements, and business rules (see Table 4-10).

Table 4-10: Consistent definitions of data.

Definition	<i>N</i>	Mean	St Dev.	<i>P</i> -value of Difference from 3
Business Terms	49	4.02	0.854	<0.001
Data Elements	48	4.02	0.836	<0.001
Metadata	48	3.71	1.071	<0.001
Business Rules	48	4.02	0.887	<0.001
Transaction	48	3.83	0.907	<0.001

### 4.5.3 Platform infrastructure

The respondents have been asked questions about the infrastructure of technology platforms in terms of the information stored, process ownership, common financial transaction platform, and pre-processing of data. In Table 4-11, all factors are summarised.

Table 4-11: Platform infrastructure.

Information Storage	Frequency	Percentage
No guidance	20	40.8%
Partial guidance	18	36.7%
Full guidance	11	22.4%
Total	49	
Process Ownership	Frequency	Percentage
Very little	9	19.6%
Partial	25	54.3%
Full	12	26.1%
Total	46	
Common Platform	Frequency	Percentage
Yes	22	55.0%
Total	40	
Data Pre-processing	Frequency	Percentage
None or unaware	15	30.6%
Partial	28	57.1%
Full	6	12.2%
Total	49	

The question regarding whether all business units had guidance on what information should be kept and where has been answered, with less than one-third of the respondents (31.4%) having full guidance on information storage.

The next question deals with clear process ownership across the enterprises with an end-to-end accountability. Process owners are responsible for the governance of process performance and process change. Moreover, the process owner is responsible for the synchronisation of process improvement plans with other interfacing processes and process owners within the value chain. The respondents have highlighted that total process

ownership, where all processes in the organisation have an owner, exists only in 26.1% of the cases.

The respondents have been asked if they had a common financial transaction platform and tools that are used across the regions and lines of business. In total, 55.0% of the respondents work in a company with a common financial transaction platform.

The respondents were asked if their enterprise used automated tools to extract, transform, load, and perform data cleaning and validation before data are loaded into the financial reporting systems. Only 15.4% of all respondents answered “Yes”.

### 4.5.4 Aggregated answers

To conclude this section, the primary data coupled with the literature suggest six overarching points to the second research question, forming a more rounded debate:

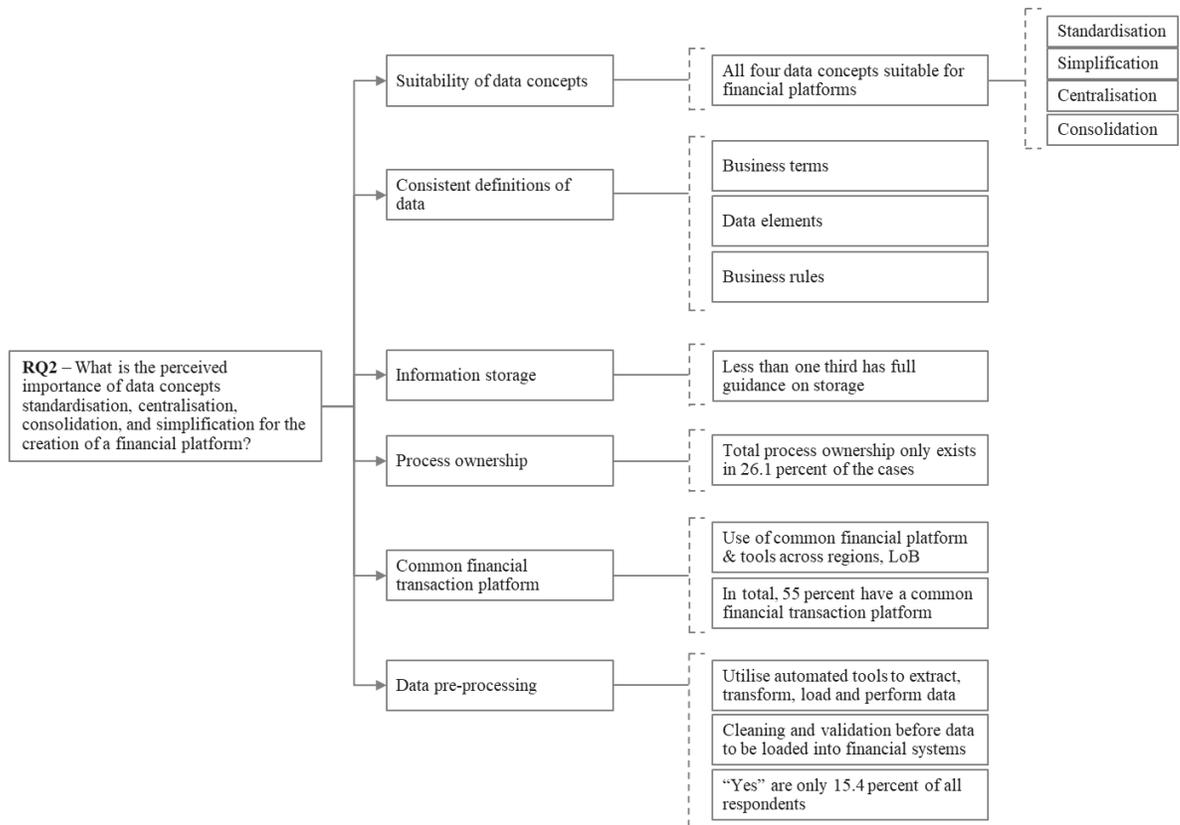


Figure 4-9: Aggregated answers to RQ2.

Source: Author’s own analysis.

All four concepts; standardisation, simplification, centralisation and consolidation, are considered for financial platforms. Thus, research question 2 has been answered.

In terms of the consistency of data within an organisation, business terms, data elements, and business rules are the subject of beneficial simplification and standardisation. For the platform infrastructure, full guidance on information storage, full process ownership, and common financial transaction platforms are required to ensure coverage and efficiency for a finance transformation. An additional requirement to be successful is data pre-processing to clean and validate the data before loading into financial systems.

The findings of research question 2 will contribute to the finance transformation framework (see Section 6.2) by addressing the building blocks of design and delivery model, processes, data and performance metrics, and technology.

## **4.6 Findings – Research Question III**

The focus for this research question revolves around the possibilities and limitations that exist regarding the transformation to an efficient financial platform.

**RQ3** What are the possibilities and limitations that exist regarding the transformation to an efficient financial platform?

### **4.6.1 Disruption of systems**

The respondents have been asked to rate the degree of disruption after the financial transformation in terms of malfunctioning.

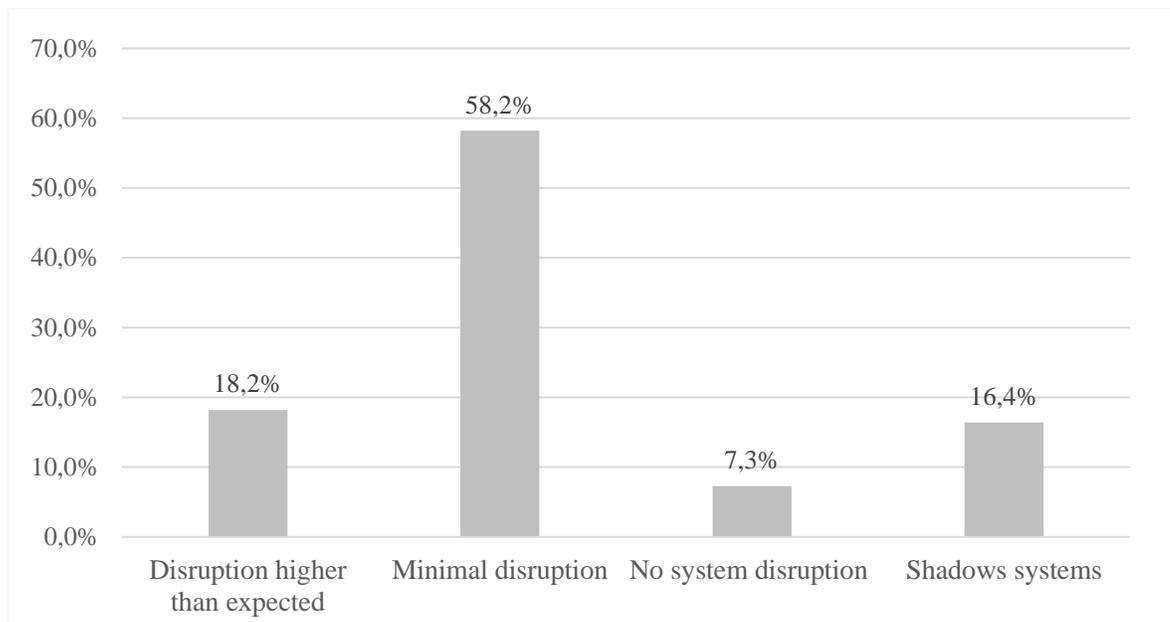


Figure 4-10: Degree of disruption.

Only 18.2% of the respondents did not experience any system disruption after the finance transformation. On the other hand, 16.4% of the respondents had to cope with shadow systems and 7.3% with a disruption higher than expected.

## 4.6.2 Challenges

The respondents have been asked about the challenges of a finance transformation. The highest ranking of the challenges is “complex finance and operational processes”, followed by the statement of “multiple definitions for financial data/information require a high degree of harmonisation”. There is no difference between those two factors, depending on whether the respondent has been involved in a finance transformation or not. In Figure 4-11, the challenges to finance transformation are presented in two groups, divided into those respondents with and without involvement in a finance transformation.

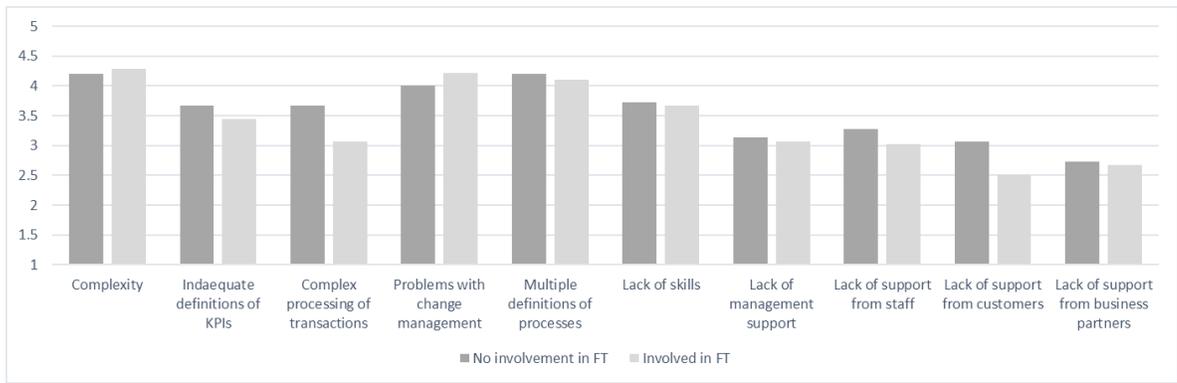


Figure 4-11: Challenges to finance transformation.

There were no statistically significant differences in the perceptions of challenges to finance transformation by whether or not the respondent was involved in a finance transformation, by the respondents' years of experience, company size, or sector.

By applying factor analysis, the challenges resolved into three factors labelled support (lack off), complexity, and process measurement and definitions, which accounted for 61.3% of the original variance. The factors are presented in Table 4-12.

Table 4-12: Challenges resolved into factors.

Challenge	Support	Complexity	Process
Lack of support from staff	0.770		
Lack of management support	0.767		
Lack of support from business partners	0.753		
Lack of support from customers	0.731		
Lack of skill	0.636	0.444	
Lack of financial resources	0.635	-0.426	
Multiple definitions of processes		0.827	
Complexity		0.659	
Problems with change management	0.305	0.627	
Complex processing of transactions			0.853
Inadequate definitions of key performance indicators (KPIs)		0.370	0.618
% of variance accounted for	29.1%	18.6%	13.6%

The challenges “lack of support from customers”, “lack of support from business partners”, and “lack of financial resources” are below the neutral evaluation. The “lack of management support” and the “lack of support from staff” are in a neutral position.

The challenges were correlated with measures of success, on time completions, and on budget. There were no significant correlations, and the Pearson product moment correlation coefficients were low, as shown in Table 4-13.

Table 4-13: Correlations between challenge factors and measures of success.

Challenge Factor	Success	On Time	On Budget
Support	0.114	-0.178	0.036
Complexity	-0.271	-0.123	0.237
Processes	0.103	-0.015	0.110

### 4.6.3 Data handling and workflow management

The respondents have been asked when the comparison of planned versus actual data was available. Only 6.1% of the respondents reported that data were available in real time. However, 24.5% did consider that data availability had improved.

Table 4-14: Data handling and workflow management.

Data Availability	Frequency	Percentage
Monthly	3	6.1%
In between	43	87.8%
Real time	3	6.1%
Total	49	
Workflow Management	Frequency	Percentage
No	4	9.1%
Partially	25	56.8%
Yes	15	34.1%
Total	44	
Drill-Down Functionality	Frequency	Percentage
No	8	22.9%
To a small extent	8	22.9%
Partially	16	45.7%
Yes	3	8.6%
Total	35	

The workflow management using automated workflow processes for transactional activities like accounts payable, capital expenditure approvals, and travel and expense processing is fully implemented for only 34.1% of cases. Only 8.6% of respondents reported that drill-down analytic functionality was full implemented, although a further 45.7% reported that drill-down functionality was at least partly implemented. Thus, implementation for many is not complete, and the finance transformation has failed to deliver for many respondents.

Real-time planned versus actual data help better track the budgets and contribute to timely decisions. When the comparison of planned versus actual data is available monthly, decisions can be made very late and must be implemented on a very tight time frame. A forward-looking view allows a better real-time view.

Sánchez-Rodríguez and Spraakman (2012) found that, with ERP systems, the transactional flows are harnessed by the charts of accounts. Consequently, extensive transactional records via an expanded and standardised chart of accounts provide for an expansion of the information that can be produced from ERP systems. To accomplish this expansion, ERP systems need to be supplemented by analytical systems, such as Cognos, Hyperion, and SAP's business intelligence. Moreover, ERP systems are generating more non-financial transactional data via standardised transaction processing and an expanded chart of accounts.

However, the availability of data is not the only necessary aspect of information. Besides that, the idea behind all the tagging efforts is to improve the quality, availability, and accuracy of information (Thoresen, 2010).

Workflow management technology is widely used in business process management of enterprises (Lixia, 2017). In technical terms, this means that workflow automation is rising, and soon there will be no data entry of operation that will not be automated. Many complex calculations and processes can be automated within financial applications. Reduction of errors from manual processing is beneficial. Instead of the work passing up and down hierarchies and across organisational departments, it stays with an individual or an operating team throughout the process (Schael, 1998). According to van Hee, Yu, Matthes, and Papazoglou (2004), there should be an integrated workflow approach, which also encompasses non-computerised or non-financial tasks.

Enterprises that allow planning and analysis tools to drill down into the operational and transaction systems to provide supporting details have a technology advancement. It helps to have the data presented faster at a glance. Cumbersome manual searches back into the data source are thus obsolete. Drill down is a powerful feature in the business intelligence area. It gives the user the ability to see data and information in more detail. Drill down is a capability that takes the user from a more general view of the data to a more specific one at the click of a mouse. For example, a report that shows sales revenue by state can allow the user to select a state, click on it, and see sales revenue by county or city within that state. The feature allows the user to go deeper into more specific layers of the data or information being analysed. Further levels of drill down can be set up within the report, practically as many as supported by the data. In the given example, the drill down can go from country to state to city to zip

code to the specific location of stores or individual sales reps. Typically, the levels of the report are similar, but what changes is the granularity of the data.

Drill down gives the user a deeper insight into the data and allows going back into the data. This greatly enhances the users' understanding of the data and of the reasons behind the figures. By only presenting one layer of data at a time, features like drill down lighten the load on the server at query time and greatly enhance the reporting performance, while offering great value to the end user.

#### 4.6.4 Aggregated answers

To conclude this section, the primary data coupled with the literature suggest five overarching points concerning the third research question, forming a more rounded debate.

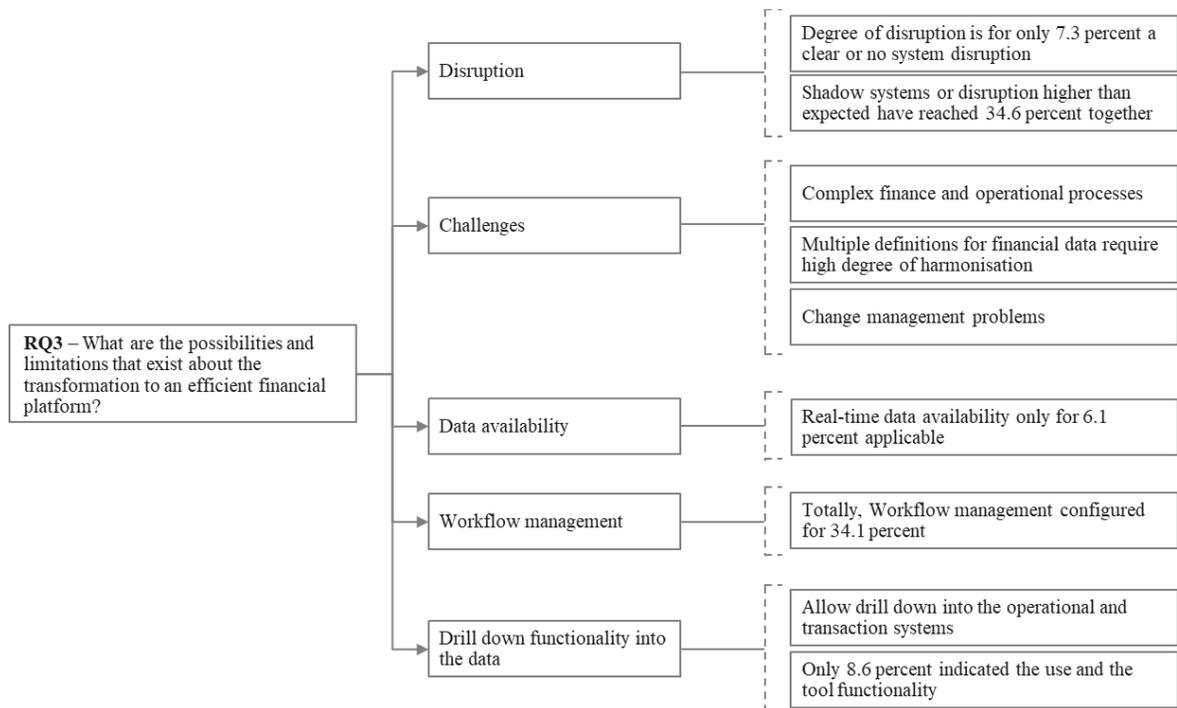


Figure 4-12: Aggregated answers to RQ3.

Source: Author's own analysis.

There are different possibilities and limitations towards an efficient financial platform. First, the degree of disruption must be clarified to have a common view on the increase of potential benefits. The exact challenges must be clearly formulated. Many companies are struggling with the complexity of the existing process landscape. Multiple definitions are causing a

variety of thoughts and misinterpretation, and even change management problems need to be solved. In terms of availability and drill down, data handling and workflow management are possibilities to improve the transformation activities towards an efficient financial platform. Based on the analysis and the findings, research question 3 is answered. The findings of research question 3 will contribute to the finance transformation framework (see Section 6.2) by addressing the building blocks of baseline and goals, design and delivery model, governance, and data and performance metrics.

## 4.7 Findings – Research Question IV

Research Question 4 deals with the implementation activities during the finance transformation.

