Digital transformation of incumbents through technology

A qualitative case study on Communications service & Pension and Life Insurance industries

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ABSTRACT

Digital transformation through digital technologies has captured the fancy of majority of the industries globally. Digitally matured organisations have been doing extremely well, if stock markets were used as a measure and such digitalisation has proved to the most significant survival factor in these demanding circumstances with Covid-19.

In this study I examine how digital transformation is a multi-dimensional phenomenon where technology is only one of the four dimensions and gather empirical insights on the digital transformation framework theory through a qualitative case study on CSP and PLI industries.

My findings indicate that the perceived nature of disruption facing the industry and firms ambition levels are critical factors shaping an incumbent's digital transformation strategy. This case study also finds the theoretical elements of the digital transformation framework to be generalisable to CSP and PLI industry and to be a relevant template for managers of incumbents developing their digital transformation strategies. A crucial finding is the non-congruence between the top management and owners of incumbents with a history of being a dividend yields company and its inhibitory influence to the digital transformation ambition of the incumbents.

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This acknowledgement would be incomplete without thanking my kids aged 2 and 6. They have shown immense compassion towards me despite their father not spending sufficient time with them during the tough Covid-19 situation as I engaged with the dissertation.

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Keyur Maheshkumar Sheth

LIST OF ABBREVIATIONS

Term	Description
B2B	Business to business
B2B2B	Business to business to business
B2B2C	Business to business to consumer
B2C	Business to consumer
CDO	Chief Digitalisation Office
CEO	Chief Executive Officer
CIO	Chief Information Officer
CMO	Chief Marketing Officer
CSP	Communication Service Providers
DT	Digital Transformation
EPK	Egen Pensjonskonto, a Norwegian term describing customer's single pension account
F2F	Face to face interview technique
ICV	Internal Corporate Venture. A "start-up" founded by incumbent for executing an innovation initiative as a new business
IoT	Internet of Things
IPS	Individual Pensjon sparing, a Norwegian term for Individual pension savings scheme
IS	Information Systems
IT	Information Technology
KPI	Key performance indicator
M&A	Mergers and acquisition
NDA	Non-disclosure agreement
OKR	Objectives and key results, a goal setting methodology
PLI	Pension and Life Insurance
VTC	Video Tele Conference interview technique

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INTRODUCTION

Background context for the research

The introduction of internet and advancement in the technologies associated with it has had a profound impact on the society. These technologies have challenged and resolved the physical limitations associated with any product or services. Examples of these can be found in almost all walks of life. Traditional audio and video cassettes and discs have been completely substituted by internet based streaming services like Spotify and Netflix implying customers can consume practically infinite amount of music, film and other content from all over the world instantaneously at click of a button or swipe of finger. Traditional banks that were predominantly based on and limited by human trust and geographical closeness to its depositors and borrowers are increasingly replaced by digital banks with no physical presence. In fact, the emergence of crowd lending platforms is beginning to threaten even the new generation digital banks. Internet of things and newer farming technologies like vertical farming and aquaponics are threatening to make obsolete the age-old demand for vast amount of cultivable land, fertilizers and farming tools.

This rise in internet linked technology development has structurally altered the way goods and services are not only produced but also consumed. Interestingly enough; we see that consumers are able to adopt these technology changes relatively quickly thereby resulting in altered consumer behaviours at rates faster than the traditional norms. Increased literacy and education levels and advancement in understanding of human psychology coupled with breakthroughs in usability technology are certainly contributing to this trend. Bughin and Zeebroeck (2017) have described this situation for incumbent business as a two-loop disruption phenomenon.

Incumbent businesses thereby are overwhelmed by the need to address the production or supply side disruption through technology innovation as well as demand side disruption in consumer behaviour and consumption patterns.

I was intrigued about this challenge faced by incumbent business and undertook a literature review in my third semester of autumn 2019, to understand how they could respond to this disruption and in fact capitalise on the disruption trend to not only defend their market share but grow it further. It was during then I discovered that the incumbent businesses need to overhaul both their operations as well as business strategy to compete in the internet technology

dominated environment, a practice widely referred to in academic and more so in practitioner's domain as Digital Transformation. Digital Transformation theories are broad and address multiple disciplines, but most of them describe adoption of digital technologies as fundamental building block of digital transformation.

Research Aim

This threat described above and experienced by the incumbent businesses is a global phenomenon and is visible in Norway too. Grocery retailing companies are challenged by local internet-based retailers like Kolonial or sports retailers are challenged by online price aggregators. In addition, incumbent businesses are also challenged by foreign competitors using digital technologies e.g. Fashion and clothing retailers are one of the most disrupted by foreign ecommerce players, banks are competing with digital banks like Revolut and internet giants like Facebook, Apple and google, local TV content producers, distributors and aggregators are competing with global technology driven players like Netflix.

Motivated with my academic learnings about digital transformation through the literature review I had undertaken, I was curious about how incumbent businesses in Norway are responding to these threats and opportunities through digital transformation.

As mentioned before, extant academic literature on digital transformation (Tekic & Koroteev, 2019; Venkatraman, 2017; Vial, 2019) emphasizes on the use of digital technologies as a central element of an incumbent's defence strategy. I therefore address the following specific research question in this thesis:

Research Question RQ1: How can incumbent businesses exploit the potential of digital technologies for digital transformation?