**RQ4** What are the implementation approaches for finance transformation?

### 4.7.1 Success, time and budget

The respondents have been asked to what extent was the finance transformation successful, finished on time, and whether the resources and budget had been appropriately planned. The majority of transformations were considered successful, with 6 out of 56 being reported as successful or very successful. The means of the ratings on a five-point scale are displayed in Table 4-15. However, 34.5% were rated as being badly delayed, and only 14.5% complied with a resource plan.

Table 4-15: Degrees of success of finance transformation.

Success	Frequency	Percentage
Very successful	1	1.8%
Successful	5	8.9%
In between	23	41.1%
Unsuccessful	25	44.6%
Very unsuccessful	2	3.6%
Total	56	
Success	Mean	Std. Deviation
	3.39	0.779

In terms of an implementation approach for finance transformation, a budget buffer and resource pool might be a solution to cover the peaks within the timeframe of a finance transformation. One of the main arguments regarding why the budget was exceeded is an increased demand for activities that arise for performance but are accompanied by budgetary constraints (Brian, 2018). Usually, companies have a small budget window for digital transformation. The cost of not transforming the finance function into a fast-thinking and forward-looking team of the enterprise is the opportunity cost of falling behind, of becoming irrelevant by not being able to foresee competitive threats, and of not having an action plan for how to deal with the potential effects of such pressures on the financial health of the organisation. In total, 16.7% of the respondents have highlighted exceeding the resource plan. The coefficient of correlation is 0.496 and the  $p$ -value=0.001, meaning a positive correlation signals that large values of one variable are typically associated with large values of the other.

#### 4.7.2 Investment and initiation of a finance transformation

The respondents have been asked about the appropriate investments for building and implementing a system. Regarding investment for running a financial transformation, 70.0% (21 respondents) stated that they used consultants, while 23.3% bought “off the shelf”, and only 2 people developed their own design (see Table 4-16).

Table 4-16: Investment and initiation of a finance transformation.

Investment	Frequency	Percentage
Buy off shelf	7	23.3%
Own design	2	6.7%
Consultants	21	70.0%
Total	30	
Initiator	Frequency	Percentage
Executive	22	62.9%
Operating	3	8.6%
Mixture	10	28.6%
Total	35	

The questionnaire contained one question regarding who would probably initiate the potential finance transformation within the organisation. Approximately 63% highlighted the executive top-down approach for the initiator of a finance transformation.

The executive level is the company's highest authority when it comes to calculating the value of ROI for a new transformation and establishing targets that balance revenue growth, operating profitability, and cash flow. Mostly, CFOs are the initiators of finance transformation, using the finance function to drive and influence strategic and tactical changes across the organisation.

However, in the preparation phase of such a transformation, the operating level is important to cover all aspects for the As-Is and To-Be status, which can also be the input for business case generation. At least for the planning phase of a finance transformation, the mix of both levels is necessary. A major transformation within a company is impossible unless the head of the organisation is an active supporter (Kotter, 2017).

The appropriate investment of building and implementing a system was indicated by less than 10% of the respondents as creating a new system design internally. In terms of implementation approaches for finance transformation, 70% responded that they used consultants for the implementation. As CFOs increasingly embrace cognitive technologies, consultancy companies continue to pioneer solutions to help companies bridge the gap between new opportunities and current capabilities. Consultancies can deliver deep technology skills and experience and tools, by teaming with CFOs to reinvent end processes through automation, analytics, and cognitive entanglements (Aems, 2017).

### **4.7.3 Aggregated answers**

In summary, the implementation approaches for finance transformation hold three outcomes suggested by the literature and discussion. The appropriate investment approach must be clarified. The initiator of a finance transformation must lead the initiation process, and the success, time, and budget must be outlined (see Figure 4-13).

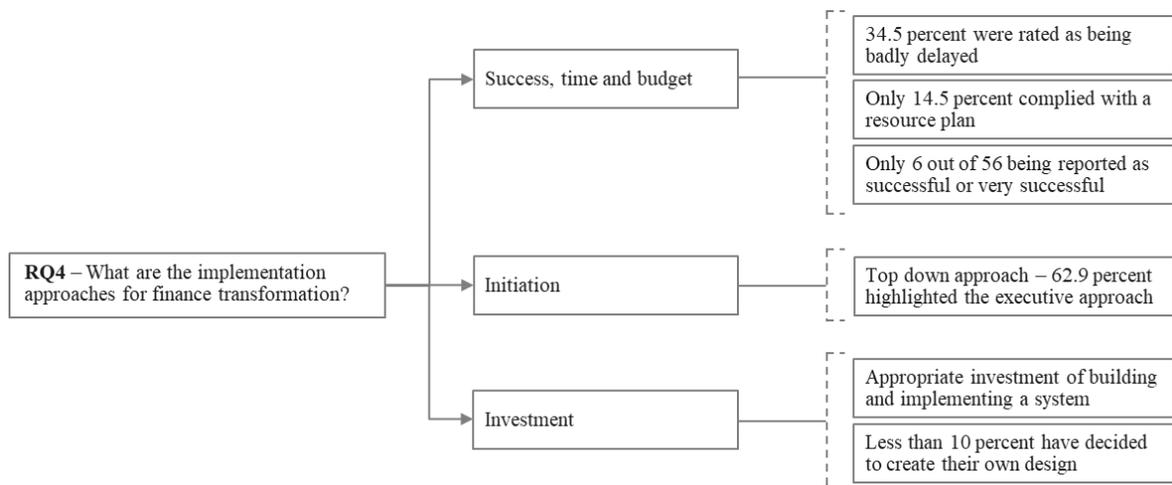


Figure 4-13: Aggregated answers to RQ4.

Source: Author’s own analysis.

The implementation approach is based on a top-down approach for finance transformation. The design for finance transformation is mostly created by other functions. The creation of an entity’s own design was indicated by less than 10% of the respondents.

Research question 4 has been answered and the findings will contribute to the finance transformation framework (see Section 6.2) by addressing the building blocks of vision and strategy, and baseline and goals.

## 4.8 Findings – Research Question V

The last research question is about risk factors that need to be mitigated before, within, or after a finance transformation.

**RQ5** What are the relevant risk factors that mitigate the success of a finance transformation?

### 4.8.1 Information collaboration and transparency

The respondents have been asked whether information is primarily viewed as a corporate asset or as a business unit asset. Based on the scale from 1 to 5, 1 means business units only share the information required to complete corporate activities, and 5 means enterprise management has full and complete insight into the operations and results of business units.

Table 4-17: Information collaboration and transparency.

Information Collaboration	Frequency	Percentage
1	1	2.0%
2	8	16.3%
3	18	36.7%
4	12	24.5%
5	10	20.4%
<b>Total</b>	<b>49</b>	

Information Transparency	Frequency	Percentage
1	4	8.2%
2	10	20.4%
3	22	44.9%
4	11	22.4%
5	2	4.1%
<b>Total</b>	<b>49</b>	

In Table 4-17, the results are presented, in which a total of 20.4% have indicated having full and complete insight into the operations and results of the business units. The mean of 3.45 indicates that the sharing of information is higher than the neutral position; therefore, more enterprises share business unit information. Additionally, one question is about the degree of an open information transparency across the enterprise, where 1 means minimum transparency and 5 means complete transparency in the respective enterprise. Further, 4.1% of the respondents have highlighted complete transparency. The mean of 2.94 indicates that less than the neutral evaluation has transparency across the enterprise.

Another identified risk factor that threatens the success of a finance transformation is the limited information transparency. As stated, 4.1% of the respondents have highlighted a complete degree of information transparency across the enterprise. Corporate transparency is defined as the widespread availability of relevant, reliable information about the periodic performance, financial position, investment opportunities, governance, value, and risks (Bushman and Smith, 2003). Moreover, it must be noted that information transparency stimulates the stakeholders' reliance on a company, but insufficient information provision can be perceived incorrectly and may result in the stakeholders' unjustified expectations from the organisation (Kundeliene and Leitoniene, 2015).

Typically, executives do not see all the internal data that are available within the corporation; they see portions or segments of data that have been pre-determined that they need access to in order to perform their tasks and make decisions. Although information transparency occurs through technology, it is independent of specific technologies (Simon, 2006). Information would ideally be provided by a group outside the IT Department, dedicated to providing content and responsive to their internal customers' information needs (Drucker, 1995).

Risk management and finance are at the end of the chain and have to combine different information threads coming from different client segments, products, divisions, and countries. Financial statements are published externally, signed off by external auditors, and therefore undergo specific scrutiny (Groot, 2017).

## 4.8.2 Responsibility

In the category of responsibility within the Finance Department, the respondents have been asked if they had covered the activities of internal control, regular compliance, and risk management. The regrouping, giving one point for each function integrated in the enterprise in combination with the answers of disruption, is shown in the following table.

Table 4-18: Finance functions.

Functionalities	Frequency	Percentage
Internal Control	40	63.5%
Regular Compliance	30	47.6%
Enterprise Risk Management	31	49.2%
Total	63	

Of the respondents, 63.5% (40 respondents), 47.6% (30 respondents), and 49.2% (31 respondents) reported that they had included internal control, regular compliance, and risk management, respectively, but only 31.7% (20 respondents) reported that they had addressed all three. Having internal control, regulatory compliance, and risk management functions incorporated in the operating model helps maintain control and compliance.

### 4.8.3 People

For respondents who were involved with finance transformation, 65% from large companies reported having at least partial recruitment programmes, while 75% of those among smaller companies reported having at least a partial recruitment programme. For companies with less experience in finance transformation, only 55% reported having at least a partial recruitment programme. Meanwhile, for those with more than ten years' experience, 75% reported having at least a recruitment programme. Moreover, 50%, 42%, and 69% reported having at least partial recruitment programmes in the automotive, banking and insurance, and “other” sectors respectively. Note that the numbers reporting by sector were low.

### 4.8.4 Aggregated answers

Research question 5 is partially answered due to the high number of relevant risk factors that mitigate the success of a finance transformation, only some of them are identified.

To conclude, aggregating the key themes from the literature with the insight gained through the survey provides a comprehensive and contemporary response to research Question 5, as shown below.

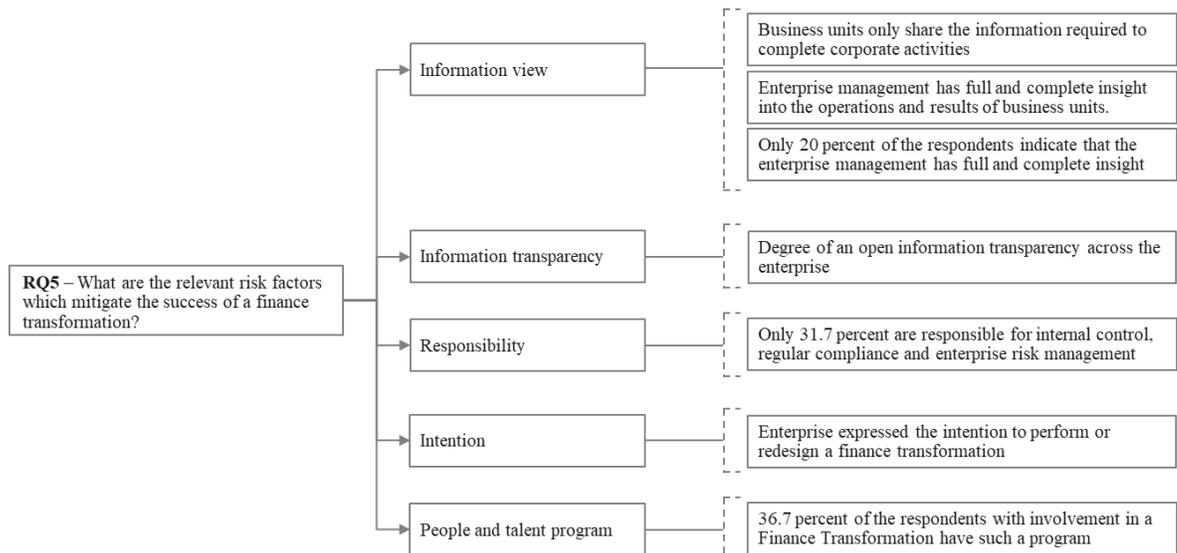


Figure 4-14: Aggregated answers to RQ5.

Source: Author's own analysis.

The identification and development of high capability staff is necessary to support and manage a complex organisation in a changing environment. Enterprises need to be ready to replace personnel in key roles if the incumbent leaves for any reason. Lack of a strong replacement can reduce the effectiveness of the organisation until the replacement can be developed and fully prepared for the role. Enterprises should support a culture of continuous process improvement. The staff need to update their knowledge of leading practices for finance processes and the new technology to support those processes.

The findings of research question 5 will contribute to the finance transformation framework (see Section 6.2) by addressing the building blocks of vision and strategy, governance, data and performance metrics, and capabilities.

## **4.9 Summary**

To summarise the objectives of answering the five overarching research questions, a final, full overview is presented, created by combining the aspects developed throughout this study. This overview outlines the route of the study, the development of research questions from within the literature, and the arrival at meaningful conclusions through the aggregation of literature and primary data.

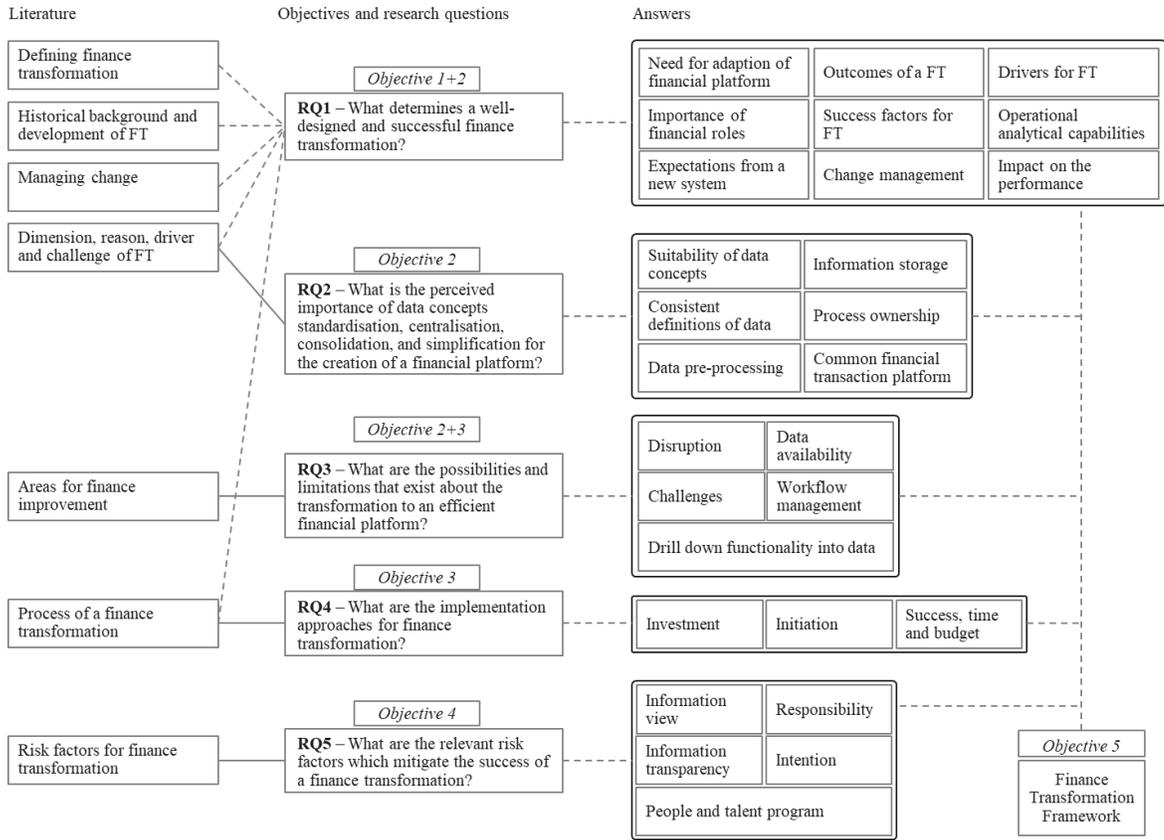


Figure 4-15: Diagram of literature research, derived objectives, quantitative findings.  
 Source: Author's own analysis.

## **5 Discussion of Findings of the Survey**

In this chapter, the researcher discusses the findings, demonstrating that the aim and objectives have been met and the research questions have been answered.

This chapter starts with a review of the aim and objectives, considering the main findings. In Section 5.2, the discussion is presented in the structure of the objectives. This work addresses the research gap identified in Section 2.9.

### **5.1 Review**

The literature review in Chapter 2 identified a plethora of academic and practical contributions, and the research provided a number of key prerequisites, processes, and people elements for the finance function within global organisations. This allowed a discussion of published research on finance transformation and provided a good theoretical and empirical foundation for the framework in Section 6.2. The finance transformation framework aims to close the literature gap, proposes a model for finance transformation, showing an understanding of various finance transformation themes and potential drivers that directly influence its design, adoption, and implementation processes.

The researcher found what determines a well-designed finance transformation. Nine different answer categories are presented. The suitability of different concepts for a financial platform has been identified. The possibilities and limitations that exist regarding the transformation to an efficient financial platform have been discussed. The implementation approaches for finance transformation are formulated. Finally, relevant risk factors, which mitigate the success of a finance transformation, have been found.

## 5.2 Discussion of Findings

In this section, the findings will be discussed using the structure of the objectives. The researcher set five detailed research objectives:

1. Identify and analyse design elements in terms of main activities for finance transformation and determine what leads to a well-designed finance transformation.

Most organisations have or are currently considering using finance transformation broadly in their business. Digital innovation opportunities in the finance space are not well understood, and adopting a digital mindset requires change. The findings of the quantitative research show the activities and approaches for finance transformation. First, the need for adaption of existing financial platforms has been determined to identify the need for an implementation approach. The findings include the expectations from a new system after a successful finance transformation to have answers regarding what needs to be implemented. The respondents highlighted the outcome of the finance transformation approach and critical success factors. Moreover, the discussion of necessary change management activities has been highlighted to incorporate those factors within the finance transformation journey. The overall effect on the performance of the organisation has been explained. Overall, this objective is linked mainly to the first research question: What determines a well-designed finance transformation?

### **Need adaption**

A significant number of the respondents agreed that the increase of digitalisation affects finance (see Section 4.4.1). Thus, there is a need to change the financial platforms in terms of functionality and specification. The literature provides many examples in which digital tools for CFOs are used. Uhl and Gollenia (2016) described the effect of digitalisation on finance and especially on finance systems. Ehrenhalt (2016) stated that technologies have growing interaction and relevance for finance activities (e.g. cloud computing), which is an elastic technology to deliver services. An interesting example of cloud services is when an enterprise gives auditors and/or tax consultants access to data and (finance) systems via the cloud. This procedure might simplify the auditing process and save the enterprise the expense of installing special tax or auditing relevant software. Furthermore, the digitalisation automates transaction processing and communication across multiple systems with less risk

of errors. Another example is that advanced analytics include new technology, combining big data to see patterns that suggest future opportunities. Cognitive computing simulates human thinking and anticipates future trends where transactions are verified and securely stored.

According to a survey performed by Accenture (2015), the cloud-based platforms will become the predominant technology for the finance areas of reporting, planning, forecasting, and analytics in the finance organisation of the future. The ERP functionalities and their use in the cloud are practical, simple, powerful, and ready. Software as a service (SaaS) gives finance organisations options that previously did not exist. The lack of agility and dependence on back-office IT for basic or complex changes can be improved using the SaaS model. With cloud solutions, the finance organisation has an opportunity to outsource back-office IT functions without giving up control of the front office and value-added components (KPMG, 2015).

A well-designed finance transformation needs to cover aspects that are driven by digital technologies, and their effects on business will transform the practice of finance and the competencies that professional accountants require. According to ACCA (2016), the development of intelligent automated accounting systems is the top issue set to effect accountancy over the next three to ten years.