Positioning of this research

Digital transformation is the holy grail for industries across the board in the twenty-first century. A google trend analysis shows the steady rise in popularity of the term from close to 0% interest until medio-2013 to 100% by Dec 2019.

Initially, the academic research focused on the use of technologies and IS capabilities as a source of competitive advantages in specific areas until the late 2000s. At the onset of this

decade, researchers started prescribing integrating IS and organisational strategies for transformation for a comprehensive digital business strategies (Bharadwaj, El Sawy, Pavlou, & Venkatraman, 2013; Matt, Hess, & Benlian, 2015). Subsequent research has then focused until very recently on defining the term digital transformation (Matt et al., 2015; Osmundsen, Iden, & Bygstad, 2018; Vial, 2019) and the digital transformation scope, models and strategies (Bharadwaj et al., 2013; Bonanomi, 2019; Cozzolino, Verona, & Rothaermel, 2018; Matt et al., 2015; Skog, Wimelius, & Sandberg, 2018; Tekic & Koroteev, 2019; Venkatraman, 2017; Verhoef, Broekhuizen, Bart, Bhattacharya, Qi Dong, Fabian et al., 2019; Vial, 2019).

Extant academic literature has identified the need to use technology, more specifically digital technologies in a strategic manner (Bharadwaj et al., 2013) to describing digital technology as a fundamental block of digital transformation (Cozzolino et al., 2018; Venkatraman, 2017; Vial, 2019). Tekic and Koroteev (2019) and Venkatraman (2017) have proposed digital transformation matrix and transformation strategy topologies based on organisation's digital technology maturity.

Researchers have also argued that digital transformation is an organisation wide multi-disciplinary agenda including digital technology adoption (Bonanomi, 2019). Matt et al. (2015) have developed a digital transformation framework theory where they propose that incumbent businesses irrespective of the industry they operate in; need to balance its structural changes, changes in value creation, and financial aspects along with use of digital technologies to achieve an effective digital transformation. Matt et al. (2015: 342) prescribes further research to determine elements and success patterns of digital transformation strategies on two aspects:

i. Identify and concretise different attributes within the above four domains that the incumbent businesses could adopt, and
ii. Empirical insights for enabling comparison of commonalities and differences in digital transformation strategies across industries.

Verhoef et al. (2019) through a systematic multi-disciplinary literature review, have identified different strategic imperatives that organisations should address for digital transformation through digital technologies, and call for further research to provide empirical insights into each of the strategic imperative domains. I observe these strategic imperatives addressing the first point of call for further research by Matt et al. (2015) notes above, i.e. identification and concretisation of different attributes of the four domains of digital transformation framework.

I position this research for contributing to the empirical insights for the digital transformation framework and strategic imperatives for digital transformation as called for by Matt et al. (2015) and Verhoef et al. (2019) respectively.

Who is this thesis addressed to?

I want to address this research to two audiences:

- the academicians interested in the field of digital transformation in general and digital transformation framework and strategies in particular with empirical insights from incumbents, and
- the practitioners who are either engaged in digital transformation or aspire to undertake one; by contributing to the managerially relevant knowledge base

Thesis structure

The thesis is structured pedagogically to answer the chosen research question. This chapter has introduced the overall research problem and the motivation behind the choice of the research question.

This thesis begins with an introduction to the topic and clarifies the research question that will be addressed and explains the positioning of this research into the bigger picture.

Next, the Theoretical framework chapter describes the existing theoretical concepts for answering the research question. The chapter begins with anchoring of the definitions of key terms and phenomenon. Then it introduces the theories of digital transformation framework and the related strategic imperatives for digital transformation model and digital transformation strategy topologies. This theoretical framework acts as a foundation for further work on this research.

Research design and methodology chapter describes the methodology and the techniques adopted to conduct the research using the honeycomb model of research methodology. It also describes the options available, choices made and the justification for them with the aim of not improving the general readability but also improving the reliability and validity of the research.

Findings and discussions chapter describes the key findings from the qualitative case study, and discusses the analysis of this findings with regards to the theoretical dimensions and research sub questions identified in the theoretical framework.

And lastly, Concluding Remarks chapter provides summary and closing comments on this qualitative case study research through the application of existing theory and findings. It also lists out the limitations of this case study and recommendations for further research.

THEORETICAL FRAMEWORK

This chapter describes the existing theoretical concepts for answering the research question and functions as a foundation for further work on this research. The chapter begins with anchoring of the key definitions of incumbent business, digital disruption and disruptive innovation phenomenon and the concepts of digital business strategy and digital transformation strategy.

Further the theory established the central role digital technologies plays as a catalyst of action and response in the digital transformation phenomenon through the inductive framework of digital transformation. Subsequently, the multi-dimensional nature of the digital transformation phenomenon is in introduced through the digital transformation framework and strategic imperatives for digital transformation model. To conclude a digital transformation strategy topology is described based on an incumbent's maturity with digital technologies.

Incumbent businesses

Cambridge online dictionary defines incumbents as a person or business that holds a particular position in a company, market or industry etc. at the present time. Some researchers like Santarelli and Tran (2012) classify business organisations into incumbents or new entrants based on the age of their existence. Christensen (1997) takes a broader view and defines incumbents as businesses with large sunk costs in and capabilities and competences tied to, the existing industry technologies, structures and business models. Incumbent businesses have mastered the dominant design of the products or services that the industry offers, the associated business models and the complementary capabilities (Suárez & Utterback, 1995) and thereby creating entry barriers (Porter, 1979) for new entrants into the industry and markets.

Often people associate the term incumbents with age-old or ex-monopoly businesses. Examples include likes of General electric, Siemens in industrial appliances, General Motors, Volkswagen in automotive industry, British Telecommunication, Telenor, AT&T in their home markets in Communication Service Provider industry or financial businesses like DNB, Storebrand, Fidelity and Barclays. From the context of this research, the term incumbent also includes newer industry entrants or challengers, but who essentially capitalize on the existing dominant design of the industry's products or services, business models and complementary capabilities. Examples include ICE in CSP industry, Feel24 in fitness industry in insurance industry and Bank Norwegian in financial services.

Some of the new age digital businesses like Google in search, Facebook in social media and Finn in classifieds are also treated as incumbents by definition proposed by Christensen (1997) as they have mastered their respective once niche offerings, established business models and effective complementary and competitive advantage building assets. As this dissertation focuses on how digital transformation process can be undertaken, I exclude such "native digital incumbents" from the classification of incumbents, for the context of this research.

Digital disruption v/s disruptive innovation

Disruption in a business context is defined as the action of completely changing the traditional way that an industry or market operates by using new methods or technology (Cambridge online dictionary). Disruption in business is not a novel or recent phenomenon but researchers in the business innovation and strategic management domains have over the last half a century have identified, analysed and classified different types of disruptions. As the thesis focuses on how incumbents tackle disruptions through technology, we anchor the definition of the two types of disruptions that are relevant.

Disruptive Innovation

Extant literature on disruptive innovation theories describe disruptive innovation as a process by which new entrants often with limited resources enter and compete in established markets and industries by targeting underserved customers of incumbent businesses with inferior and sub performing products and services compared to the industry standards, but at a significantly lower price points and then gradually move up the perceived value curve to disrupt the incumbents by targeting their core customers (Christensen & Raynor, 2013; Christensen, Raynor, & McDonald, 2015; Christensen, 2006; Skog et al., 2018).

The core characteristics of a disruptive innovation is the non-linear innovation on the business model canvas (Skog et al., 2018) and the disruptive innovation theory is applicable irrespective of such innovations have elements of technology innovation or not.

Digital Disruption

The third industrial evolution introduced advancing in automation and digitalization associated with mass computerization of practically all spheres of life. The world at present is widely believed to be experiencing the start of the fourth industrial revolution primarily based on digital solutions capable of bringing deep transformation of global economy (Białoń & Werner, 2018).

Skog et al. (2018) summarized academic research to describe digital disruption as a rapidly unfolding creative destruction process induced by digital innovation of recombining resources that leads to erosion of boundaries and approaches that previously served as foundations for organizing the production and capture of value shaking the core of every industry.

This definition is broad and encompasses both threats and opportunities created by digital innovation as opposed to very technology based threat focus that extant research IS has had(Skog et al., 2018) .

Klaus Schwab in World Economic Forum (2016) describes that this phase of revolution cycle is characterised by innovative application of information technology and the innovation speed itself and has major effects on businesses on four dimensions - customer expectations, product enhancement, collaborative innovation, and organizational forms. The velocity of innovation is incomprehensible for even the most established businesses as new technologies enable delivering on customer needs in completely new ways by newer innovative competitors, thereby disrupting existing industry value chains. The change in customer behaviour and consumption method enabled by technology are also disrupting the demand side for products and services by established business (Vial, 2019). Examples include reduction in market size of hotel rooms due to disruption by AirBnB or demand for gymnasiums due to home studio solutions like Peloton. This contraction in market leads to high rivalry among established competitors for market share (Porter, 1979). The supply side and demand side challenges simultaneously faced by incumbent businesses are consistent with two-loop disruption phenomenon (Bughin & Zeebroeck, 2017) observed in a digital disruption.

To summarize, disruption innovation is business model led and maybe complimented by technology innovation while digital disruption is characterised by innovative application of digital technology and maybe complimented by some business model innovation.

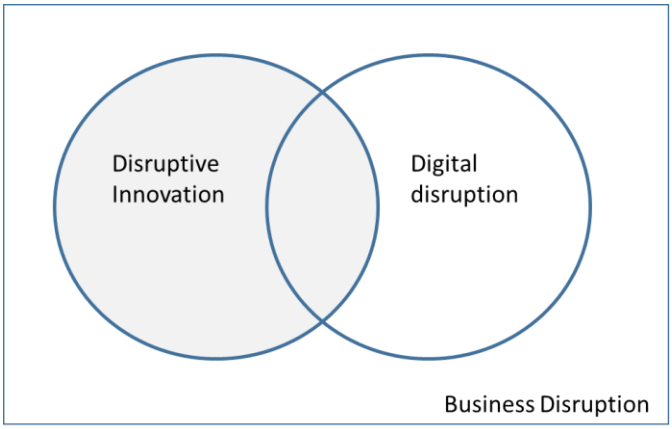

Fig. 1 - Scope classification of the types of disruption

Digital Business Strategy and Digital Transformation Strategy

Incumbents need to remain competitive in the above described disruption phenomenon to be able to defend against the threats and capitalise on the accompanying opportunities. Vial (2019) observes that the disruptions fuelled by the application of digital technologies triggers incumbents, industry and society in general to develop strategic responses in the form of digital business and digital transformation strategies.