Systems and their software will replace manual work (such as bookkeeping), will automate complex and multifaceted processes (such as financial close), and will support the trend towards outsourcing services. Smart software and analytics will enable more, better, and closer-to-real-time reporting, will support transition from retrospective to predictive analysis, and highlight the interconnectedness of financial and non-financial performance. The use of video and social media will improve collaboration, disclosure, presentation, and stakeholder engagement. The IT will also support both greater outsourcing of services and their return to in-house control ACCA (2016).

In the era of digital transformation and new business models based around the cloud, analytics, and mobile devices, the ERP core and systems of record is still essential but needs to be transformed into a digital core, covering key functionalities, such as a universal journal, appendix ledger, new asset accounting, and an accelerated close.

For example, the SAP's S/4HANA Finance solution is primarily about creating a simplified user experience and access to real-time data, addressing many of the pain points raised by CFOs in the IBM CFO study (IBM, 2016b). In addition, SAP S/4HANA Finance is a platform and an enabler for business innovation and transformation. The finance solution provides instant insight with on-the-fly analysis across practically all dimensions of financial data. In addition, the data model removes system limitations linked to data aggregation. According to SAP, the universal journal is the new definition of a single source of truth with a new simplified data model that combines financial accounting and managerial accounting into one universal journal entry, all represented in a one-line item table with full details for all components. Since all the data are provided in near real-time from the universal journal, the effort for period-end reconciliation is expected to be reduced (IBM, 2016b).

### **Expectations from a new system**

Better management information was ranked as the most significant attribute. This can mean improving data quality to build the foundations of insightful management reporting, which is necessary (Deloitte, 2016b). The high-performing finance function recognises when data quality might be a problem within the organisation and will have the appropriate executive sponsorship to react by changing the necessary processes and governance structures that help identify and resolve the issues. Organisations that identify a direct link between KPIs and their strategy typically have a better record of execution. However, it is not just the link that makes this effective for better management information. Tracking and monitoring underlying measures that make up the KPIs truly determines the success. Ideally, a number of measures are tracked and monitored at a granular level and are combined to have a direct effect on the strategy-level KPIs. However, where there is no link between KPIs and the business strategy, key management questions are more likely to remain unanswered. Organisations should continuously review their KPIs against their business strategy and ensure that, when a change in the strategy takes place, a KPI review also occurs. This allows finance to maintain a strong understanding of business strategy and to intervene as required.

By improving the quality of management information, the finance team can support effective decision making and help the business understand how much progress has been made towards targets. White (2015) highlighted the improvement of data quality that key finance leaders

should focus on. Data quality is an area of concern in many companies. In this context, there are significant opportunities for the finance function to achieve greater data accuracy and reliability by improving and simplifying systems.

Regarding corporate social responsibility, people identify certain benefits for a business being socially responsible, but most of these benefits are still hard to quantify and measure. However, meta-analysis results from the literature show that there is a positive relationship between corporate social performance and financial performance (Orlitzky, Schmidt, and Rynes, 2003; Tsoutsoura, 2004). The argument that socially responsible companies have an enhanced brand image and a positive reputation among consumers might be correct, but in terms of an expectation from a new system after successful finance transformation, this attribute is not important.

Having a chaotic or very disruptive new system is also not expected to come from a new system. This result is not surprising, as one of the main expectations is to have a new system without chaos conditions, which is one of the main objectives of a finance transformation.

### **Outcomes of a finance transformation**

The leading outcomes of a successful finance transformation are expected to be the implementation of governance structures and processes followed by establishing a centre of digital/finance transformation excellence and network.

An inadequate data governance structure or the use of poor data quality results in unreliable reports. With standardised data definitions and effective governance, the ERP platform allows streamlining processes and serves as a single source of truth. The target operating model will deliver a centralised governance model that promotes cross-business collaboration and prioritisation, which is adaptable to changes in the business and marketplace. Furthermore, the centralised governance model integrates global process ownership and adopts future-state best practices for continuous improvement. Effective governance is essential when establishing and operating the target operating model. Governance surrounding master data management is critical to success and must be established at the very beginning of the transformation.

According to Gotter (2017), a centre of excellence (CoE) plays an important role in digital transformation. The team consists of specialists with varied backgrounds, education, and experience, and those specialists are the best in class on their subjects. There are many experts, but the difference is that each of these specialists is fuelled with an entrepreneurial spirit and attitude. The excellence centre deeply understands the whole business value chain, customer expectations, and the technology of the company. The centre acts as an advisor on how to execute the technology, market, and mechanisms and knows how to drive digital transformation. The centre is an innovation and information hub between lines of business, customers, and partners. Instead of virtual teams working on organisational boundaries that crush momentum, energy, motivation, and effectiveness, a CoE teams work on one mission, one vision, one strategy, and one goal. Building CoEs help to ensure success (Weber, 1998). A healthy partnership between the finance function and finance IT leads to better decisions.

### **Success factors for finance transformation**

The attribute with the highest mean value is the implementation of new systems with financial analysis capabilities. As technology reshapes all industries, companies continue to make sizeable investments. Yet many such investments fail to deliver their promised returns. The results according to PwC (2015) clearly show that there is no direct correlation between technology investments and profitable growth. Spending more on technology does not necessarily lead to better financial performance. However, the PwC report results reveal a strong correlation between technology and profitable growth if the investments are focused on targeted capabilities, augmented with the right operating model and implementation skills (PwC, 2015). Thus, financial analysis capabilities are a success factor for a finance transformation.

However, the scope in a financial system implementation needs to be clear, for example, the financial data model is a key design decision and the first step in planning. It combines an understanding of historical data, dimensions, system capabilities, and reporting needs for operational, management, financial, or external functions. Moreover, the functionality is important to consider, whether the implementation strategy is a big change or is starting with the basics and then rolling out functionality over time. Decisions regarding which users need to use the new solution need to interface with the governance model. Finally, data conversion

is always a tricky subject. Data conversion takes time and requires significant understanding of how the old system processed data and how the new system processes data. Limiting data conversion to what is essential can greatly reduce time, cost, and risk (Hoebler, 2016).

Building blocks for the finance transformation framework have been identified based on the findings of objective 1.

2. Identify and classify the different stakeholders involved in finance transformation and understand their needs and determine how these can be met.

This objective was met by performing a stakeholder analysis in which different stakeholders involved in finance transformation and their needs have been identified. The importance of the financial roles has been determined. Moreover, the key challenges involved in large finance transformation programmes have been discussed. Primarily, it is important to build up the dialogue between the affected stakeholders and a joint mission of the business and IT Department to perform a successful finance transformation. Drivers for finance transformation have been found.

3. Identify and analyse implementation approaches for finance transformation and determine good practices for implementation.

A finance transformation program needs to be aligned both with the overall strategy of the organisation and the expectations of the key stakeholders. The approach starts with the understanding that finance transformation involves accepting the importance of partnerships and of working within business ecosystems. A successful finance transformation is not founded on just the CFO's objectives and personal goals. People across the organisation need to engage with finance (digital) technology.

One major finding is that successful finance transformation requires involvement by management at a senior level, reporting lines are key enabler. When the executives in charge of the business and IT report to the CFO, the focus, activities and outcome are often measurable on costs. However, in successful organisations the IT executives report directly to the CEO, where the focus is on strategy and corporate goals that are broader and not only focused on finance. A consultative and collaborative implementation approach drives better decisions, especially for end-to-end process views and their accountability.

Organisations are facing many financial challenges; the CFO is often looked upon as the person expected to provide leadership who can navigate the organisation even through in very unpleasant times. From there, communications can roll down to the operating groups and their constituents. A lack of buy-in from senior management is one of the main reasons for unsuccessful finance transformations (Kalish, 2018). The characteristics of a successful finance transformation are standardized processes for financial management, standard tools and applications, on single occurrence and all financial processes in optimum locations (KPMG, 2013).

To ensure a complete and successful design of the finance transformation activities, a solid and proven program approach is required (Wolters and de Vries, 2016). Most finance functions are evolving towards a more centralised operating approach, for example, as corporate functions or within shared services centres (KPMG, 2013). According to the authors Sposato and Vicente (2015), companies that have not adopted the top-down approach for finance transformation have struggled to achieve results. The top-down direction setting creates focus in the organisation, develops awareness for performance improvement, and creates necessary preconditions for transformational change (Dichter, Gagnon, and Alexander, 1993). However, the bottom up approach, for example, starting with (localised) pilots to confirm the design and then rolling out the program through the rest of the organisation can reduce the risk of investment failures or ineffective. With a bottom up approach, people can better evaluate current versus desired performance, and develop plans to close the gap.

As demand for regulations increase so does the need for interpretation and adherence. Major investments in finance workforce optimisation and talent management are necessary to support the transformation of finance into a broader business partner role. The implementation approach for finance transformation is efficient, if the implementation is finished on time, planned resources have produced expected results and the program budget has been appropriately planned, exhausted but not overused.

Regarding investment for running a financial transformation, 70% of the respondents stated that they have used consultancy companies to achieve the finance goals. Finance strategy and implementation services are at the core of the consultancies' financial management solution

set. Using diagnostic and strategic tools for profit improvement and modelling, consultancies can help enterprises to assess organisational effectiveness. Services, related to finance operations improvement help organisations to execute strategic plans, redesign key business and financial processes, restructure organisations to improve overall efficiency and responsiveness, and eliminate non-value-added tasks through outsourcing and shared services.

The implementation approach with the stages vision, design and implementation for the finance transformation framework has been identified based on the findings of objective 3.

4. Identify potential key factors and risk-associated aspects of an enterprise success or failure within large finance transformations.

Risk factors that mitigate the success of a finance transformation were identified and found to be inconsistent with the view on business information and the lack of overall transparency of information within the organisation. In addition, the responsibilities and people have been discussed. The identified factors and aspects will help redesign key processes and technology platforms and restructure organisations to improve their overall effectiveness and efficiency.

One key factor for a successful transformation is the consistency of data. Wang (2008) argued that multiple definitions of data will exist all the time, but the main point is to find the correct link between the different definitions using calculations, expressing business rules, or using different definitions, but it is essential that the definition of data is used in one system consistently. Of course, enterprises try to create a single version of the truth: a single set of reports and definitions for all business terms to ensure every manager has a common understanding of accurate corporate information. However, most organisations have many different definitions of the business terms they work with on a daily basis. An entire industry has developed to help businesses provide “one version of the truth”. A proliferation of vendors and consultancies exists to provide software, services, and skills to build data warehouses based on tools and techniques that help extract, transform, and load data, using business intelligence tools to exploit that data in many different ways, such as supporting management reporting, ad-hoc querying, and advanced analysis (Buytendijk, 2008).

Information stored in databases shall be accessible frequently, so that people can work with their data, managers, accountants, and auditors who then can retrieve the information and

analyse the financial state of the enterprise. Most businesses that keep electronic database storage systems also keep physical source documents in their file cabinets. Most enterprises rely on electronic information storage systems to keep the records of clients and rely on supporting work papers for engagements.

The other trend in business systems is the use of cloud-based storage (Walls, 2018). Businesses are increasingly switching to cloud computing and online information storage or backup services. This has two main advantages. First, sensitive data are never stored onsite and cannot be physically stolen. Second, the data are accessible from anywhere with an Internet connection. However, data stored online must be secured effectively to ensure accounting information is not compromised.

A clear process ownership across the enterprise with a global process owner is as a key role and leading practice to enable end-to-end management without dilution of accountability. Senior leaders primarily act in this role with enterprise accountability, responsibility, continuous improvement, and oversight of the execution of the end-to-end process. Appointing key individuals with end-to-end process ownership is a strategic approach that empowers the process owner to have the authority and accountability for building, standardising, and maintaining processes across the operating model structure to drive efficiency and agility. The global process owner is established and empowered to make decisions and is part of an overall end-to-end process governance structure (Ray, 2014).

The global process owner ensures that the process is being carried out but does not run the day-to-day operation of the process. They receive regular updates concerning the performance of the process and represent this process concerning all decisions being made by senior management. The strengthened control environment through documented, centralised, efficient, and standardised processes is one of the success factors for an effective process ownership and governance (Ernst & Young, 2015). Deloitte (2017) confirmed that organisations are increasingly using global process owners to drive process efficiencies and standardisation across shared services organisations. However, as process owners continue to focus on process standardisation and automation, important benefits begin to emerge in relation to fraud and error. According to the Global Economic Crime Survey (PwC, 2018),

there is a growing improvement in the effectiveness of internal controls for detecting economic crime.

While global process ownership may not be universally adopted, the early signs are that organisations that invest in these roles are likely to steal a march on competitors through higher productivity, better visibility of controls, and lower levels of fraud (Spanicciati, 2014).

A common financial platform is a key component in financial efficiency because it promotes consistent processes, avoids duplicate data entry, and provides a single source of data. To meet the most demanding international financial accounting requirements and to master global business with flexible accounting processes with multi-currency support, large companies need a common financial transaction platform and tools that are used across the regions and lines of business. Even small and medium-sized organisations are adding foreign entities and transacting business in multiple currencies. Some of the greatest global accounting challenges arise within multinational organisations that must contend with complex regulatory frameworks, geographies, laws, currencies, and other issues. It is important to have a common accounting solution designed not only to handle this complexity, but ideally, to shield the finance team from that complexity. With a common platform, the achievement of financial transparency is easier to manage (Prasad, Green, and Heales, 2014). Possibilities such as integrated systems with commonly used data and drill-down items in connection with every booking ensure traceability in the context of auditing and create a clear picture. The trend of using cloud-based accounting software exists for handling global accounting complexities with an innovative technical foundation and the right functionality to handle the complex tactical and strategic challenges of multinational accounting, financial reporting, and regulatory requirements.

Accounting information systems (AIS) process and store a series of sensitive and confidential data, such as the general ledger, payroll database, and financial database. However, cloud and mobile technology adoption requires a rigorous analysis of data and application security (Brandas, Megan, and Didraga, 2015). These authors argue that AIS development using cloud and mobile technologies will lead to a reorganisation of the business architecture with significant effects on business strategy.

Data must be properly formatted and normalised to be loaded into data storage systems, and extract-transform-load (ETL) is used as shorthand to describe the stages of preparing data. For the efficient handling of data, ETL covers a process of how the data are loaded from the source system to the data warehouse. Moreover, ETL encompasses the cleaning step as a separate step. The sequence is then extract-clean-transform-load. Enterprises utilise such automated tools to extract, transform, load, and perform data cleaning and validation before the data are loaded into the financial reporting systems. According to Kimball and Caserta (2004), the most complex and time-consuming part for data warehousing is to extract, clean, conform, and deliver data. The ETL tools can reduce error rates using validation procedures to detect errors or problems with source data. The errors can be corrected before the data are loaded into the financial systems.

The degree of disruption in terms of malfunctioning systems has been rated high by the respondents. Only 7.3% of the respondents indicated having a clear or no system disruption. On the other hand, respondents with shadow systems or disruptions that were higher than expected reached 34.6% together. The disruption and efficiency of traditional finance activities seems to be unsolved in the performed finance transformation. The reason for that might be the missing or insufficient list of requirements and solutions at the beginning or the missing available technologies that are reshaping the financial services landscape. The core technological and economic drivers need to be validated to minimise the degree of disruption.

The potential for technology to drive massive structural change and disruption is based on the Deloitte (2016c) report, most clearly demonstrated by the FinTech revolution. Investments in FinTech nearly tripled in 2014 to USD 12.2 billion, according to Young (2015). The overall goal is a continuous stream of innovations to improve payment processes, reduce fraud, and promote financial planning. Gopal (2017) summarised this:

Cognitive intelligence for business insights, robotics to eliminate manual touch points, and platforms and tools for automation are some of the critical elements for such a digital core. When organisations build their finance function upon such systems, they're able to better manage resources, predict business needs, and contribute to the organisation's overall goals. To acquire these next gen capabilities

and enable new technologies, businesses are building futuristic shared services platforms. (Gopal, 2017, p. 1)

Using disruption to accelerate transformation is one common future trend for finance. One of the identified risk factors that mitigates the success of a finance transformation is the limited sharing of information. Only 20% of the respondents indicated that enterprise management has full and complete insight into the operations and results of business units. Information is primarily viewed as a business unit asset and not as a corporate asset. The limitation that business units only share the information required to complete the respective corporate activity leads to an information hiding structure in the companies and is counterproductive. Actively managing organisational knowledge and data can also stimulate cultural change and innovation by encouraging the free flow of ideas.

Another identified risk factor for the success of a finance transformation is the coverage of financial activities in the Finance Department. In total, one-third of the respondents indicated that the Finance Department is responsible for the areas of internal control, regular compliance, and enterprise risk management. Having internal control, regulatory compliance, and risk management functions incorporated in the operating model help maintain control and compliance. Outsourcing transactional activities frees up critical management resources to focus on value-added activities. Governance and finance necessarily work hand in hand to help ensure that a company is sustainable during even the most challenging economic environments. Governance achieves at least two primary goals: to create value for the corporation and to create transparency in organisational operations (Lamm, 2010). The interaction of the three functionalities and a well-aligned governance structure minimises the risk that a finance transformation will not achieve the desired benefits. Building blocks for the finance transformation framework have been identified based on the findings of objective 4.

##### 5. Construct and verify a finance transformation framework.

This objective was met by constructing a framework based on the findings of the quantitative research and some additional aspects from literature on finance transformation, see Chapter 6. Components of the framework are related to strategy, design, and implementation of finance transformation solutions and platforms. The achievement of these objectives

contributes to the aim of the study, which was the construction of a finance transformation framework and to determine a well-designed finance transformation. This aim was fully met by conducting a quantitative survey and structured interviews for the data verification with a mix of the operating level and executives that are experienced in the management of finance projects in global organisations. Furthermore, the method ensured a robust data analysis and a high validity of the findings. The study further unveils that the area of finance transformation is still under-researched. The data collection of semi-structured interviews has been performed to collect qualitative data and to verify the framework and quantitative results in more depth (in qualitative research section, see Chapter 7).

Even though this contribution adds additional depth to the existing literature, there are still several opportunities for additional research, which are outlined in Section 8.3.

## **6 Framework for Finance Transformation**

### **6.1 Introduction**

A finance transformation involves multiple stakeholders and the scope of activities is large, in general the organisational design and governance is part of the transformation process (Stoop, Staffhorst, Bekker, and Hobma, 2016). The researcher interpreted and classified the findings to construct a framework for finance transformation. The framework will help enterprises to break down affected organisations and the potential scope into building blocks so that the transformation plan can be worked out in a structured and appropriate way. The first step is to identify the necessary building blocks for each finance transformation, then dependencies and constraints within the whole enterprise have to be taken into account, and finally each building block needs to be individually planned and implemented (Weiss, 2004).

The framework contains building blocks, which are integral parts of an effective operating model. The building blocks are selected to advise on how to implement the transformation, which is the key contribution to knowledge and practice.

However, the process of finance transformation is specific for each enterprise. Nevertheless, the major building blocks need to be applied to combine redefined business processes, supplemental professional services, and IT solutions (Sharma, 2015). The organisation needs to support processes and employees as well as the IT infrastructure and facilities are needed for applications, employees, and the carrying out of organisational tasks.

The need for consistent and reliable IT solutions and services is one critical aspect of any finance transformation programme. One approach for efficient processing and control of a financial transformation is to consider the finance transformation framework, which will be presented in the next section.

## 6.2 Finance Transformation Framework

A finance transformation framework has been constructed based on the findings of the survey. The main findings have been categorised into building blocks which illustrate integrated steps towards a successful transformation. The integrated and holistic approach for finance transformation addresses elements of the operating model, people, processes, technology, governance, risk, and compliance with the aim of generating greater effectiveness.