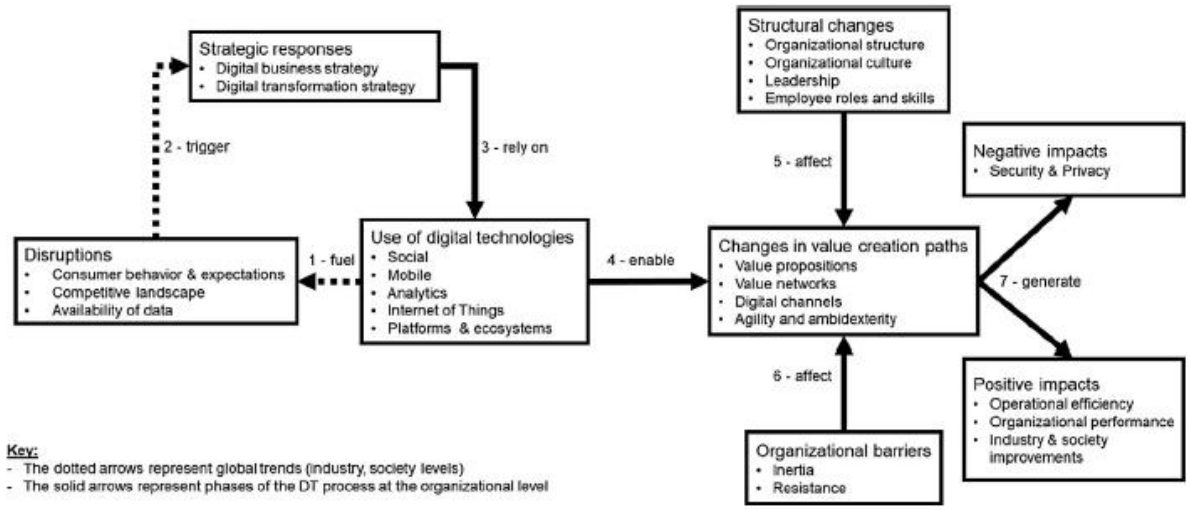

Fig. 2 - Inductive framework for digital transformation by Vial (2019)

The concept of digital business strategy is relatively well established and has been proposed by researchers for some time. Bharadwaj et al. (2013) proposed that organisations perceive IS, the source of digital technology competence as a strategic capability and finely integrate with the business strategy to produce a holistic digital business strategy. They defined digital business strategy as an organisational strategy describing the business' future opportunities and strategies based on applications of digital technologies.

The term digital transformation is often variedly used in various research literature to convey the process of transformation of the business model or operations to digital or everything under the gambit to deliver on the digital business strategy (Bharadwaj et al., 2013; Bonanomi, 2019; Matt et al., 2015; Tekic & Koroteev, 2019; Verhoef et al., 2019; Vial, 2019). Some researchers have also described digital transformation as a consequential state of an organisation or an industry as a result of the sustained digitalisation and digital innovation (Osmundsen et al., 2018; Piccinini, Hanelt, Gregory, & Kolbe, 2015). As the digital transformation is an ongoing phenomenon in the industries across the board, I align with the process-oriented school of

thought. This thesis is based on Morakanyane, Grace, and O'Reilly (2017: 12) definition of digital transformation as a an evolutionary process that leverages digital capabilities and technologies to enable business models, operational processes and customer experiences to create value.

A digital transformation strategy is essentially a blueprint of how the incumbent will undertake the digital transformation to deliver on the end state envisaged in its digital business strategy (Matt et al., 2015).

Phases of digital transformation journey

Verhoef et al. (2019) identified that an incumbent's digital transformation has three distinct phases:

Digitisation is a phase of conversion of incumbents' analogue information and tasks to digital; that is the information and tasks can be stored, processed and transferred by computing devices primarily for cost efficiency objectives without changing value creation activities.

Digitalisation is a phase of altering the incumbents' existing business processes through use of digital technologies by improving co-ordination between processes and by enhanced user experiences; to achieve both cost efficiency and to create incremental customer value.

Digital Transformation is a phase of reinvention of incumbents' core business model through use of digital technologies to strategically enhance the core capabilities or develop completely new ones to redefine the customer values.

In order to simplify these phases of digital transformation in the context of this dissertation, I group them into operational and strategic transformation, based on the objectives these phases deliver on.

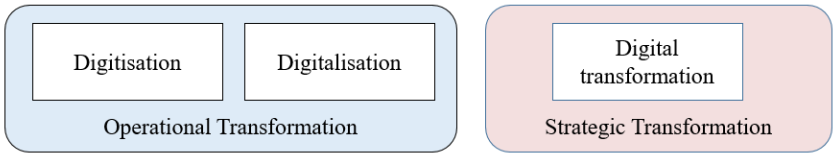

Fig. 3 - Operational and Strategic transformation

Verhoef et al. (2019) note that incumbents would initiate their digital transformation through operational transformation and then subsequently undertake strategic transformation.

Digital technology as a foundation

Extant literature in the domains of strategic management, business research and IS management have identified digital technologies as a fundamental block for digital transformation of an organisation, industry or even a society (Hartl & Hess, 2017; Nwankpa & Roumani, 2016; Osmundsen et al., 2018; Piccinini et al., 2015; Tekic & Koroteev, 2019; Venkatraman, 2017; Verhoef et al., 2019).

The Inductive Framework for digital transformation by (Vial, 2019) in Fig. 2 depicts that the incumbents' strategic response rely extensively on the application of digital technologies to enable it to transform its value creation paths. Also important to note is that incumbents could utilize the same digital technologies to trigger industry desruptions. Thus, innovative application of digital technologies is a critical endogenic factors of an incumbent's attack strategy as well as defence strategy.

Analytics, cloud computing, mobile technology, social media, data & analytics, big data, artificial intelligence, robotics, blockchain, 3D printing and internet of things are among the most commonly referred to digital technologies relevant for digital transformation in the extant literature(Osmundsen et al., 2018: 7; Tekic & Koroteev, 2019: 685; Venkatraman, 2017: 14; Verhoef et al., 2019: 2; Vial, 2019: 122).

Digital Transformation framework

Digital transformation strategies require multiple other changes in the organisation in addition to the increased exploitation of digital technologies. Mueller and Renken (2017) observed that digital transformation needs to be more than just the digitization of products and services or the implementation of technologies that are climbing Gartner's Hype Cycle and that incumbents need to engage in a fundamental enhancement of what work is done and how work is done (Osmundsen et al., 2018: 8).

Matt et al. (2015) in their digital transformation framework described other three dimensions that are required to be balanced for harvesting the planned objectives throught digital

technology adoption – Changes in value creation, structural changes and financial aspects. Vial (2019) and Verhoef et al. (2019) concur with (Matt et al., 2015) that exploiting digital technologies for delivering on digital business strategy is an organisation wide and multidisciplinary process. They have augmented further on the dimensions of the digital transformation framework by describing the strategic imperatives relevant for these dimensions.

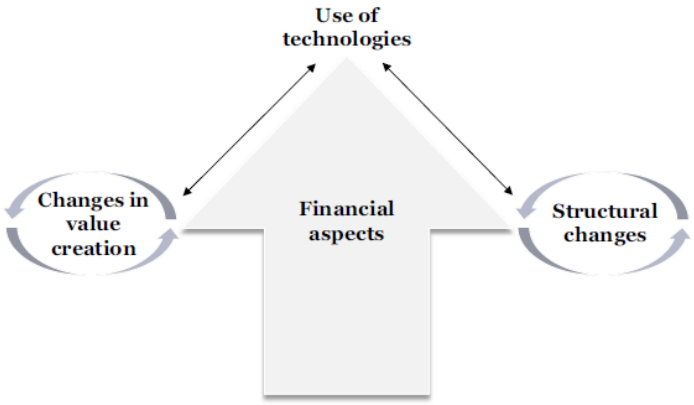

Fig. 4 - Dimensions of digital transformation framework by Matt et al. (2015)

Use of technologies:

Matt et al. (2015: 340) and Matt, Hess, Benlian, and Wiesbock (2016) states that this dimension encompasses an incumbent's approach towards exploration and exploitation of technology in general and digital technologies in particular. It consists of two sub dimensions:

i. Ambition towards emerging digital technologies:

An incumbent's organizational character influences the ambitions it creates for itself with regards to adoption and exploitation of emerging technologies. An incumbent can be aggressive and aspire to be a technology innovator and lead in establishment of technology standards. Alternatively, it can adopt a balanced aggression strategy with an ambition of being an early adopter of technology. A conservative strategy on the other hand, would opt for being a follower of technology and only adopt well established technologies. An incumbent's choice of technology ambition level is also reflective of its corresponding risk tolerance levels.

ii. Ability to exploit emerging digital technologies:

Incumbents have different viewpoints on the strategic role of the IT in the organisation. Some incumbents perceive it as an enabler for new businesses and thereby drive the transformation process through technology. The other set of incumbents treat IT as supporting business capabilities and thereby drive technology choices through business issues.

Changes in value creation:

An incumbent's digital transformation through digital technologies causes changes to its value chains due to changes in its business models (Matt et al., 2015). Matt et al. (2016) further identify three sub-dimensions to this:

i. Digital Nature of interface to the customer

Incumbents need to create ambition on what kind of diversification of digital interfacing they want towards their customers. Options range from changing the sales and distribution channels to digital channels for the traditional "analogue" offerings, augmenting the analogue offerings with digital extensions, digitalising the analogue offerings to offering completely new digital products and services as shown in Fig. 5**Error! Reference source not found.** which is adapted from Matt et al. (2016) and digital growth strategies by Verhoef et al. (2019)