The finance transformation framework contains guiding principles and a complete set of inter-related elements - structure, scope and time - covering all aspects of a company's operations, presented in Figure 6-1.

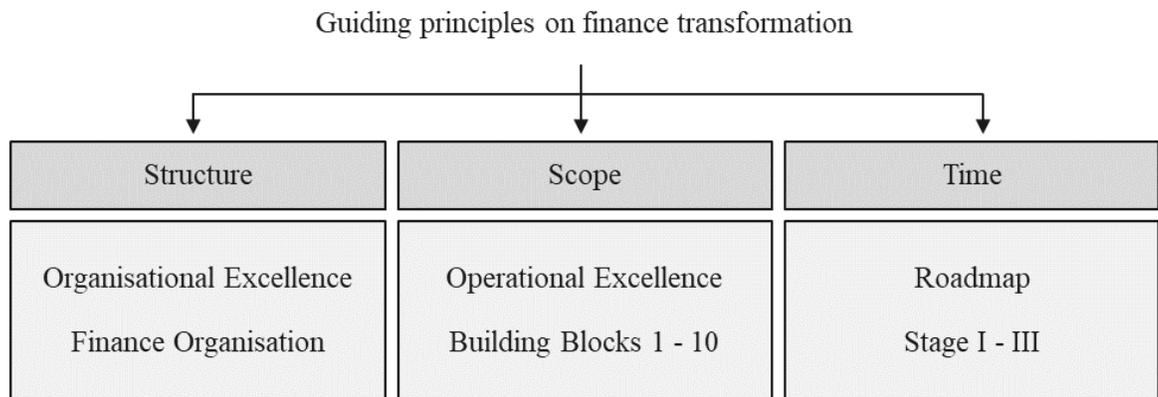


Figure 6-1: Overview of the framework.

Source: Author's own analysis.

The organisation part contains the potential future organisation with the goal of organisational excellence. The building blocks are the components of the framework, demonstrating operational excellence. The roadmap shows the components on a timeline.

The implementation of a Finance Transformation needs a combination of both, the organisational excellence and operational excellence. The organisational excellence aims at developing and optimising the finance organisation. The operational excellence aims at performance improvement and service orientation in transactional processes and in efficiency driven processes.

The strategy for the concept of operations is designed to increase efficiency and business insight. The organisation and governance contain beside the centralised and adaptable governance model also the future organisation for successful finance transformation. Due to multiple risks and intensification of regulation, finance transformation has moved up on the organisational agenda for enterprises (Hollander, 2013).

Represented in Figure 6-2 is the potential future finance structure in terms of an organisational chart. The left divisions represent the current state. The anchor points here are typically business units with profit and loss responsibility. The target finance organisation consists of four different areas. The division and functional support is about business partnering and insight with decision support. The corporate area is handling policies, approvals, frameworks, and strategy. One of the survey findings of the necessity of a centre of excellence is dealing with the specialised knowledge-driven processes with business rules. Area four, shared services, acts with higher volume and transactional processes with business rules with a certain level of innovation adaption to the automation of transactions. The global process owners are responsible for the end-to-end accountability of the processes in scope.

Appointing key individuals with end-to-end process ownership is a strategic approach that empowers the process owner to have the authority and accountability for building, standardising and maintaining processes across the operating model structure to drive efficiency and agility. The global process owner does not act alone but is part of an overall end-to-end process governance structure.

The key enablers within organisations, identified from the survey findings, are the integrated technology platform embracing with a single source of truth and the process standardisation, data governance, and finance competency. This will also enable performance management and career progression of those engaged in the new finance platform.

Organisational Excellence

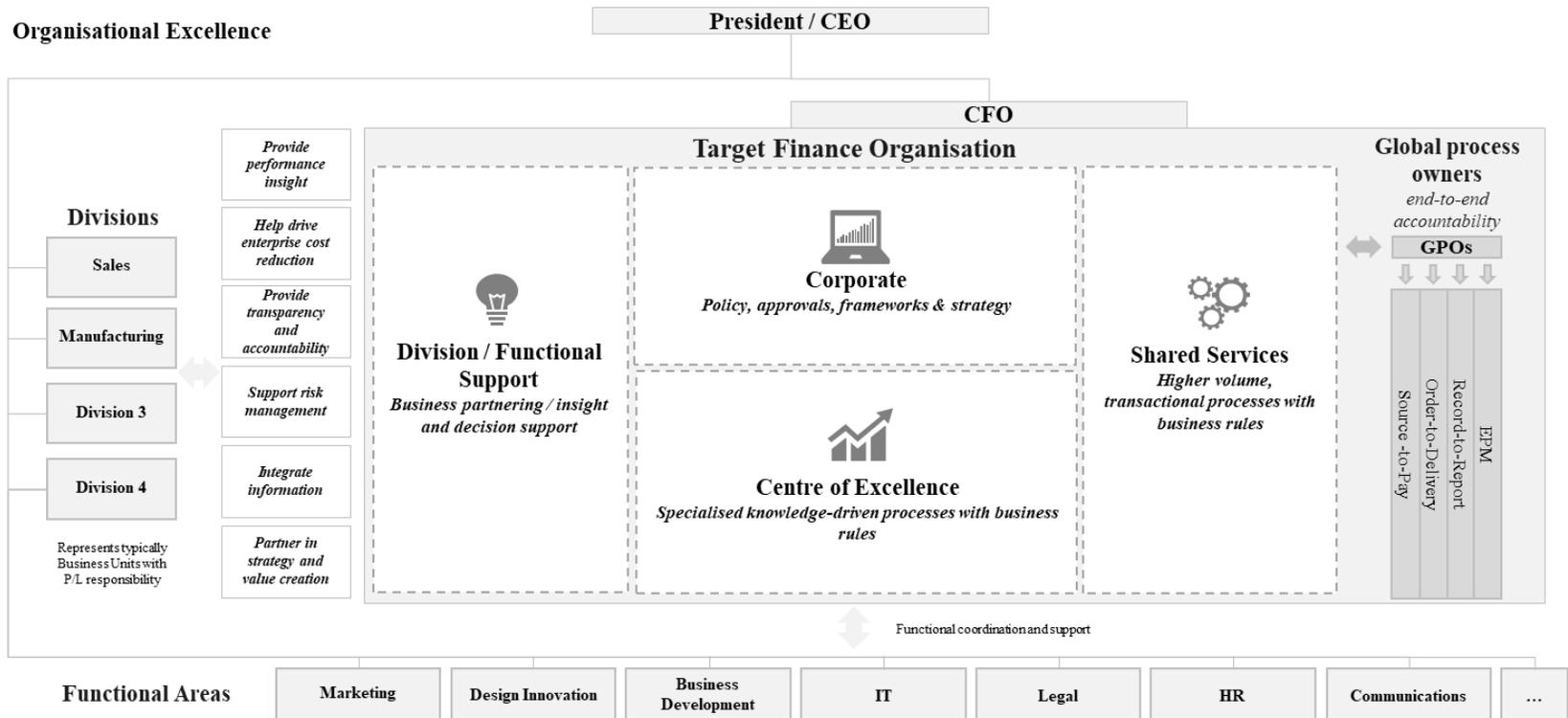


Figure 6-2: Finance transformation framework – organisational excellence.

Source: Author's own analysis.

The operational excellence part contains the ten building blocks of the framework, that are closely interlinked to the roadmap with stage I (strategy), stage II (design), and stage III (implementation) of financial transformation solutions and platforms. The framework highlights factors to consider when approaching the general finance environment.

The finance transformation framework produces a roadmap for digital finance reinvention, driving specific actions supported by fact-based decisions. The starting point of a finance transformation journey is the initiator. The executive level primarily develops an actionable finance vision aligned with the strategic goals and supported with a strong meaningful business case.

The idea behind the first building block, *vision and strategy*, shown in Figure 6-3 is to create clear strategy goals and objectives and to understand motivations, constraints, and complications for the Finance Department. After having built consensus and clarity about the finance vision, the strategy needs to be aligned with the business strategy of the whole organisation. The balance of efficiency, effectiveness, and controls needs to be determined. The vision and strategy parts are a prerequisite for finance transformation (Sposato and Vicente, 2015). After that, eight different building blocks are categorised from the inner circle. These are equally weighted and are interdependent.

The second building block, *baseline and goals*, contains the alignment of functional goals with the corporate/finance vision, the assessment of the current state and maturity, and the definition of transformation goals and measurements. The transformation process needs to build a road map for the desired future state by translating the vision into options for implementation with high-level business cases. The rational allocation of resources and capability development must be aligned based on the roadmap. Overall objective understanding, and measurement of current and targeted performance is required.

The third building block addresses the definition of the scalable, flexible *design and delivery model* for the Finance Department. The idea is to support growth and acquisitions, leveraging business partners and a strong ecosystem, and to design a target operating model that addresses readiness by providing finance with the transformation blueprint and implementation plan. The target operating model will deliver a scalable and flexible service delivery model to support the growth of the business, a centralised governance model that

promotes cross-business collaboration and prioritisation, which is adaptable to changes in the business and marketplace. In addition, it will provide global process ownership and will adopt future-state best practices (continuous improvement).

The fourth building block contains, as the findings presented, the necessary global process ownership of *processes* to drive and adopt future-state best practices, continuous improvement, automation blue printing, and the control and compliance to minimise risk through documented, centralised, efficient, and standardised processes.

One of the main findings was the fact that *governance* surrounding the management of master data, common definitions, and one single point of truth data are critical to success and must be established at the very beginning of the transformation, which is presented in the fifth building block: organisation and governance. The recommendation on the view of information/data is to decouple resource information from enterprise applications and processes and to make it available as a strategic enterprise asset. Overall goal is creating a centralised and adaptable governance model to promote business collaboration and prioritisation.

Building block six covers the *data and performance metrics*. The enterprise needs to provide an authoritative source for master data and manage information integrity, standardisation, controls, and distribution. One of the main functionalities is to provide flexibility by accommodating changes to schema, business requirements, and regulations and to support the integration of new master data. The assurance of the data lifecycle integrity is guaranteed with the design of data ownership, integrity, privacy preferences, and security from data entry to the data retirement as well as the design interoperability (usage of industry accepted open-computing standards to support multiple technologies, external and internal). Overall, the idea is to analyse financial and non-financial data within the organisation, with the level of insight generated moving from gathering to interpreting data. Additionally, metrics and key performance indicators (KPIs) will integrate and balance metrics to provide meaningful insight across the entire organisation.

The seventh building block deals with the important *capabilities* that are required for a finance transformation. Investing in the right people and talents that support efficiency and

an insight-driven culture contributes to prioritisation of initiatives and enables the development of the finance transformation roadmap and the implementation phases.

The eighth building block, *technology*, covers all technology insight, such as enhanced insight, decision support and business partnership, system rationalisation, and consolidation towards an effective target financial platform. One of the main findings from the survey was the outcome of intelligent automation, meaning that investments in automated and integrated technology shift to high-value strategic and analytics delivery.

*Assets and locations* are addressed in building block nine, where strategic decisions are informed regarding which part of the organisation is responsible for performing each of the activities and where they are performed based on the finance roadmap and business case.

The chronological order of the three stages of the finance transformation process is presented in Figure 6-3. The first stage comprises the vision phase with an aligned finance vision, mission, and strategic imperatives of the enterprise. The second stage, the design phase, includes eight building blocks including a review of the current environment and the understanding of maturity across the operating model components: process, data and analytics, technology, and people. As a result, initiatives can be formulated to overcome the gaps and can be developed into a transformation roadmap. The third stage is the implementation incorporating all aspects of the design stage.

In the following figures, the operational excellence with the building blocks of the finance transformation framework and the time perspective are presented.

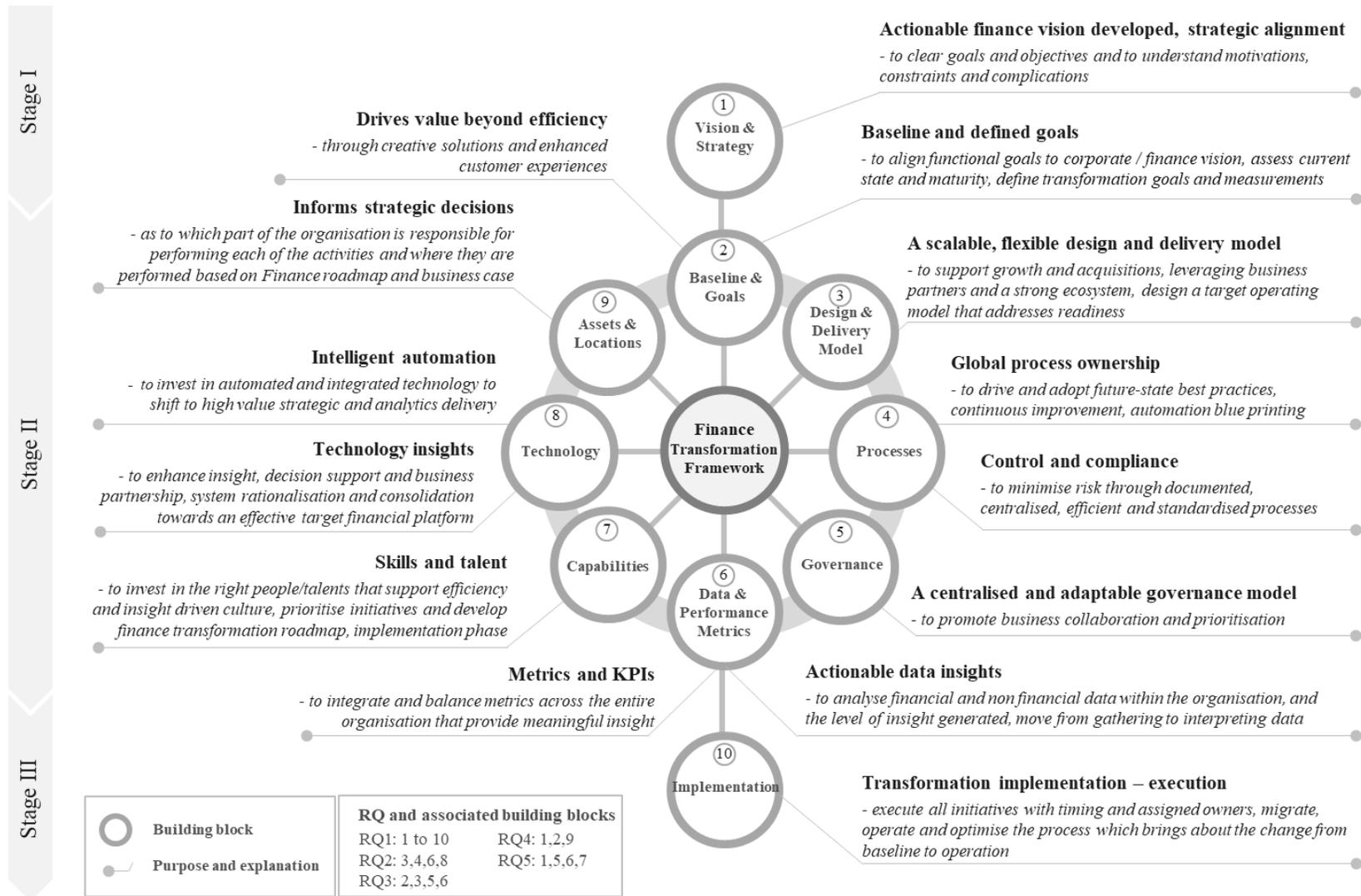


Figure 6-3: Finance transformation framework – operational excellence and time.

Source: Author's own analysis.

The building block approach ensures that finance transformation objectives are grounded in business outcomes and the accelerated time to value. The finance transformation journey can be categorised as rapidly assessing the finance function and development of an actionable vision, strategy, and blueprint to address the CFO's mandate and role. Activities help redesign key processes and restructure organisations to improve overall efficiency and effectiveness, while striving to integrate value and enhance the integration of information to drive profit growth.

### **6.3 Summary**

In this thesis, a finance transformation framework has been established, which allows to be used by multiple stakeholders across industries. The framework can be used for the chronological execution and implementation of finance transformation. The building blocks are the key aspects that need to be considered. It is not recommended to focus only on some of the building blocks and neglect others, the full cycle of a transformation has to be used.

The main idea is the integration of ten different building blocks into one process for finance transformation. The process considers the different stages strategy, design, and implementation. The finance transformation framework can be used to reconsider the current entire governance and organisation approach and to enable a risk based decision-making approach with much greater transparency and efficiency.

The design and implementation approach will ensure that predicted benefits of a content, process, and system programme are realised. It represents an efficient and effective, holistic process approach, which ensures balance is maintained throughout the design process between the key drivers of finance transformation success: People, Process, and IT.

## **7 Verification of the Framework for Finance Transformation**

### **7.1 Introduction**

A finance transformation requires accurate planning, design and allocation of resources that can be costly without appropriate preparation (Keuper and Neumann, 2008; O'Sullivan, 2010; Potter, 2015). Interviews confirmed that a good preparation and design of the finance transformation is a necessity for successful implementation.

Overall, the finance transformation framework provides finance professionals with a clear guidance on the target structure, scope and time, serving to identify related needs and scope for the transformation. As more enterprises pursue platform business models, organisations need to digitally reinvent their enterprise business and operating models (IBM, 2018d). Thus, the financial transformation helps companies to prepare for future trends and innovations in for finance and to apply them purposefully.

In this chapter follow-up interviews, which are part of the qualitative section, are summarised. These interviews were conducted to help verify the usefulness of the finance transformation framework and to confirm interpretation of the findings from the quantitative data analysis. Ten semi-structured interviews were conducted between November 2018 and January 2019 as subject professionals who were invited to critically comment on the framework produced in this study. The qualitative verification approach was chosen to receive answers about experience, meaning and perspective from the interviewees' viewpoint about the finance transformation framework. The intention was to get into a dialog with the interviewee and to receive thought-provoking impulses.

The verification of the finance transformation framework contains the structure which is represented by the target finance organisation (see Figure 6-2), the scope and time which are shown in Figure 6-3. The verification focuses on the principle of importance and necessity, completeness and lucidity, value and suitability as well as of correctness and applicability.

In interviews, researchers usually present some of their research findings and conclusions to elicit feedback about the reliability and appropriateness of their interpretations (Adams, Khan, and Raeside, 2014). This strengthens the overall quality of the data analysis and helps

to tailor research implications to specific target groups. The interview guide for the conducted verification interviews shown in Appendix D was constructed after the initial data analysis had been completed. The interview guide contained semi-structured interview questions as well as few statements which reflected the findings of the research project. These questions were arranged to allow a certain flow throughout the interview (Bryman and Bell, 2015a). The intention of the verification was to draw out the interviewee's personal point of view (Bryman and Bell, 2015a).

Participants for the verification interviews were not selected from the list of participants of the main study (quantitative section). Interviewees for the verification interviews were recruited through the professional network of the researcher and are therefore also considered a convenience sample. It was the aim of the researcher to have a diverse sample of experienced practitioners with different background to enrich the findings and conclusions drawn from the quantitative data.

Most interviews were conducted via Skype. The interview guide was not provided before the interviews to elicit truthful and on the spot answers. All verification interviews were conducted in English or in German. With agreement, interviews were digitally recorded. The interviews were translated directly from the audio recordings by the researcher. The external practitioner interviews were transcribed by the researcher. All interviews were edited for brevity to quickly absorb the key points of each interview and easily compare the different statements and perspectives. In the next section the results of the interviews are presented.

## **7.2 Findings**

All interviews highlighted the necessity of the framework for the preparation, design, and execution of a finance transformation. The interviewees confirmed that finance transformation is a holistic approach, complex and time-consuming. The researcher gained more insights about experiences interviewees have made with a transformation journey and if and how they have thought about or used a target architecture. Based on the current position or role in their professional life, the interviewees intended to focus more on topics connected to their specific role. This phenomenon is not surprising, it even leads to an overall enrichment of the results.

All interviewees experienced that based on the constantly changing conditions in the corporate environment, the finance function had to adapt continuously. The idea of continuous transformation is the key for an innovation company. The interviewees also agreed on the statement that due to digitalisation activities, current financial platforms needed adaptations. All interviews have stated that the transformation has been beneficial and confirmed the high degree of value for the (target) architecture for finance transformation in practice.

To ensure the solution-oriented implementation of the finance transformation, all interviews confirmed that a framework will help to organise the finance transformation and will allow boundaries to be set and thus gives a better picture of the whole puzzle. However, some critical statements of the interviewees need to be highlighted as well. For example, adaptations of the architecture that have to be made due to different or even contradictory regulations are made clear. The same applies to individual adjustments in the organisational structure and for processes (i.e. automation potential). It is important to take appropriate account of both the operational and organisational structure of the enterprise. Evidence for the findings above is summarised in Table 7-1.

Table 7-1: List of interviews for the verification of the framework.

<i>No</i>	<i>Position / Role</i>	<i>Years of experience</i>	<i>Number of employees (company)</i>
<i>Interview statement / Findings</i>			
I-1	COO	> 22 years	> 1,000

[...] “Without having a framework as the target architecture, I do not need to start a transformation. The prerequisite for every transformation should be having a clear goal. To present the target architecture, the use of this finance transformation framework definitely helps or would support me. It represents the critical functions, roles and boundaries.” [...]

“The framework is the target architecture for me, if I do not have a goal, I do not need to start a transformation, then I would transform because of the willingness to transform.” [...]

“For me, you have recognised the important building blocks.” [...]

“For the implementation, building block 10, if you’d ask me directly, I would miss a questionnaire saying to be able to address each of the above elements, which questions must I ask myself to be able to give the correct answers.” [...]

“[...] in terms of the centre of excellence, there is no general recipe for all organisations. This is something very organisation specific and exactly for the divisions and functional support.” [...]

“Yes, I need a top down approach, 100%. But I do not need this top down approach to be able to say simple I buy a standard software” [...]

No	Position / Role	Years of experience	Number of employees (company)
<i>Interview statement / Findings</i>			
I-2	CFO	> 15 years	> 1,000
<p>[...] “This company had come up with a structure (framework) for the new ERP system before, but it was far too rudimentary.” [...]</p> <p>“So, it was a concert of wishes, the motto was life flows with a monthly budget and now go ahead and here is the high-level agenda or what comes next you might see.” [...]</p> <p>“With a framework you have the possibility to define the program structure more clearly from the beginning, you can really specify it.” [...]</p> <p>“In my opinion, everything is contained in the framework. What may still be added is the auditor as a support function in the organisation, in the organisational chart. It is not just about finance in the company, but an "external". For example, Tax, Audit, Financial Audit or Market Authorisation, Reporting. Or represent it as an interface.” [...]</p> <p>“There were extreme omissions in the organisation of this project and in the structural design of this IT system in terms of user-friendliness and, as a result, too few user trainings were provided.” [...]</p>			
I-3	CRO	> 13 years	> 1,000
<p>[...] “The usage of this framework is necessary for each company to modernise the target application because it has a high business value using digital technology and latest innovations for Finance.” [...]</p> <p>“Technology insights are important but also basically covered. Compliance with legal requirements cannot be found right away. These are probably hidden in the design. Based on the regulatory requirements, external factors must be taken into account. But what happens with requirements that are only then asked. You have to be flexible, because external factors do not really announce themselves.” [...]</p> <p>“Building block 10 is most important as well, because implementation is very expensive, often underestimated, many change requests and issues that have not yet been considered in design will apply.” [...]</p> <p>“I would make sure that the risk part of a finance transformation will be clearer. Otherwise the transformation journey will fail and yes in many cases from my experience I can say different risks should be examined in advance.” [...]</p>			
I-4	Controllor	> 8 years	> 1,000
<p>[...] “I expect most valuable of using this finance transformation framework. The motto within our company is: First the planning is made, then evaluated by a selected team and the management and then decisions are taken by the management". [...]</p> <p>“I think there are no changes or adjustments needed using this framework. For our company, it looks beneficial for what needs to be considered for the finance transformation. Potential individual adjustments will be included in the design specification. Mostly we have localisation issues that are then discussed with the individual countries from our headquarter team.” [...]</p> <p>“[...]if something is missing, then this would be a matter of interpretation or subject to individualism.” [...]</p> <p>“The decision via Top Down approach and the development via the middle up (2nd management level).” [...]</p>			

No	Position / Role	Years of experience	Number of employees (company)
<i>Interview statement / Findings</i>			
I-5	Risk & Compliance	> 6 years	> 1,000

[...] “New or updated regulations are changing the business environment continuously. These are external factors that are difficult to predict and can lead to an incalculable risk if you do not deal with it early on and tackle things.” [...]

“The necessity of this framework is reflected in the fact that a holistic approach was adopted to optimise corporate governance. This framework covers the essential aspects, different departments are affected, and these are also included.” [...]

“Based on the regulatory requirements. External factors must be taken into account. But what happens with requirements that are only raised after the design specification. You have to be flexible, because external factors do not really announce themselves.” [...]

“However, the financial strategy must also take into account the regulatory requirements and take them into account. The best example is the target architecture in which the strategies of the CRO and CFO can be coordinated and connected with each other – i.e. the connection and handling of the establishment of a uniform data warehouse with the new General Data Protection Regulation (DSVGO) of the European Union.” [...]

I-6	IT & HR Operations	> 5 years	> 1,000
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[...] “Beside a good set-up of the project management which is to me the first step of each transformation project, the most difficult activities in terms of change management is to clearly explain all activities because in a first sense it is not trivial. Everything is running, and why do we need a change now. The slogan is: never change a running system. [...]

“It is often difficult to buy the trustees so that the need for change is clear. The necessity of short-term cost cutting to achieve long-term benefit is often overlooked and neglected. The idea is that the change will lead to better information in an improved control environment.” [...]

“The most resource are needed for the implementation of the design specifications made. For example, for the intelligent automation, mostly technical architects, data scientist and solution architects are needed. The main target is to invest in automated and integrated technology with a special team and cultural mix.” [...]

No	Position / Role	Years of experience	Number of employees (company)
<i>Interview statement / Findings</i>			
I-7	Head of IT	> 10 years	> 1,000

[...] “This framework is for me necessary to start a finance transformation. Every stakeholder needs to identify his position in the big picture. The building blocks are clearly addressed. What I like is, that the important elements are all covered and there is no activity split directly addressed, it is generalisable for multiple companies and is a kind of story board for the transformational journey”. [...]

“The benefit of using this framework is to help people to understand how their own goals fit into the bigger picture of finance transformation. IT specialists focus on the requirements and solutioning rather than the big picture.” [...]

“For me the credo of finance transformation is all about central finance to bring data from multiple systems into one single instance, most preferable into the cloud.” [...]

“I am sure that our company will succeed. We wanted to reposition ourselves and stand out from the competition, with the result that we are seen as the leader of innovation for our products and services. We are spending more effort on digital initiatives and the application of digital technologies to finance tasks.” [...]

“Testing is important, test activities are not limited to newly developed functionalities, but also that data transmission, technical interfaces and reports are tested. Before the transfer to regular operation, the future technical support will be ensured.” [...]

I-8	IT SME (Consultant)	> 6 years	> 1,000
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[...] “The building blocks are all interdependent, they are equal, so there are no most important building blocks for me.” If I would exclude one, the others will collapse. Instead of vision I would rather take objectives.” [...]

“Most resources are needed to develop the target architecture. The more effort you put in to define the target architecture, the easier the transformation and the easier it is to get the story across.” [...]

“But a transformation cannot be successful if I do not have a clear target architecture at the beginning. The better the planning, the easier the implementation.” [...]

“Logically, brain resource is necessary at the beginning of the transformation to develop such a target architecture, the human factor (change process) is when the transformation begins for execution. But a transformation cannot be successful if I do not have a clear target architecture at the beginning. The better the planning, the easier the implementation.” [...]

“The only one: potential financial regulation can and must be brought up to the vision and strategy in the bottom up approach.” [...]

No	Position / Role	Years of experience	Number of employees (company)
<i>Interview statement / Findings</i>			
I-9	IT SME (Industry perspective)	> 8 years	> 1,000

[...] “For me the framework for finance transformation is needed primary at organisations level; it can serve as a source for value creation, maintain or increase competitive advantage by focusing on the industry specific design element without losing the main building blocks for finance transformation.” [...]

“The consideration of this framework is of importance and can be applied to consolidate and increase competitiveness. It is flexible to be used for multiple industries.” [...]

“However, to guarantee success rate with this framework, it is mandatory reviewing the original scope and plan against that framework. A short analysis how well aligned the strategic plan is with the framework would be beneficial for some different industries. The percentage of goals in each building block will help you determine the amount of focus the finance department gave to each building block in the framework.” [...]

“During the process of application of managing change it must be implemented at different structural levels, sectors of organisations and enterprises. 1) acceptance of new technology (e.g. digital development); 2) change of management (acceptance of the finance transformation process at all company levels); 3) restructure of organisational culture (compatible with 1) and 2) to support managing change towards finance transformation. I think this finance transformation framework will provide and assure integrated ways when implementing the three structural sectors 1) 2) 3).” [...]

I-10	Data Scientist	> 15 years	> 1,000
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[...] “I give a (4) which means for me yes I agree. Certain other areas such as e.g. document management systems already existed before. The new trend of using robots e.g. for searching in archives with big data technology is a must to analyse properly. Unstructured data must be scoured using digitisation options.” [...]

“If no compulsion, then the framework is meaningful. My idea is to take everything from the framework what makes sense and is needed, and the rest is not that important. Use the framework to reach your goal. If there is e.g. already a governance model, I just have to adapt it and not make new ones.”

“I would give a (3) so for me valuable in a neutral position, because the degree of value is depending on the corporate culture. For start-up is it different as for global companies.” [...]

“The target architecture is a guide, but the results can be different because of the iterative approach and because of the flexibility there are different outcomes than desired, then the strategy needs to be adjusted, for example, a focus has been placed on individual building blocks. Transformation took longer than planned. A problem is the permanent change of scope. In some cases, the scope was changed in such a way that it could already be another project.” [...]

## **7.2.1 Verification of importance and necessity of the framework**

In this qualitative section, interviewee I-1 (a COO) argued that “without having a framework as the target architecture” a finance transformation cannot be started. According to his view it is a “prerequisite” having a clear goal and a target architecture. The framework “represents the critical functions, roles and boundaries” and the “important building blocks” are covered to plan, design and execute the finance transformation. This means that a COO, who knows all the operative activities and problem areas of a company and co-determines the strategic goals, finds this framework to be very important in order to start a transformation. Interview I-2 (a CFO) confirms using the framework is a “possibility to define the program structure more clearly from the beginning” and can be specified based on the leading themes. Interviewee I-3 (a CRO) confirms the importance and details out that the “usage of this framework is necessary for each company to modernise the target application because it has a high business value”. All three executives set and communicate strategies, and they confirmed the importance and necessity of this finance transformation framework to ensure a management that is aligned with the established plans.

Interviewee I-7 (a Head of IT) confirms also the necessity of this framework to start a finance transformation. He suggested that “every stakeholder need to identify his position in the big picture”. He also confirms the clarity of the addressed building blocks. He has emphasised that there “is no activity split directly addressed, it is generalisable for multiple companies and is a kind of story board for the transformational journey”. Interviewee I-8 (an IT Subject Matter Expert, Consultant) argued that the “building blocks are all interdependent, they are equal, so there are no most important building blocks”. In sum, there was a broad consensus of views that the building blocks are not different in terms of importance. All building blocks are important. Interviewee I-9 (an IT Subject Matter Expert, Industry perspective) gave examples showing why and how different building blocks or components can affect the entire financial organisation. The consideration of this framework will result in an “increase competitiveness”. Interviewee I-5 (a Risk and Compliance Expert) argued that this holistic approach is necessary for the finance transformation to optimise governance. This means that the governance structure will be considered and planned right from the beginning to build quality and set accountability. The framework “covers the essential aspects, different departments are affected, and these are also included”.

Interview I-10 (a Data Scientist) has seen the importance slightly more differentiated than the others. According to his view in terms of necessity is “if no compulsion, then the framework is meaningful”. He suggests to “take everything from the framework what makes sense and is needed, and the rest is not that important [...] and use the framework to reach your goal. If there is e.g. already a governance model, I just have to adapt it and not make new ones”. This means that although all building blocks should be taken into account, however, a prioritisation must be worked out individually by the companies.

Concluding, none of the interviewers has neglected the necessity of such a framework nor proposed alternatives to plan and design a finance transformation.

### **7.2.2 Verification of completeness and lucidity of the framework**

Interviewee I-2 (a CFO) is satisfied that “In my opinion, everything is contained in the framework. What may still be added is the auditor as a support function in the organisation, in the organisational chart. It is not just about finance in the company, but an external. For example, Tax, Audit, Financial Audit or Market Authorisation, Reporting. Or represent it as an interface.”

Interviewee I-1 (a COO) argues in terms of completeness that for “the implementation, building block 10, he would miss a questionnaire saying to be able to address each of the above elements, which questions must he ask himself to be able to give the correct answers”. Hence, a good planning not only combines forward viewing but also a quality check in a roll-back scenario to ensure that everything has been be considered and linked correctly.

Interviewee I-3 (a CRO) criticises the lack of addressing risk management in the framework. He suggests making the “risk part of a finance transformation clearer [...] otherwise the transformation journey will fail. He confirmed that “different risks should be examined in advance”. This means that although interviewer I-3 states that the content of the building blocks is complete, the subject of risk should be emphasised in more detail. Risk aspects, that could exist objectively, should be included somehow in the framework by defining the company’s risk appetite and risk tolerance and outline of key accountabilities and responsibilities. From this statement it can be seen that a transformation is also characterised by individuality and there can be different ways of doing things. The researcher suggests

using an appropriate method for the evaluation of risk such as a risk assessment for each building block.

Interviewee I-4 (a Controller) confirmed completeness and argues that “if something is missing, then this would be a matter of interpretation or subject to individualism”. The framework may be as comprehensive, meaningful and adaptable as standard, yet there remains a certain amount of customisation. Interviewee I-5 (a Risk & Compliance Expert) critically mentioned the regulatory requirements that “are only raised after the design specification”. In his view, the company needs to be “flexible, because external factors do not really announce themselves”. This means, that e.g. regulatory requirements that arise during a finance transformation are initially not in the scope, but it is good to select an iterative requirement solution approach so that the already existing requirements can be implemented, and new ones can be processed separately from each other.

### **7.2.3 Verification of value and suitability of the framework**

Respondents were asked to specify the degree of value to use the proposed finance transformation framework. In total eight out of ten interviewees scaled the degree of value as “most valuable”. However, two interviewees scaled a lower degree of value, interviewee I-3 (a CRO) “would expect, that for each company this framework would be seen as a global standard approach.” The CRO thinks that “companies need to check individually if this framework is beneficial to be used” and in total he scaled “it is valuable” instead of “most valuable”. Additionally, interviewee I-10 (a Data Scientist) scaled the value in a “neutral” position, “because the degree of value is depending on the corporate culture. For start-up is it different as for global companies”. This means that not for every company a finance transformation is needed. This statement is congruent with the limitation set by the researcher.

Interviewee I-1 (a COO) critically recognised that the target finance organisation is suitable for all companies, however he reflected, that “in terms of the centre of excellence, there is no general recipe for all organisations. This is something very organisation specific and exactly for the divisions and functional support.”, (COO).

Interviewee I-2 (a CFO) illustrated that “this company had come up with a structure (framework) for the new ERP system before, but it was far too rudimentary.” The result was an insufficient situation with “no well-planned concept” and, “they forgot to bring the users on board and secondly, an inadequate situation or management of change”. He further explained during the process, “people need to change, and people need training to learn the details of the new environment that comes to them and that's how it's done.”

Interviewee I-4 (a Controller) confirmed suitability and illustrates further “that the motto within our company is: First the planning is made, then evaluated by a selected team and the management and then decisions are taken by the management”.

Interviewee I-7 (a Head of IT) highlighted the effort of the implementation of the developed technical concepts in the IT systems that takes place along iterative build and release cycles. According to his view, “testing is important, test activities are not limited to newly developed functionalities, but also that data transmission, technical interfaces and reports are tested.”

Interviewee I-8 (an IT Subject Matter Expert, Consultant) sees a high individual value of the framework and recognised that “most resources are needed to develop the target architecture. The more effort you put in to define the target architecture, the easier the transformation and the easier it is to get the story across”. The IT SME confirmed based on his experience that “the better the planning, the easier the implementation”. This means that without a detailed understanding of these needs and approach it is complex to estimate the effort required to implement.

## **7.2.4 Verification of correctness and applicability of the framework**

All ten interviewees confirmed the stage I-III (vision, design, implementation) and expect no problems with these stages. However, interviewee I-10 (a Data Scientist) highlighted that “testing and quality gates should be included”. This means, that during implementation, quality gates will help to optimise the finance transformation and to succeed.

Interviewee I-1 (a COO) confirmed that the top down approach is needed to perform a finance transformation. I-1 justified this step, however, with the intention that the top down decision

involves more than just the question whether a “standard software is purchased”. This means that the management conceives, plans and directly implements and that the managing of the changes will succeed. The top down approach is often used to quickly design a transformational program or change reform but with not enough detailed understanding of the needs of the end-user.

According to Interviewee I-6 (an IT & HR Operations Expert) “most of the resources are needed for the implementation” itself (building block 10). He considers for the intelligent automation, “mostly technical architects, data scientist and solution architects”. For the investment in “automated and integrated technology” he selects a special team and cultural mix to face the implementation challenges. Hence these roles should be part of the planning and design team as well to agree on activities and link the skills and responsibilities.

Interviewee I-8 (an IT Subject Matter Expert, Consultant) argued that potential financial regulation is the only argument why it “must be brought up to the vision and strategy in the bottom up approach”. In turn, bottom-up perspectives are relevant to solve requirements from e.g. external or local operating requirements and employee needs. Hence, a top down approach does sufficiently permeate some, but not all levels of an organisation to achieve sustained changes.

Interviewee I-9 (an IT Subject Matter Expert, Industry perspective) focused on the managing change part of the finance transformation and his solution is to manage change at different structural levels, sectors of organisations and enterprises in three key areas. First, to manage “the acceptance of new technology (e.g. digital development)”, then the “change of management (acceptance of the finance transformation process at all company levels)” and thirdly the “restructure of organisational culture (compatible with a) and b) to support managing change towards finance transformation”. The interviewer confirmed that this finance transformation framework “will provide and assure integrated ways when implementing the three structural sectors 1) 2) and 3).”

The statements of the interviewed subject matter experts highlighted before are in line with recent literature focusing on challenges finance departments are facing.

## **7.2.5 Verification of the framework in practice**

The finance function is being deeply affected by the advent of digital technologies (Bhimani and Willcocks, 2014). According to (ICAEW, 2011) “relentless IT development may have a transformative impact on the implementation of finance activities and also provides an ongoing challenge”. First, the finance function is in the position of driving change in the design and operation of work processes and organisational control systems. Yet, at the same time, the finance function is also the object of change in the new configuration of the corporation (Seal and Herbert, 2013). The rate of change in technology in the workplace has never been quicker, which has made adapting to change such an important characteristic of an employee (Alexander, 2018).