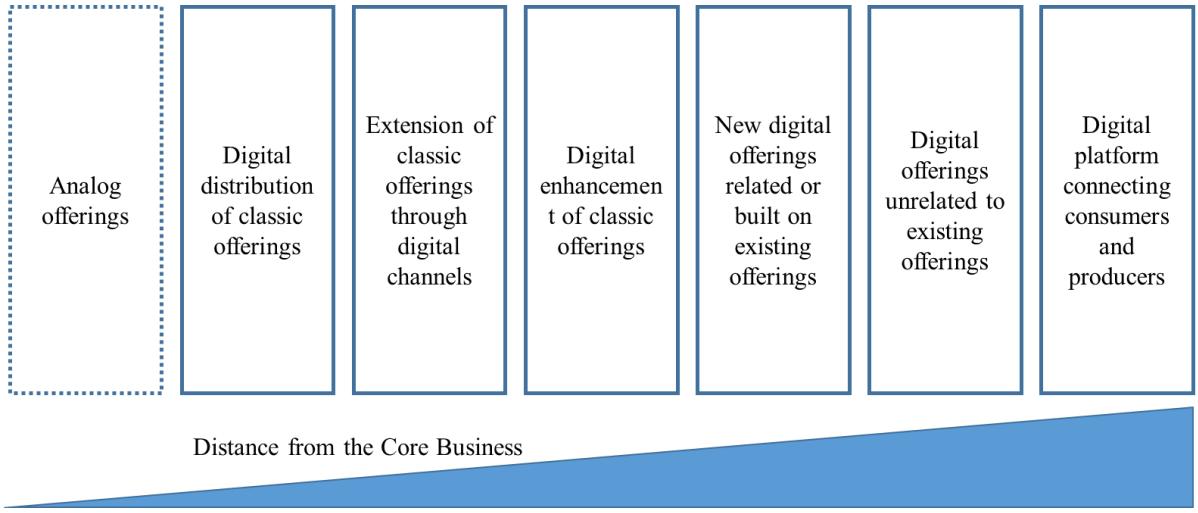

Fig. 5 - Digital Interface with customer model

ii. Revenue models from future business

Incumbents are required to plan how they will create value and get paid in the planned interfaces with the customers. Transforming from analogue to digital offerings does not automatically imply the same value propositions and even more the same willingness to pay.

iii. Scope of future business

The transformation of the industry value chain or value networks implies that incumbents have to redefine their vision as to what roles they play in the new value chain. A relevant example, although from digital incumbent is re-definition of Amazon's role from a book seller with

online storefront to an online marketplace and logistics business and subsequently a cloud infrastructure provider.

Structural changes:

Exploitation of newer digital technologies and changes to its value chains, requires incumbents to also make structural changes to its organisation structure to support both the transformation process and also subsequent operations. As digital transformation is a long running process, incumbents are required to be ambidextorous (Raisch & Birkinshaw, 2008)support both the older and newer value chains simultaneosly that further accentuate the need for structural changes (Matt et al., 2015: 341). It may further consist of sub-dimension like:

i. Responsibility of the Digital transformation endeavor

Incumbents need to evaluate where in the organisation would the responsibility for digital transformation would be effective. Inadequate or unclear assignment of the responsibility could seriously jeopardise the transformation process or the subsequent operations. Potential alternatives include the CEO, CIO, CDO or a business transformation manager.

ii. Integration of new operations into existing or separate entity

Incumbents have to consider how the transformed operations would be integrated with the existing operations. This is relevant both from supporting operations of both new and existing operations in parallel during the operation but also from the synergies and / or conflicts between the two.

iii. Expectations on operational changes

The planned transformation of an incumbent requires the incumbent to plan what type to operational changes are required in the new operations. The nature of new operations may impact the customer interfacing like launching different portfolio of products and services, or simplify and increase efficiency of internal business processes or significantly change skill and competence management routines.

iv. Acquisition of necessary skills

Transformation of the incumbent’s offerings, business models, technology and potentially role in the value chain implies that incumbent will be required to acquire new digital skillset.

Financial aspects:

Matt et al. (2015: 341) states that transformation of the above other three dimensions – digital technology exploitation, changes in value creation and structural changes require availability of financing for execution. The financial capacity of the incumbent could be highly influenced by the current and projected situation of its core business. Financial aspects dimension have further identified two strongly related sub-dimensions:

i. Threat to the current business

Incumbents need to assess the level of threat to finances from its existing operations. The higher the disruption, the greater is the urgency and commitment from stakeholders for the transformation.

ii. Source of funding the digital transformation

It requires incumbents to secure long term funding for digital transformation. The sources of this funding could be internal or external. Incumbents with a better current financial position find is easier to secure financing from investors.

Digital transformation strategy topologies

Tekic and Koroteev (2019) have developed a digital transformation strategy topology for businesses to decide the strategies that they should adopt based on its maturity of the use of digital technologies and readiness of digital business models. It consists of four strategies:

1. Disruptive –high mastery of digital capabilities and high maturity of its digital business models, suited to disrupters who are often smaller companies or start-ups but may also include incumbents of another industry or value chain.
2. Business model led - low mastery of digital capabilities and high maturity of its digital business models, suited to businesses that are under stress either due to being disrupted or contracting overall market or its market share.
3. Technology led –high mastery of digital technology capabilities and low levels of digital business model maturity, suited to companies operating in high entry barrier industries with little or no external disruption. Technology investments is a means to optimise, reduce costs and risks thereby improving profitability.
4. Proud to be analogue –low mastery of digital technology capabilities and low levels of digital business model maturity, suited to companies who actually benefits by being analogue or whose customers perceive digitalisation as irrelevant or negative.

Strategic imperatives for digital transformation

Verhoef et al. (2019) in an independent research has also concluded the multi-disciplinary nature of digital transformation. They further propose that incumbents are required to address certain strategic imperatives specific for each of the three phases of digital transformation process. These strategic imperatives are classified in five categories:

i. Digital resources: These are the assets and capabilities that the incumbents have control and ownership over. For digital transformation, incumbents are required to identify and acquire newer assets and capabilities. Examples of some of the digital resources are described in Fig. 6 below. Digital resources imperatives are consistent with the technology ability sub-dimension of the digital transformation framework.

Phase	Digital Resources as strategic imperatives
Digitisation	Digital assets like data storage, network infrastructures, computing resources
Digitalisation	Digital agility and digital networking capabilities
Digital transformation	Big data analytics capabilities

Fig. 6 - Digital resources strategic imperatives examples

ii. Organisational structure: Incumbents need to consider how its organisation needs to be optimally structures to adapt to digital change. Alternatives include separate units for transforming entities, more fluid and agile forms and digital functional areas in existing organisation structure. Organisational structure imperative overlaps significantly with the structural changes dimension of the digital transformation framework. Examples of alternatives for organisational structure alternatives are described in Fig. 7 below.

Phase	Organisation structures as strategic imperatives
Digitisation	Standard top-down hierarchy
Digitalisation	Separate agile divisions
Digital transformation	Separate units with flexible organising, internationalisation of IT

Fig. 7 - Organisational structure strategic imperatives examples

iii. Digital growth strategies: Incumbents needs to identify what growth strategies they will adopt to succeed in their digital transformation journey. The digital transformation

framework addresses this through its changes in value creation dimension. Examples of digital growth strategies alternatives available for incumbents are described in Fig. 8.

Phase	Digital growth strategies as strategic imperatives
Digitisation	Market development, product development
Digitalisation	Platform based market penetration
Digital transformation	Platform diversification

Fig. 8 - Digital growth strategies strategic imperatives examples

iv. Metrics: Incumbents are required to measure the progress of digital transformation differently from traditional metrics they are used to. This is necessary to allow learning and experimentation into unchartered territories. Digital transformation framework also addresses this domain through the operational changes sub dimension of the organisational structure dimension. Examples of metrics for different phases are described in Fig. 9 below.

Phase	metrics as strategic imperatives
Digitisation	Traditional metrics like Cost to serve, ROI, ROA
Digitalisation	Digital KPIs like Active Users, User experience rating
Digital transformation	Digital KPIs like digital share, momentum, co-creation sentiment

Fig. 9 - Metrics strategic imperatives examples

v. Goals: Last but most important is the establishment of goals and objectives that incumbents want to achieve through digital transformation. It is these goals that would drive the choice of appropriate digital transformation phases that incumbent should undertake and the strategic imperatives it needs to address. Examples of goals suitable for different phases of digital transformation are given in Fig. 10 below.

Phase	Digital goals as strategic imperatives
Digitisation	Cost savings or efficiency
Digitalisation	Cost efficiency and increased revenues / profitability
Digital transformation	New revenue and cost models, leverage technology scalability potential

Fig. 10 - Goals strategic imperatives examples

Theory implication on research question

The theoretical knowledge described here, especially the digital transformation framework and complemented by the strategic imperatives model imply that the research question RQ1 can be sub divided further into four specific research sub-questions that serve as objectives for this research.

RQ2: How are incumbents positioning to capitalise on emerging digital technologies?

RQ3: How are incumbents' value creation changing to enable capitalising on digital technologies?

RQ4: How are incumbents' organisational structures changing for and as a consequence of digital transformation through technology?

RQ5: How are incumbents' managing their financial aspects to enable digital transformation?

RESEARCH DESIGN AND METHODOLOGY

This chapter describes the research methodology planned for answering the research question on how are incumbent businesss exploiting the potential of digital technologies for digital transformation. A research methodology is defined as the approach and strategy used to conduct research (Wilson, 2014). The Honeycomb model of research design proposed by (Wilson, 2014) is used as a template for developing the research methodology for this research and it consists of six distinct steps whose sequences can be altered to best suite the research objectives.

This dissertation is a descriptive research in an attempt to describe better the phenomenon of digital transformation in incumbents through digital technologies. A deduction driven approach is chosen wherein the dimensions of existing digital transformation framework theory (Matt et al., 2015; Matt et al., 2016) are utilized to develop research sub questions to understand the digital transformation phenomenon better and describe how it be manifesting in real life organisations. Qualitative multi-case study with two cases and expectation of literal replication is designed with the aim of collecting subjective primary research data from elite interviewees based on their experiences on digital transformation. The final step of the strategy employs interpretation and deductive coding of collected qualitative data and application of narrative analysis techniques to develop findings.