Finance Transformation is based on notion that the environment of a company changes depending on the client. It aligns goals and strategies. Thus, it also has to adapt to changes in finance. This can be radical or incremental. Both can happen. However, companies always need a target architecture (pre-requisite), because they are not in a free-floating room but dependent on many parameters, legally and content-wise and to which they must comply to.

The researcher used this framework for four projects within the researcher’s network, internally in the company with project colleagues. The researcher established a “door opener” to show the results and potential further contribution as well as used cases. The finance transformation framework has been accepted by the clients. With this framework the researcher makes a strong project contribution in practice. The clients highlighted the clear view and measurable deliverables for the preparation and design blocks and activities that are essential. As part of the verification, this target architecture with the building blocks has already been positively accepted in four branches and has become good practice.

Table 7-2: List of cases used in practice.

<i>Industry</i>	<i>Client</i>	<i>Project scope</i>	<i>Phase</i>	<i>Contribution</i>
Insurance	Global Insurance company in Germany	<p>One data for finance:</p> <ul style="list-style-type: none"> <li>▪ Implementation of Line of Business (LoB)- Analysis for the opportunity to analyse and control the insurance portfolio;</li> <li>▪ Realisation of a complete, harmonised and daily updated data warehouse with all controlling- and customer-relevant information.</li> </ul>	Execution	<ul style="list-style-type: none"> <li>▪ Consistent creation and reproducibility of reports;</li> <li>▪ Integration of future or currently not included source data and consolidation of data and reports;</li> <li>▪ Alignment of the governance model with traceability by linking terms and analytical requirement;</li> <li>▪ Finance core model according to data vault method.</li> </ul>
Banking	Global Banking company, Italian background; subject of a transformational journey	<ul style="list-style-type: none"> <li>▪ Reshape the current financial platform;</li> <li>▪ Create a new finance operating model for Germany.</li> </ul>	Execution	Finance transformation activities for Accounts Payable, Accounts Receivable, Asset Accounting.
Automotive	Global Automotive manufacturer asked for innovation topics related to Finance	<ul style="list-style-type: none"> <li>▪ Strategy with a clear roadmap with innovative aspects considering <ul style="list-style-type: none"> <li>○ payment &amp; mobility platform;</li> <li>○ artificial intelligence (AI) in call centre.</li> </ul> </li> <li>▪ Readiness assessment and creation of To-Be design building blocks</li> </ul>	Commercial	<ul style="list-style-type: none"> <li>▪ Innovation for financial services;</li> <li>▪ A streamlined approach of call centre operations using artificial intelligence;</li> <li>▪ A blockchain solution for all financing models of mobility solutions, from leasing to the fleet management.</li> </ul>
Semi-conductor	Semiconductor company looking for a reshaped Finance Target Operating Model	Door opener: Reshape the finance activity split using RPA potential.	Preparation	Finance function: A transformation journey for increasing efficiency and deliver the complete spectrum of automation for finance (RPA).

The target architecture and building blocks have been developed with the findings from many experts; overall the transformation potential and transformation activities are in high demand and have been implemented in practice.

## 7.3 Summary of Findings of the Qualitative Verification Process

The key findings of the semi-structured interviews are:

- Interviews confirmed that finance transformation is a holistic approach, complex and time-consuming. Interviewees confirmed that a good preparation and design of the finance transformation is a necessity for successful implementation;
- All interviewees experienced that the finance function had to adapt continuously, and current financial platforms needed adaptations. Overall, a high need for adaptation in finance is recognisable and necessary;
- All interviews have stated that the transformation has been beneficial and confirmed the high degree of value for the (target) architecture for finance transformation in practice. Interviewees confirmed that a framework will help to organise the finance transformation and will allow boundaries to be set and thus gives a better picture of the whole puzzle;
- This framework represents the critical functions, roles and boundaries and the important building blocks are covered to plan, design and execute the finance transformation. This framework offers to define the program structure more clearly from the beginning and can be specified based on the leading themes. Modernisation of the target application was found to be valuable. The governance structure should be considered and planned right from the beginning to build quality and set accountability;
- The framework has been considered as comprehensive, meaningful and adaptable, yet there remains a certain amount of customisation. Finance transformation also needs an overall risk assessment and a prioritisation of building blocks must be worked out individually by the companies;
- This framework is generalisable for multiple companies and is a story board for the transformational journey. It has been positively accepted by clients and has become good practice.

To summarise the objectives of answering the five overarching research questions, a final, full overview is presented, created by combining the group of statements of the interviewees throughout this study (qualitative section). This overview outlines the route of the study, the development of research questions from within the literature, and the arrival at meaningful conclusions through the aggregation of literature and interview data to reach the objective to construct and verify the finance transformation framework.

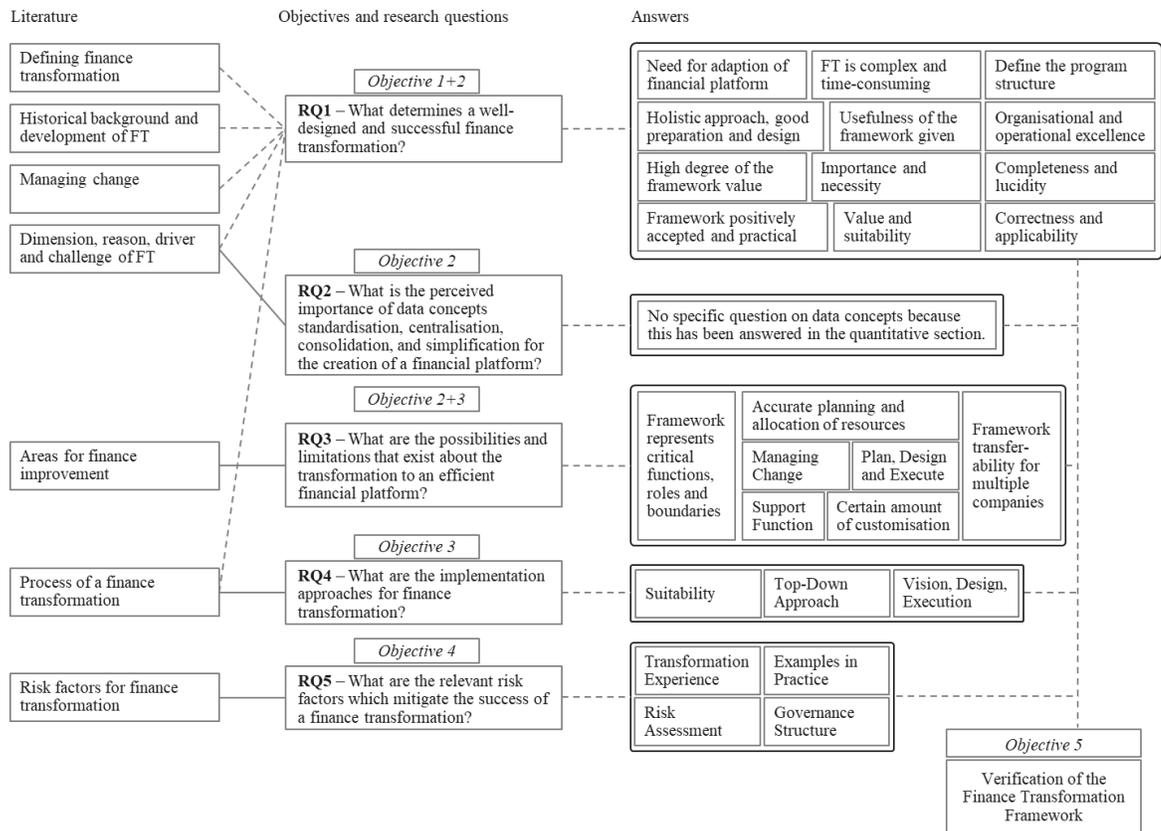


Figure 7-1: Diagram of literature research, derived objectives, qualitative findings.

## 7.4 Summary

In this thesis, a finance transformation framework has been established and verified in terms of principle of importance and necessity, completeness and lucidity, value and suitability as well as correctness and applicability. An organisational chart to direct implementation of good practices of a target finance organisation has been given in section 6.2. The different building blocks are covering design elements and determine a well-designed finance transformation.

Interviewees confirmed an importance and necessity of the finance transformation framework. There is agreement that the leading building blocks are included in terms of completeness. Interviewees found the framework also clearly arranged. For the individual value, most interviewees gave some examples. Therefore, correctness and applicability has been endorsed by the interviewees.

The aim of the research was to understand the process of finance transformation and to advise on how to implement the process efficiently to enable the attainment of business objectives. The design and implementation approach represent an efficient and effective, holistic process approach. Overall design elements in terms of main activities for finance transformation have been identified and analysed. By involving stakeholders and the understanding of key opportunities, challenges, barriers, and drivers within the finance transformation journey have been identified, ordered and measured. The implementation approaches for finance transformation have been exposed and analysed. In summary, good practices for the design and implementation of finance transformation were discussed. Potential key factors and risk-associated aspects of an enterprise success or failure within large finance transformations were identified. The objective to construct and verify a finance transformation framework has been achieved and thus the thesis is strengthened.

The finance transformation framework has become a fundamental enabler in creating and maintaining a flexible network. The framework breaks down the aspects into building blocks. The researcher described each block characteristics and offers guidelines and recommendations to derive benefit.

## 8 Conclusion

In this chapter, the researcher presents the research contributions. The researcher draws conclusions from the findings, thus demonstrating how this research responds to the need, challenges and opportunities for finance transformation expressed by both academics and finance stakeholders. Section 8.3 contains limitations and ends with directions for further research.

Finance transformation is an under-researched area. The aim of this research was to contribute to filling this knowledge gap. The role and importance of finance transformation in different organisations have been discussed. The deductive part of the approach in the context of a finance transformation is new and not found in the literature. This research offers prescriptive guidance on how the transformation can be achieved.

A survey among finance experts has been performed to collect data defining the need, important elements, potential challenges, and opportunities for finance transformation. The questionnaire was designed to address different elements of finance transformation. Based on the data analysis and the interpretation of the findings, some key directions and conformation have been formulated and anchored to the finance transformation framework. All respondents highlighted the need for finance transformation. The importance was highlighted from a strategy and conceptual point of view.

The research aim has been met by providing a framework which describes the necessary building blocks and factors critical for the success of finance transformation programmes. In addition, the finance transformation framework has been verified to demonstrate its usefulness and focused on the principle of importance, completeness, suitability as well as of its practical applicability. This framework can now be tested by stakeholders and programme managers from different industries and therefore provides the basis for further research.

From the quantitative research the following findings have been confirmed:

- Confirmation on the need for adaption of existing financial platforms and all respondents highlighted the need for finance transformation; adopting a digital mindset requires change;

- To ensure a complete and successful planning and design of the finance transformation, a solid and proven program approach is required. The leading outcomes of a successful finance transformation should be improved governance structures and processes followed by establishing a centre of digital/finance transformation excellence and network;
- A single source of truth with a new simplified data model that combines and connects financial data with enterprise data, a process ownership and electronic data capture at the source are main success factors in finance transformation towards an intelligent enterprise.

These findings were confirmed from the qualitative research.

The researcher demonstrated a practice-based value of the framework that has some legitimacy in practice to be used.

## **8.1 Contribution to Practice**

The finance transformation framework offers a contribution to practice as it helps developing a wider view of finance activities and their transformation potential. Finance transformation requires a high level of change through automation, innovation, and new technology. Organisations lacking sufficient resources to oversee the whole finance adoption process often face sizeable challenges that significantly limit the effectiveness of implementation, which is also affected by the lack of clear finance transformation design and implementation guidance and expertise on how to resolve potential finance transformation issues. The framework, which addresses several building blocks, can constitute a useful tool to maintain oversight on affected processes.

Specifically, this research offers academics and finance industry practitioners a better understanding of factors critical to the implementation of a future or present finance transformation, supported by empirical evidence. The framework gives practitioners a structured phase approach for an end-to-end view of a finance organisation's effectiveness. The researcher offers guidance and aspects to consider in moving rapidly from the development of a strategic vision to an implementation roadmap. The framework can be used for the initial process before a company embarks on the implementation of specific roadmap

finance initiatives. Additionally, the framework can be used as a foundation for a retrospective analysis of what has been reached in an already performed finance transformation, locating the limitations and areas for improvement of existing finance transformations. Furthermore, the framework can be applied prospectively, as a managerial guideline supporting decisions on future finance initiatives. All in all, it is not a guarantee for success, but the usefulness of the finance transformation framework can improve the planning and design of the finance transformation journey and thus constitutes a valuable contribution. As a result of the thesis, the researcher has already applied and implemented these framework building blocks in practice in current consulting projects. The received feedback has been equipped with consistently positive signals and confirmations for this approach to follow.

The following key recommendations, summarised per building block, present a picture of an effective finance transformation and contain attributes of an effective operating model and steps towards a future-proof Finance Department.

*Governance:* Recommendations are to implement a single global finance function with clarity in the roles, responsibilities, and handoffs between finance and the business. The finance organisation (see Figure 6-2) contains a CoE and shared service centre structure supported by strong governance to drive efficiency and scalability. The establishment of centralised end-to-end process governance to support a consistent process and delivery model is necessary.

*Process:* The main target is the standardisation and automation of processes allowing for only local regulatory exceptions with a global operating view. The reduction of enterprise performance management cycle times enables quicker business decisions and agile action planning. The implementation of KPI/driver-based reporting enables rapid and more accurate revenue and profit forecasting. Additionally, embedded preventive controls in processes are a design principle. The main idea is to simplify the data environment by leveraging the next-generation integrated financial platforms, such as SAP HANA capabilities, which uses universal journals instead of separated journals. The data model and application logic have been simplified (KPMG, 2017).

*Data and Performance Metrics:* Recommendation to practice includes the implementation of processes, tools, and dashboards that automate operational performance management reporting across all areas of finance and that monitor progress from the baseline to the target on a consistent basis that is aligned or confirmed with enterprise KPIs on a consistent basis.

*Capabilities:* Recommendation to practice includes the engagement with the finance staff to communicate the compelling career paths that the new operating model will deliver. Furthermore, the establishment of internal SAP super-users as part of the SAP implementation will reduce future reliance on external resources. The promotion of the essential needs of continuous learning, business acumen, and development of next-generation skills in advanced analytics is beneficial. The balance of needs and the focus on financial accounting and financial planning and analysis by role will shift from transaction-driven skills to analytical and business partner skills and competencies. When designing and implementing the target organisational model, the organisation needs to consider local customs, languages, and statutory reporting needs.

*Technology:* The main recommendation based on technology and innovation is to implement an integrated ERP architecture that supports all departments within the company. It is recommended to establish a data model that provides a division and legal entity view that is flexible to future needs and changes and to utilise enabling technologies as intended to automate and simplify processes. The consideration of additional functionality (i.e. SAP HANA Cash Management) can efficiently address cash-flow forecasting accuracy issues.

*General:* The overall programme governance and design authority need to be in place. Global process owners should be established and empowered to make decisions. The alignment on master data governance, ownership, and architecture (e.g. finance master data governance) should be centralised and maintained within an integrated master data management tool, which is a main functionality that is needed to perform a finance transformation successfully.

Firm agreement from stakeholders on the actionable outcomes that will guide detailed design and the alignment across procurement and other functional divisions are mandatory.

Based on the collected data and analysis the following findings and factors critical for success were identified:

The deployment of one single integrated application architecture supporting all departments within the company is a lever for improved finance activities. The integrated application architecture defines the principles of moving data among applications to reduce the inconsistency risk and the workload needed to connect applications through multiple manual updates. The architecture includes both, the design of the databases and the handling of data, as the same information will affect multiple applications. Potential new technology should be integrated easier due to the automated approaches of integrating applications.

Enabling technologies can support companies to increase efficiency if the integration of these innovative technologies is possible with minimal customisation effort. A well-designed finance transformation needs to cover aspects that are driven by digital technologies, and their effects on business will transform the practice of finance and the competencies that professional accountants require. Systems and their software will replace manual work (such as bookkeeping), will automate complex and multifaceted processes (such as financial close), and will support the trend towards outsourcing services.

Better management information can be generated using financial analysis capabilities. This was ranked as the most significant attribute from a new system after a successful finance transformation. The high-performing finance function can recognise easier potential data quality problems within the organisation and react proactively before the individual business units recognise these with higher effort. By improving the quality of management information, the finance team can support effective decision making and help the business understand how much progress has been made towards targets. Data quality is an area of concern in many companies.

The leading outcomes of a successful finance transformation are expected to be the implementation of governance structures and processes followed by establishing a centre of digital/finance transformation excellence and network. An inadequate data governance structure or the use of poor data quality results in unreliable reports. Clarity on the process ownership will reduce the risk of impactful inaction when no clear owner has been identified. The process owners monitor the process performance across the organisation, develop and manage policies, procedures, and govern processes. The governance structure includes the end-to-end process view, will help to improve business innovation, and decision-making by making data easier to share, work on, store and access when needed. A clear process

ownership across the enterprise with a global process owner is as a key role and leading practice to enable end-to-end management without dilution of accountability.

Finance experts who will perform a finance transformation need to keep in mind, that high engagement of key finance stakeholders and leadership involvement is a key for success. Finance need the appropriate executive sponsorship to react by changing the necessary processes and governance structures that help identify and resolve the issues. The major finding is that successful finance transformation requires involvement by management at a senior level, reporting lines are key enabler. A lack of buy-in from senior management is one of the main reasons for unsuccessful finance transformations. Companies that have not adopted the top-down approach for finance transformation have struggled to achieve results. Organisations that identify a direct link between KPIs and their strategy typically have a better record of execution. Tracking and monitoring underlying measures that make up the KPIs truly determines the success.

Companies should ensure the consistency of data. Information stored in databases shall be accessible frequently. One of the identified risk factors that mitigates the success of a finance transformation is the limited sharing of information. Another identified risk factor for the success of a finance transformation is the coverage of financial activities in the Finance Department.

## **8.2 Contribution to Knowledge**

In this section key contributions of this research to the literature and to knowledge are formulated. The research is a valuable contribution to theoretical knowledge through the in-depth review of various concepts and themes for finance transformation. This is achieved through a review of the academic, industry-based literature and the researcher's recognition of the effects of external and internal drivers on adoption, design and execution of a finance transformation. The researcher has identified and analysed design elements in terms of main activities for finance transformation and has found what leads to a well-designed finance transformation. As discussed in Section 2.9, this research has identified a gap in the literature on finance transformation which, to the researcher's best knowledge, has not been empirically addressed adequately in previous studies.

The main contribution to knowledge of this research is the development of a finance transformation framework with a suggested target finance organisation (structure) and the ingredients to plan, design and execute a finance transformation journey (scope and time). In addition, practical guidelines for its effective implementation have been presented that can improve the finance function in global organisations.

This framework is considered unique in a number of ways:

- The identification of the relevant elements for the financial transformation from the basis and the prerequisites for an implementation towards an efficient finance organisation;
- The definition of the work packages covering the scope for each building block;
- The definition of the stages (time perspective) describing how the relationships of the building blocks are and in which sequence these need to be performed;
- For this framework different views of stakeholders such as involved as CFO or auditors have been considered. Additionally, the consideration of different levels of seniority, different sizes of companies, different sectors, and involvement in finance transformation;
- The confirmation of the usefulness of the framework from finance professionals and therefore a transferability to organisations with similar circumstances and a specific need for the transformation of their finance function.

The framework has been designed to provide a clear understanding of the relevant elements (building blocks) and factors that have an impact on the finance organisation after a successful transformation.

The sample selected for the survey (quantitative section) comprised 87 respondents who were considered well informed and familiar with theoretical and a part of it even practical aspects of finance transformation and four structured interviews for the verification of the survey data. Different levels of seniority, different sizes of companies, different sectors, and the performed roles are possible differentiators. The data analysis compares the means of the two populations, those with involvement in finance transformation and those without involvement. In terms of challenges to finance transformation the two populations have the same understanding, there is no difference depending on whether the respondent has been

involved in a finance transformation or not. The groups mainly differ in their assessments regarding change management, handling of data in terms of automation (workflow management and accessibility) and the view on governance. Those who have been involved in finance transformation give these three attributes a stronger emphasis, as they have an impact on the success rate in finance transformation.

This research contributes to a better understanding of the role and importance of finance transformation in global organisations. It highlights the key drivers of finance transformation, in the context of the benefits and challenges, offering prescriptive guidance on how it can be achieved. This is not only based on the theoretical and empirical investigations performed as part of this study, but also on the researcher's years of professional experience in finance in the consultancy sector.

In this research an observation has been made that the silo mentality remains deeply embedded among finance practitioners in global organisations, enterprises should firstly attempt to break down the different finance activities and integrate core processes, standards and activities across key finance functions. Successful finance transformation implementation depends on enterprise-wide cooperation among key business, risk and operational functions.

Furthermore, the methodological approach underlying this research demonstrates the use of quantitative and qualitative data collection and analysis. The approach to this study may shed a new light on research in this field to better plan and design finance transformation and improve the finance function in global organisations. By undertaken the verification interviews (qualitative section) reported in Chapter 7, there are some assurance given that the findings are valid, and the finance transformation framework usefulness is given.

### **8.3 Limitation and Further Research**

Throughout this research study, the researcher has analysed various aspects of finance transformation, the framework, the research methodology, the methods of data collection and analysis, and the selection of research samples. This thesis partially closed the identified gap by constructing a finance transformation framework.

However, every study has limitations, which provide opportunities for future research. The following four key limitations to this research has been identified based on the researcher's knowledge of the subject, the availability of resources, and access to information and skills:

- Limited sample size – This research is based on 87 returned survey questionnaires, four structured interviews for the data verification and ten interviews for the verification of the finance transformation framework. However, the nature of the finance area in which the study was undertaken, and the high profile of the people surveyed justify this relatively small sample size. The researcher used his professional network to identify the sample, which is composed of finance/project managers of large market-listed companies in Germany as well as project managers of international IT consulting organisations. Therefore, not all findings can be generalised to other situations, countries and cultures;
- Most of the respondents work in global enterprises – finance transformation in small or medium-sized enterprises might be differently;
- Time perspective – the primary data have been gathered in a time frame of three months and might represent only a mindset at this certain point of time and the current economic conditions;
- Tax environment – the specific tax structure must be considered individually for each company within the transformation process and could not be generalised in the framework. However, recommendations from tax specialists that will guide sessions and detailed design principles are important to face this challenge.

Considering these contextual factors, the researcher does not claim that the findings are generalisable to other populations such as smaller companies, companies with different organisational structure or public companies. Rather, the research provides evidence that is immediately applicable by the researcher's network. Ultimately, this research is thus a starting point for future research.

A key challenge throughout this study was achieving a comprehensive scope and level of focus. Through such a level of omission, several areas for further research become evident, both from the literature and the primary data.

First, this study's focus was on the need for finance transformation and the opportunities and challenges in an unspecific sector in the context of global SMEs. As literature on finance transformation is still scarce, there are some areas for future research that can provide a deeper level of analysis:

- study of the operationalisation of each identified success factor in finance transformation programmes and analysis of the relevant risk factors mitigating the success of a finance transformation;
- repeated study of the same parameters, while tracking developments and the success of change management activities;
- a similar study set in a different geographic location to compare and contrast the success rate of finance transformations by project stage and framework acceptance.

Based on the results of the four structured interviews (see Appendix C) for the quantitative survey data verification the following two aspects have been identified as important and might have an impact on future transformations:

- study on the need of corporate social responsibility. Tsoutsoura (2004) researched on the relation between corporate social responsibility and financial performance; the question here is, how to integrate corporate social responsibility into the future finance organisation. CFOs are responsible for sustainable corporate governance;
- study on master data management in terms of the strategy towards one data handling in enterprises. Governance surrounding master data management is critical to success and must be established at the beginning of the transformation.

The researcher recommends that future research should focus on the qualities of finance transformation management that are important to the alignment with the framework, such as investigating how the framework can add value to the organisation. As the finance transformation field is rapidly developing in terms of technology, process efficiency, and data handling, researchers should also continue to seek and introduce new relevant elements and contexts to the existing framework. Further research is recommended to measure and, where possible, quantify the value associated with all aspects of finance transformation and the potential benefits, challenges, and limitations, so that the shortcomings can be more easily surmounted. Ownership and accountability need to be well-defined and extended to all levels

for the stable future finance organisation. The finance strategic intent is to improve business insight, efficiency, compliance, control and to find the right balance between these objectives.

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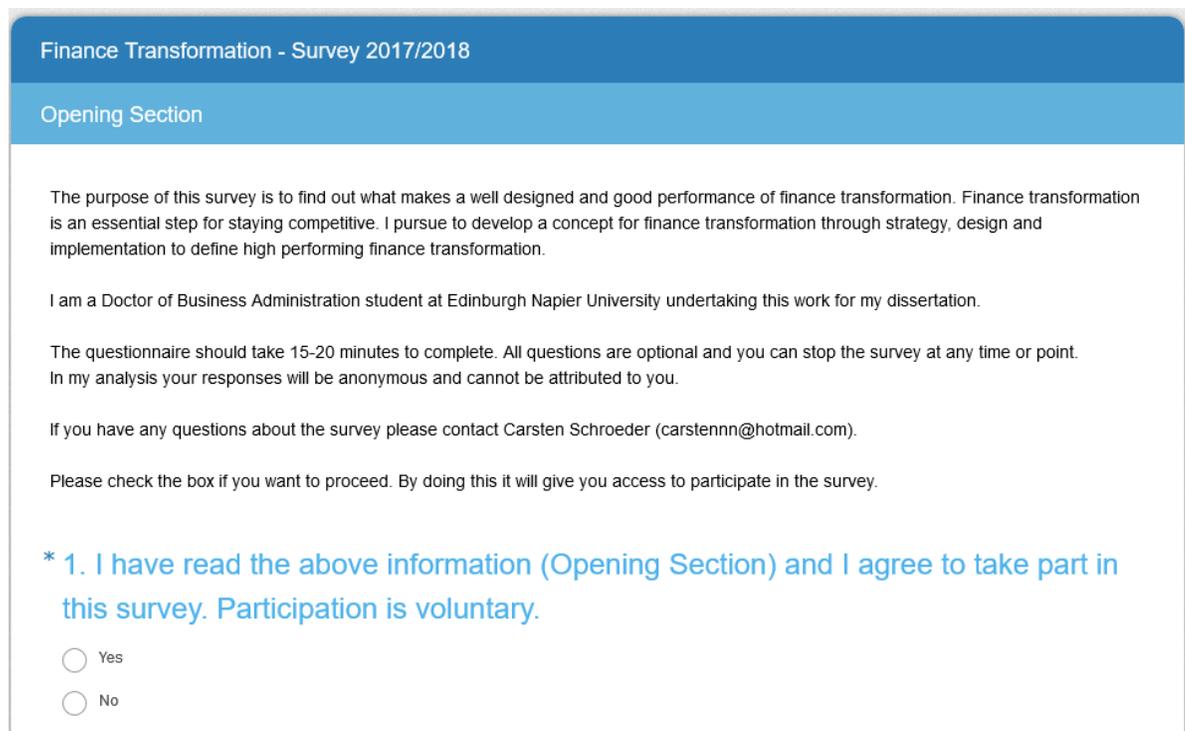
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# Appendix

## Appendix A Consent

The questionnaire contains 39 questions in total. The following consent text has been provided for each potential participant:

The purpose of this survey is to find out what makes a well-designed and good performance of finance transformation. Finance transformation is an essential step for staying competitive. I pursue to develop a concept for finance transformation through strategy, design and implementation to define high performing finance transformation. I am a Doctor of Business Administration student at Edinburgh Napier University undertaking this work for my dissertation. The questionnaire should take 15-20 minutes to complete. All questions are optional and you can stop the survey at any time or point. In my analysis your responses will be anonymous and cannot be attributed to you. If you have any questions about the survey, please contact Carsten Schroeder (Email). Please check the box if you want to proceed. By doing this it will give you access to participate in the survey.



Finance Transformation - Survey 2017/2018

Opening Section

The purpose of this survey is to find out what makes a well designed and good performance of finance transformation. Finance transformation is an essential step for staying competitive. I pursue to develop a concept for finance transformation through strategy, design and implementation to define high performing finance transformation.

I am a Doctor of Business Administration student at Edinburgh Napier University undertaking this work for my dissertation.

The questionnaire should take 15-20 minutes to complete. All questions are optional and you can stop the survey at any time or point. In my analysis your responses will be anonymous and cannot be attributed to you.

If you have any questions about the survey please contact Carsten Schroeder (carstennn@hotmail.com).

Please check the box if you want to proceed. By doing this it will give you access to participate in the survey.

\* 1. I have read the above information (Opening Section) and I agree to take part in this survey. Participation is voluntary.

Yes

No

Figure Appendix: Form of consent.

## Appendix B Questionnaire

### Finance Transformation - Survey 2017/2018

Q1. I have read the above information (Opening Section) and I agree to take part in this survey. Participation is voluntary.

Yes

No

Q2. In which sector are you working in your current position? Please select.

Automotive

Banking

Energy and Utilities

Healthcare

Insurance

Telecommunication

Other sector

Q3. How many years of professional experience do you have? Please select the appropriate range.

< 1

1 - 4

5 - 10

> 10

Q4. Does your organisation have international business units, business partners? Please select.

Yes

No

Q5. How many employees are working within your organisation? Please select the appropriate range.

1-250

251-1000

1001-5000

5001-10000

> 10000

Q6. As Financial Management activities become digitised, current financial platforms need to be adapted. Do you agree or disagree? For the following statement please give your level of agreement. 1=fully disagree to 5=fully agree.

1

2

3

4

5

Q7. Have you ever been involved in a finance transformation process? Please select.

Yes

No (conditional flow – no Q8)

Q8. What was your role? Please select.

Initiator

Consultant / Subject Matter Expert

Designer

Executer

Other

Q9. According to your view, how important are the financial roles in your enterprise? Please distribute the points where the highest number is a very important role.

Steward and Controller

Business Partner

Trusted Reporter

Technical Expert

Q10. What do you expect from a new system after a successful finance transformation? Please score all possible answers in terms of agreement. 1=fully disagree to 5=fully agree.

reduced costs

better management information

improved customer satisfaction

better addressing of corporate social responsibility

enter new markets

more innovation

more efficient handling of finance activities

improved control of Finance

chaos or very disruptive new system

Q11. How would you rate the level of success of the finance transformation performed? 1=underperformed to 3=as expected on target to 5=exceeded expectations.

1

2

3

4

5

Q12. To what extent was the finance transformation finished on time? 1=behind schedule to 5=ahead of time.

1

2

3

4

5

Q13. Were resources and budget for the finance transformation appropriately planned? Please rate. 1=exceeding budget to 5=below budget.

- 1
- 2
- 3
- 4
- 5

Q14. How would you rate the degree of disruption after the financial transformation in terms of malfunctioning systems? Please select.

- no system disruptions detected
- shadow systems with problems
- minimal disruption
- disruption higher than expected
- If so please give example(s)

Q15. Who will mainly initiate the potential finance transformation within your organisation? Please select.

- Executive level
- Operating level
- A mix of both level
- Don't know

Q16. What should be the outcomes of a successful finance transformation? Please score all possible answers in terms of agreement/disagreement. 1=fully disagree to 5=fully agree.

- establish a centre of digital/finance transformation excellence and network
- improved governance
- facilitate business partnering
- focus on control-related information
- increased flexibility and changes of the organisation
- establishment of a continued dialogue between Business and IT
- reinforcement of high quality and cross sector standards
- increased supply of new, highly specialised skills
- improved security

Q17. For the success of a finance transformation, how important are the following attributes? Please score all possible answers. 1=not important to 5=very important.

- implement new systems with financial analysis capabilities
- allow secure payments and secure process
- reports can be created more easily
- enhanced governance
- more involvement with consultants or business partners

Q18. How important is formalised change management to achieve the goals of finance transformation? 1=not important, 5=very important.

- 1
- 2
- 3
- 4
- 5

Q19. Which challenges do you expect while transforming finance? Please score. 1=low to 5 = high.

- complex finance and operational processes
- lack of defined key performance indicators and their calculations
- complex processing of transactions
- multiple definitions for financial data/information require a high degree of harmonisation
- lack of employees with required skills
- lack of support from senior management
- lack of support from staff
- lack of support from customers
- lack of support from business partners
- change management problems
- lack of financial resources

Q20. What are the drivers for finance transformation? Please score on a scale. 1=fully disagree to 5=fully agree.

- volatility in markets and increased globalisation
- different partner/tax systems in different countries
- increasing global mobility
- technological innovations
- increasing regulations and policies
- fast IT systems to adapt business changes
- single source - link strategy to execution
- everyone else is doing it

Q21. Please rate the suitability of the following data concepts to create a target financial platform. 1=not suitable to 5=very suitable.

- standardisation - critical process of bringing data into a common format
- centralisation - one single truth in one data warehouse
- consolidation - data (finance) consolidation for subsidiaries
- simplification - logic and harmonisation of finance data calculations

Q22. Is information primarily viewed as a corporate asset or as a business unit asset? Please score. 1=if business units only share the information required to complete corporate activities to 5=if enterprise management has full and complete insight into the operations and results of business units.

- 1
- 2
- 3
- 4
- 5

Q23. To what degree is there an open information transparency across the enterprise? Please score. 1=minimum transparency to 5=complete transparency.

- 1
- 2
- 3
- 4
- 5

Q24. In your organisation how important are consistent definitions of data for each of the following areas? Please score importance. 1=not important to 5=very important.

- business terms
- master data elements
- meta data
- business rules
- transaction data elements

Q25. Rate the importance of the following operational analytical capabilities within a finance transformation process? Please score. 1=not important to 5=very important.

- electronic data capture at the source
- streamlined information delivery
- systematic data cleaning and auditing
- transparent business risks in performance reporting
- automated calculation of key financial and operational metrics

Q26. Do all business units have guidance on what information should be kept and where? Please select.

- Not at all
- Partially
- Fully
- Don't know

Q27. When is the comparison of planned versus actual data available? 1=if planned data is not available to compare with actual on a monthly basis to 5=if planned data and actuals is compared and presented in real time.

- 1
- 2
- 3
- 4
- 5

Q28. Are you using automated workflow processes for transactional activities like accounts payable, receivables, capital expenditure approval, travel and expense processing? Please select.

- Yes
- Partially
- No
- Don't know

Q29. Do you have a clear process ownership across the enterprise? Please select.

- Yes, totally
- Partially
- To small extent
- No
- Don't know

Q30. Do you have a common financial transaction platform and tools that are used across the regions, lines of business? Please select.

- Yes
- No
- Don't know

Q31. Do your planning and analysis tools allow drill down into the operational and transaction systems to provide supporting details? Please select.

- Yes, totally
- Partially
- To small extent
- No
- Don't know

Q32. What is the appropriate investment of building and implementing a system? Please select.

- Own design
- Buy off the shelf
- Use consultants
- Don't know

Q33. Does your enterprise utilise automated tools to extract, transform, load and perform data cleaning and validation before data is loaded into the financial reporting systems? Please select.

Yes

Partially

No

Don't know

Q34. Is the Finance Department within your enterprise responsible for the following areas? Please select the appropriate topics.

internal control

regular compliance

enterprise risk management

Q35. Has your enterprise expressed the intention to perform or redesign a finance transformation? Please select.

Yes

Partially

No

Don't know

Q36. Does your enterprise have a program to identify, recruit and train specialised financial staff? Please select.

Yes

Partially

No

Don't know

Q37. Do you have any concern regarding the finance transformation operating model/process? Please select.

Yes

No

Q38. What are the activities which have an impact on the organisation's performance? Please score impact. 1=no impact to 5=significant impact.

real-time updates to financial metrics

centralisation of data in a repository for financial information

enabling users to create, access and share own reports and charts

making use of the embedded predictive analytics

creation of efficient, automated processes

implementation of a streamlined, data driven and regulated environment

security and governance

Q39. Do you have any comments or suggestions on topics or further questions which should be considered in this survey?

Text field

## Appendix C Verification of the Survey Data – Structured Interviews

The appendix includes the structured interview guide to provide a better understanding of the data from the interviews. Interviewees were asked to comment on each statement, based on their personal experience. In addition, the researcher engaged the interviewees in a broader discussion of the presented findings and the value of finance transformation.

Each interview was recorded, and the level of agreement with each statement has been stored in a short summary table. Each comment was ranked as either strongly agree (SA), agree (A), disagree (D), or strongly disagree (SD). It is also possible to indicate no direct comment to a statement (N).

Table Appendix C: Verification of the Survey Data – Structured Interviews – Outcome

<i>RQ</i>	<i>Aspect</i>	<i>Analysis &amp; Findings</i>	<i>No. I</i>	<i>SA</i>	<i>A</i>	<i>D</i>	<i>SD</i>	<i>N</i>	<i>Consolidated Interviewee Comments</i>
1	Need for adaption of existing financial platforms	The result of the t-test shows that the evaluation (mean score = 4.6, scale 1 to 5) was higher than the neutral evaluation	1	X					
			2	X					
			3	X					
			4	X					
1	Importance of financial roles in Finance	All roles are necessary. Highest mean rank: Technical Expert 1. Technical Expert 2. Steward and Controller 3. Trusted Reporter 4. Business Partner	1	X					I-1: Combination of skills required: Technical Expert, Business Partner necessary. If you want to join database a and b you need to have first the business requirements associated with and afterwards the technical solutioning.
			2	X					
			3		X				
			4	X					I-4: The combination of business and IT people are important in Finance. So technical expert is necessary and business partnering is the goal.
1		Significant: Better management information and	1	X					

<i>RQ</i>	<i>Aspect</i>	<i>Analysis &amp; Findings</i>	<i>No. I</i>	<i>SA</i>	<i>A</i>	<i>D</i>	<i>SD</i>	<i>N</i>	<i>Consolidated Interviewee Comments</i>
	Expectations from a new system  (after a successful Finance Transformation)	More efficient handling of finance activities.  Not significant: better address of corporate social responsibility having chaos or very disruptive new system	2		X				I-2: CSR is very important in Europe, getting into main focus due to reporting requirements
			3	X					
			4	X					
1	Outcomes of a Finance Transformation	Highest ranked mean of all attributes: improved governance establish a centre of digital / finance transformation excellence and network	1	X					
			2	X					
			3	X					
			4	X					
1	Success factors for Finance Transformation	Ranking: Implement new systems with financial analysis capabilities Reports can be created more easily Enhanced governance Allow secure payments and secure process More involvement with consultants or business partners	1		X				I-1: Outcome should be enhanced governance, but success factor is only third rank Reports can be created more easily -> all are governance topics
			2			X			I-2: All agree but disagree to more involvement with consultants or business partners because in general not a fan of
			3		X				I-3: Yes. I would add business case is the entry success factor to get the acceptance by all stakeholders.
			4	X					
1	Change Management	90 % of the respondents think that change management activities are important to achieve the goals of Finance Transformation	1	X					I-1: First Business Requirement Analysis, then specific risk analysis, then database a und b consolidation Confidentiality and Authentification Concept: Change, in waves or pilot first
			2	X					
			3	X					
			4	X					
1	Drivers for Finance Transformation	Significant: technological innovations increasing regulations and policies	1	X					I-1: volatility in markets and increased globalisation Conclusion

<i>RQ</i>	<i>Aspect</i>	<i>Analysis &amp; Findings</i>	<i>No. I</i>	<i>SA</i>	<i>A</i>	<i>D</i>	<i>SD</i>	<i>N</i>	<i>Consolidated Interviewee Comments</i>
		volatility in markets and increased globalisation fast IT systems to adapt business changes increasing global mobility single source - link strategy to execution different partner/tax systems in different countries  Not significant: because "everyone else is doing it"							Driver are the technological innovations, benefits clearly identifiable.
			2	X					
			3	X					
			4	X					
1	Operational analytical capabilities	Ranking: Electronic data capture at the source; Streamlined information delivery; Systematic data cleaning and auditing; Transparent business risks in performance reporting; Automated calculation of key financial and operational metrics.	1	X					
			2	X					
			3	X					
			4	X					
1	Impact on the performance of the organisation	Creation of efficient, automated processes  others: real-time updates to financial metrics centralisation of data in a repository for financial information enabling users to create, access and share own reports and charts implementation of a streamlined, data driven and regulated environment security and governance making use of the embedded predictive analytics	1		X				I-1: Biggest lever: real-time updates to financial metrics based on governance improvement.  Systematic data cleaning DSGVO Storage periods of information clean up, design concepts.  Predictive buying behaviour, but the data is not usable (deletion concept).
			2	X					
			3	X					
			4	X					
2	Suitability of data concepts	Ranking: Standardisation Simplification Centralisation Consolidation	1	X					I-1: All together a must standardize, Hadoop, set barriers and then simplification is ensured First 3, central requirement But 4 Consolidation, decentralised e.g. Customer surveys

<i>RQ</i>	<i>Aspect</i>	<i>Analysis &amp; Findings</i>	<i>No. I</i>	<i>SA</i>	<i>A</i>	<i>D</i>	<i>SD</i>	<i>N</i>	<i>Consolidated Interviewee Comments</i>
			2	X					I-2: Migration completeness
			3	X					
			4	X					
2	Consistent definitions of data	Data categories such as business terms business rules transaction data elements  master data elements meta data All means are higher than the neutral evaluation. However, the standard deviation error bars are overlapping, meaning the difference may be significant.	1			X			I-1: Standardisation: Main drivers are master data elements and meta data (constraints) -> disagree  Resist to the preliminary question. Answers are probably due to business people, not technical experts.
			2			X			I-2: Master elements most important, MDM!
			3		X				
			4	X					
2	Information Storage	Do all business units have guidance on what information should be kept and where? Fully guidance on information storage have less than one third of the respondents (31.4 percent).	1	X					
			2		X				
			3		X				
			4	X					
2	Process Ownership	Totally process ownership exist only in 26.1 percent of the cases.	1	X					
			2	X					
			3	X					
			4	X					I-4: End-to-end accountability needs to be clear. Not everybody in the process has the same understanding. Silo thinking for each phase often
2	Common financial transaction platform	Common financial transaction platform and tools that are used across the regions,	1	X					I-1: Group consolidation (internal and external)

<i>RQ</i>	<i>Aspect</i>	<i>Analysis &amp; Findings</i>	<i>No. I</i>	<i>SA</i>	<i>A</i>	<i>D</i>	<i>SD</i>	<i>N</i>	<i>Consolidated Interviewee Comments</i>
		lines of business. 55 percent of the respondent have a common financial transaction platform.	2			X			I-2: Not important to have just one common. All big companies have multiple system platforms
			3		X				I-3: Global standards are leading, local transaction standards should be limited to a minimum
			4	X					
2	Loading of Data	Utilise automated tools to extract, transform, load and perform data cleaning and validation before data is loaded into the financial reporting systems.  Answers with “Yes” are only 15.4 percent of all respondents.	1	X					I-1: Otherwise no standardisation possible Layer between standardisation and simplification
			2	X					
			3		X				
			4	X					
3	Degree of disruption (after the financial transformation in terms of malfunctioning systems)	Degree of disruption is for only 7.3 percent a clear or no system disruption  Shadow systems or disruption higher than expected have reached 34.6 percent together.	1		X				I-1: agree, but decentralisation imperatives: Strategies and processes Hire good people Let her do her work.  Never change a running system... Automation potential: decision, emotional attitude. Certain disruption always persists.
			2	X					
			3	X					
			4	X					
3	Challenges	complex finance and operational processes multiple definitions for financial data require high degree of harmonisation Change Management problems	1	X					
			2	X					
			3	X					

<i>RQ</i>	<i>Aspect</i>	<i>Analysis &amp; Findings</i>	<i>No. I</i>	<i>SA</i>	<i>A</i>	<i>D</i>	<i>SD</i>	<i>N</i>	<i>Consolidated Interviewee Comments</i>
			4	X					
3	Data availability	Real-time data availability only for 6.1 percent applicable.	1	X					I-1: Real time values are partly there Only monthly values (part of the definition)  Sales figures start on the 15th of the month.
			2					X	I-2: depending on the demand, better to separate into different scenarios. A) external data -> no B) internal data -> yes
			3	X					
			4	X					
3	Workflow Management	Totally, Workflow Management configured for 34.1 percent.	1	X					
			2			X			I-2: not for all processes
			3		X				
			4	X					
3	Drill down functionality into the data	Allow drill down into the operational and transaction systems  Only 10.3 percent indicated the use and the tool functionality.	1		X				I-1: But only in combination with Governance model
			2	X					
			3		X				
			4	X					
4	Investment	Appropriate investment of building and implementing a system  Less than 10 percent have decided to create their own design.	1	X					I-1: Business case: Standard software or own design
			2	X					
			3	X					
			4	X					

<i>RQ</i>	<i>Aspect</i>	<i>Analysis &amp; Findings</i>	<i>No. I</i>	<i>SA</i>	<i>A</i>	<i>D</i>	<i>SD</i>	<i>N</i>	<i>Consolidated Interviewee Comments</i>
5	Initiation	Top Down approach – 63% have highlighted the executive approach	1	X					
			2			X			I-2: a mix of both important
			3		X				I-3: first top down. For iterations, when changes needed during implementation, better bottom up.
			4	X					
5	Success, Time and Budget	finished on time resources and budget appropriately planned 16.7 percent have highlighted being exceeded by the resource plan.	1	X					I-1: Moving targets Agile method Budget is mostly held. Switzerland in Europe or not? CH is added, then new planning.
			2	X					
			3	X					
			4	X					
5	Information view	Business units only share the information required to complete corporate activities	1	X					I-1: Technical or only technical point of view
			2		X				I-2: better depending on level of hierarchy, vertical integration
		enterprise management has full and complete insight into the operations and results of business units.	3	X					
		Only 20 percent of the respondents indicates that the enterprise management has full and complete insight.	4		X				
5	Information Transparency	Degree of an open information transparency across the enterprise	1	X					
			2	X					
		The mean of 2.94 indicates that less than the neutral evaluation has transparency across the enterprise.	3	X					
			4		X				

<i>RQ</i>	<i>Aspect</i>	<i>Analysis &amp; Findings</i>	<i>No. I</i>	<i>SA</i>	<i>A</i>	<i>D</i>	<i>SD</i>	<i>N</i>	<i>Consolidated Interviewee Comments</i>
5	Responsibility	Only 31.7 percent are responsible for internal control, regular compliance and enterprise risk management.	1	X					I-1: First line: Department Protection requirement analysis (individual processing by the business). Second line: Regular compliance. Must one sit in the business Third line: Internal revision of defence (audit and internal control) over IT All three functions must be in the department -> MaRisk
			2		X				
			3	X					
			4	X					
5	People & Talent program	36.7 percent of the respondents with involvement in a Finance Transformation have such a program.	1	X					
			2		X				
			3	X					
			4	X					I-4: Talents are needed, so this is really important to have a clear vision how people can reach the next level. Transparency also needed to see promotion examples

## Appendix D      Verification of the Framework – Semi-Structured Interviews

Below are the interviewees, the interview guide and an extract of the interview with a CFO. The interview was conducted in English. Hence, not all statements or sentences may be complete or grammatically correct, as they have been written down the way the informant has answered it during the interview.

Table Appendix D-I: List of the semi-structured interviews.

<i>No</i>	<i>Role / Title</i>	<i>Organisation / View</i>
1	COO	Organisational
2	CFO	Organisational
3	CRO	Organisational
4	Controller	Provider
5	Risk & Compliance	Provider
6	IT & HR Operations	Provider
7	Head of IT	Technical
8	IT SME (Consultant)	Technical
9	IT SME (Industry perspective)	Technical
10	Data Scientist	Technical

Table Appendix D-II: Semi-structured interview guide (qualitative section)

<i>RQ</i>	<i>IQ-No</i>	<i>Purpose</i>	<i>Interview Question</i>	<i>Comment</i>
RQ1	1	Introduction	What do I call finance transformation? Researcher gives information. My experience is, that based on the constantly changing conditions in the corporate environment, the function finance has to adapt continuously. What is your experience with that?	(1) = fully disagree to (5) = fully agree
RQ1	2	Introduction	As Financial Management activities become digitised, current financial platforms need to be adapted. Do you agree or disagree? Please give your level of agreement.	(1) = fully disagree to (5) = fully agree
RQ5	3	Introduction	What experiences have you made with a transformation journey?	Please specify
RQ1	4	Framework Approach	Have you thought about a target architecture?	Yes or No

<i>RQ</i>	<i>IQ-No</i>	<i>Purpose</i>	<i>Interview Question</i>	<i>Comment</i>
RQ4	5	Framework Approach	According to your view, is the transformation framework approach suitable for you in terms of the planning, designing and execution?	Yes or No and please explain
RQ1	6	Framework Approach	What is the degree of value for the (target) architecture for finance transformation in practice?	(1) = no value to (5) = most value
RQ1	7	Framework Approach	What is the necessity of using that framework?	Please specify
RQ4	8	Guiding Principles   Stage I (Structure) Figure 6-2	Is it essential to have a top down approach for this scenario and how is it eventually captured in reality?	Yes or No and please explain
RQ1	9	Guiding Principles   Stage I (Structure) Figure 6-2	If you need to introduce the target architecture, what additions (elements/factors) would you include?	Yes or No and please explain
RQ1	10	Guiding Principles   Stage II (Scope) Figure 6-3	What are the three most important building blocks for you (deal breaker) from this FT Framework? Is anything missing?	Please specify
RQ3	11	Guiding Principles   Stage II (Scope) Figure 6-3	Where do most resources need to be?	Please specify
RQ4	12	Guiding Principles   Stage III (Time) Figure 6-3	Do you see any problems with the stages stage I = vision phase, stage II = design phase, stage III = implementation phase? If Yes, please explain why.	Yes or No and please explain
No RQ	13	Closing	Would you like to add anything?	Please specify

**Example of interview record:**

Interviewer: I would like to introduce you to my research project. The research topic is finance transformation. First, I will give you some information about the research project and will raise 13 questions. [...] My experience is, that based on the constantly changing conditions in the corporate environment, the function finance has to adapt continuously. What is your experience with that? Please answer with (1) fully disagree to (5) fully agree.

Informant: (5) fully agree.

Interviewer: As Financial Management activities become digitised, current financial platforms need to be adapted. Do you agree or disagree? (1) fully disagree to (5) fully agree.

Informant: (5) fully agree.

I have strong experiences from finance transformation journeys from a reviewer perspective, as an auditor. Specifically, to mention one example, there was a change in the ERP system and the restructuring of the accounting processes including accounts receivable, accounts payable and inventory valuation and depreciation, fixed assets and the financial statement closing process of a large German capital company with 600 million euros turnover, which operates globally, which has the production here in Germany and nationwide on all five continents, sales companies as well. In addition, a production site in North America and a production site in Mexico. The company itself is a global player in mechanical engineering and industrial gas sector, which has to overcome the classic challenges of that sector. This means, continuous innovation, continuous competition from the Chinese market, there are manufacturers, which, so to speak, are pushing the sales markets, there is huge price pressure with equivalent manufacturers from Asia.

To counteract the cost side, the company has decided to change the internal corporate processes in terms of system accompanying, so there was an introduction of a new ERP system, but it was a self-production, not a commonly known or one of the major ERP systems and services, it was Baan LN. To reduce the overhead cost in Germany, a shared service centre with attendant set up was implemented. This shared service centre was in Poland and was operated in such a way that they make customer accounts receivable and liability bookings and of course capture and handle the incoming invoices.

I have accompanied this process from the perspective of the auditor, which was now two years ago, i.e. before my current role as CFO. At that time, of course, I focused on the process structure specifically because it is an exam requirement according to the list of IDW audit standards. You have to go through the exam and if you work on an audit approach, you have to deal with the processes and the structure, i.e. the process-oriented structure of the company

and if something changes, then you have to also describe the audit approach and modify and that was done.

The findings were of course from our side. It was not possible to perform any functional controls in the first year in any way, because the society in the conversion had considerable difficulties. If you had done that after your Finance Transformation Framework, the pie chart on page 3, then those big problems in the building block, scoping and timing, probably would not have existed.

One can say that they have not considered any structure before how they wanted to tackle the changes. It was just like a big bang decision of the management. Planning has not been capitalised here, the idea was to create a direct route and adjust things there when they were noticed. Experiences that I have made of this: structure is absolutely essential. In the finance transformation area this means planning and design is essential.

Interviewer: Have you thought about a target architecture?

Informant: Yes, that is what the company did, but at that time I heard it all from the point of view of the reviewer. I received answers out of the questions I have raised. This company had come up with a structure (framework) for the new ERP system before, but it was far too rudimentary.

They decided to establish service centres and to implement a new IT system at the same time and then they wanted to have a lot of controls and then they wanted to have everything a little bit leaner and then they just started working. Lots of explosions but no cross-departmental alignment. It was a chaotic state, only meetings at the end.

So it was a concert of wishes, the motto was life flows with a monthly budget and now go ahead and here is the high-level agenda or what comes next you might see. The goal was that there should be purified processes in the finance department in Germany itself, it also had to fall back on restructuring measures. Reducing personnel costs was a top priority. It was tough. yes, exactly and then you just started and had, while you started to implement it all and to tinker and test. When problems raised during the implementation, no overall solution was in

place. It was a stringed problem solve rhythm without checking the needs and requirements. No structure far and wide.

Interviewer: According to your view, is the transformation framework approach suitable for you in terms of the planning, designing and execution?

Informant: Yes, of course. I have just given in the example some insights of our way of working and the perspective of the company presented. With a framework you have the possibility to define the program structure more clearly from the beginning, you can really specify it.

Interviewer: What is the degree of value for the (target) architecture for finance transformation in practice? (1) no value to (5) most valuable

Informant: Yes, (5) most valuable. I would like to bring now the following example and that is the large SAP conversion at my former employer, the audit company. We also changed the ERP system there. There were two systems running in parallel, one that was billing separately, so invoicing client acceptance, bidding, planning, billing contracting, overhead, and all you have to do with earning money, on the one hand and on the other side was the exam tool. There was the implementation of the actual work in the test program, which was split in two and only then my former employer was thinking about making the complete conversion to SAP and so make the fully integrated system solution.

The biggest problem that was done there, and the biggest mistake and it was in the end common sense throughout the company: they wanted to make a global rollout. It has been considered, how to structure it all and what to do there exactly. The design and its development should be covered over three years from the largest areas. There were people from Asia, EMEA, America, Australia who came together and designed together, but they all had only theoretical background and thus, a very sophisticated structure emerged, but without the people who are the end users to get on board, that was the biggest mistake.

There were extreme omissions in the organisation of this project and in the structural design of this IT system in terms of user-friendliness and, as a result, too few user trainings were

provided. So, we all started trying to somehow re-use this complicated tool, and all had to do learning-by-doing and it thus became a relatively inefficient process.

And ultimately, this meant that the company was unable to produce reasonable bills for more than 3 months, for example. Employees around the world have not been taught to make reasonable bills and then all our customers have been waiting for months. Customers were told that currently we cannot invoice. You might know that situation as well from a financial point of view, if you cannot bill, you have no sales. Of course, we then put in constant turnover according to the level of performance, but we did not have any cash flow and was lagged behind. Cash is King. The liquidity situation depends on the incoming payments and their issued and paid invoices.

Those were the two big mistakes. So, in summary, I would say it was first no well-planned concept, they forgot to bring the users on board and secondly, an inadequate situation or management of change. During the process already, people need to change, and people need training to learn the details of the new environment that comes to them and that's how it's done.

Only two years after the introduction of the new program, we have new experts for each office and for each site of this global organization, so they were called "program explorer or program experts" and could then be called and asked and they are, so to speak, the seeds of a four or five weeks training to solve then user problems, too.

Interviewer: What is the necessity of using that framework?

Informant: As described, the focus is on end-users to involve them in the design and training sessions just before going live, rather than just after the event.

Interviewer: Is it essential to have a top down approach for this scenario and how is it eventually captured in reality?

Informant: So, a top down decision should be available in any case. From a strategic point of view, the corporate structure should be clear, whether a shared service centre is needed, which

divisions may or must be included, how to set up, how to structure the transformation, which must be predetermined. Yes, it is very clear and that is essential. [...] decision top-down, but when one is in transition, so at the operational level should also be bottom-up. At least Mid-level Management Involvement. You cannot force all people at operational level to agree. A reasonable change management is mandatory and from top-level comes to those people who implement the change management concept.

Interviewer: If you need to introduce the target architecture, what additions (elements/factors) would you include?

Informant: In my opinion, everything is contained in the framework. What may still be added is the auditor as a support function in the organisation, in the organisational chart. It is not just about finance in the company, but an "external". For example, Tax, Audit, Financial Audit or Market Authorisation, Reporting. Or represent it as an interface.

Give me a minute, I have to look at the whole thing in detail again. I was just thinking in the direction: where is the internal control system? But maybe it would be better to represent these controls at the process level. Or where is the internal audit, where is the internal audit department within the organisation?

Interviewer: Internal Audit is a functional division. Ok then we go over to the next question.

Interviewer: What are the three most important building blocks for you (deal breaker) from this FT Framework? Is anything missing?

Informant: I cannot think of anything to add. I would not prioritise any of the building blocks either. Because I say very clearly, that depends on the individual case. Every company has its own difficulties, that sounds now very hackneyed and banal yes, but the banality is for me personally is often where the difficulties are.

Interviewer: Where do most resources need to be?

Informant: I believe money and human capital as well as time is most needed in building blocks (1), (3), (4), (8), and (10). Why? At (1) vision strategy because that costs a lot of money

altogether. There is no trainee, but COO, Head of Finance, there sits the head of IT, together with external consultants, which consumes enormous amounts of resources, it is expensive, because also the internal rates are so high. [...] Implementing (8) technology also costs a lot of money. There's a lot of manpower in it. Either cheap people do a lot or expensive people do little and in the worst case expensive people make a lot. Otherwise, the other building blocks that seem to me to be from the amount of time and from the bound personnel resources are not as intense as these. And at (10) implementation that, of course, is expensive, because there with all in the company, if you have 1000 employees, then perhaps make 10-15 of those make the vision, the planning and the strategy but in the implementation phase, then every single employee has to be trained. That costs money because you could have vacancies. You might face idle times and also production losses etc.

Everything else does not seem to cost a lot of money. If the vision and the strategy and the planning is so good that the implementation proceeds smoothly, that of course would be great. But I think based on my own experience with my old and my new employer, what is most expensive is the implementation.

Interviewer: Do you see any problems with the stages – stage I = vision phase, stage II = design phase, and stage III = implementation phase? If Yes, please explain why.

Informant: The chronological process is all right.

Interviewer: What experiences have you made with a transformation journey?

Informant: I have already described this in detail at the beginning of the conversation.

Interviewer: Yes, that's right. Fits. Let's come to the end.

Interviewer: Would you like to add anything?

Informant: No