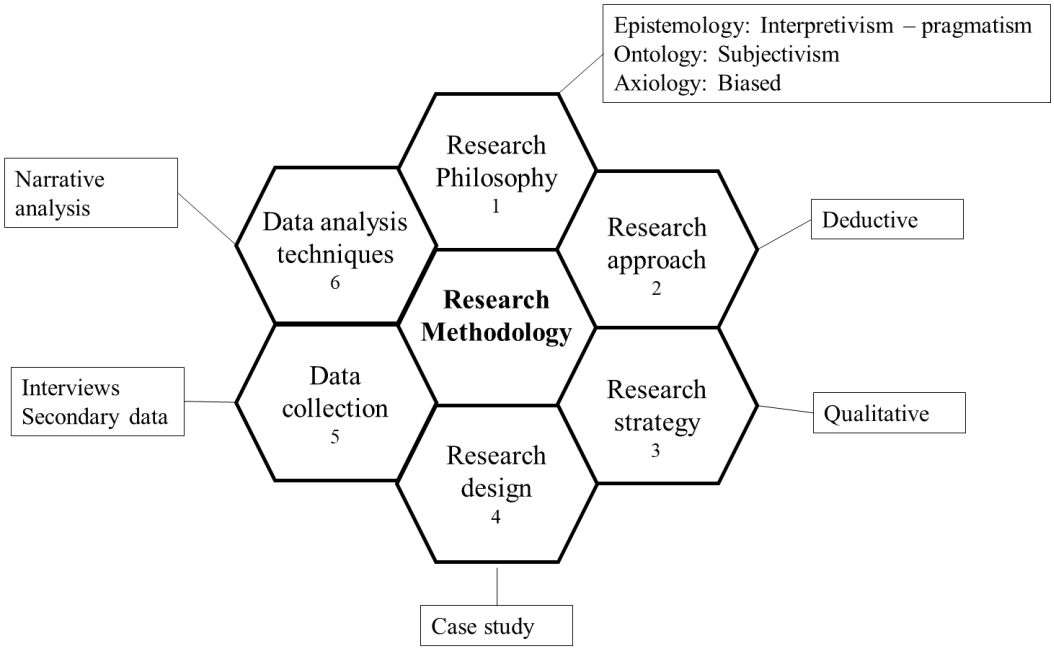

Fig. 11 - Research methodology based on Wilson (2014) Honeycomb model

Research Philosophy

Wilson (2014: 32) describes research philosophies as a researcher's view of what constitutes a knowledge regarding the research domain and belief on how the research should be conducted. Hong and Easterby-Smith (2002) suggested that researchers should have a clear understanding of their philosophical standpoint on the research in order to choose the appropriate design elements for the research and also adapt them to overcome the constraints associated with the elements of research design and the philosophies themselves (Wilson, 2014: 32).

The research question this dissertation tries to address is at the intersection of the domains of digital transformation and technology adoption. The choice of these domains in general and the research question in specific were influenced by my historical work experience in the technology management domain. It has also been influenced by the literature review assignment I had undertaken in the previous semester of my curriculum for masters in entrepreneurship and innovation management.

Epistemological v/s doxological philosophy

This dissertation is built on the extant literature in the digital transformation, strategic management and IS management and along with literature on business research constitute primarily to my knowledge. The thesis is therefore based on what is known to be true - epistemological philosophies. However, my work experience also sub consciously contributes to my knowledge source and to what I believe to be true about the research domain and the design. I am aware about my doxological philosophies influencing the research design.

Positivism or interpretivism epistemology

The digital transformation through technology adoption is a continuous and complex change in multiple dimensions of an incumbent business's context influenced by the organisation's endogenous as well as exogenous factors (Matt et al., 2015; Verhoef et al., 2019; Vial, 2019). My belief is that understanding such a complex context objectively as a positivist will be ineffective. The researcher will be required to acknowledge and comprehend the endogenous and exogenous factors relevant to each organisation and industry to address the research question at hand. Thus, a subjective qualitative analysis as an interpretivist is more appropriate.

At the same time, I am not ideologically attached to either with the positivism or interpretivism school of epistemology and believe that my doxological bias could be counter balanced with some conscious objective evaluation. This approach resonates with the epistemology of pragmatism where, the research question is maintained as the central focus for the research

activities and the most suitable methods with appropriate adaptation are adopted independent of the philosophical alignment (Wilson, 2014: 34)

Objectivism v/s subjectivism ontology:

The multidisciplinary digital transformation process in my belief as mentioned above; requires a subjective assessment to understand how the perceptions and actions of the various actors in an incumbent business or an industry influence the incumbent's digital transformation.

Value-free v/s biased axiology:

My subjective assessment inclination implies that the dissertation is on biased axiology and may influence both the choice of respondents and interpretation of the findings. I acknowledge this bias and actively try to compensate and mitigate for this bias as described further in this chapter under the Interviews as Primary source of evidence and **Data analysis**.

Research Approach

I adopt a deductive research approach for answering the research question. The dissertation is anchored on the theory of digital transformation framework proposed by Matt et al. (2015). The digital transformation framework is further elaborated into digital transformation strategy alternatives by Matt et al. (2016) and complemented by strategic imperatives of digital transformation model by Verhoef et al. (2019). The dimensions of digital transformation framework contribute to the development of research sub questions relevant to the research question and a research strategy is designed to observe the findings on these sub questions.

The goal of the dissertation is not to develop a theory or conclusive recommendations to incumbents on adoption of digital technologies for digital transformation, instead it is to understand how closely the strategies and actions undertaken by the incumbents resonate with the digital transformation theories and to collate their experiences from their respective transformation journeys.

Research Strategy

Digital transformation is a growing phenomenon (Osmundsen et al., 2018) that is a continuous and complex process(Matt et al., 2015: 3; Matt et al., 2016: 15; Tekic & Koroteev, 2019: 10). Influenced by my interpretivism-pragmatism epistemology, I prefer to employ qualitative research strategy that allows me as a researcher to carefully isolate the individual intricate core elements corresponding to the digital transformation framework and the intrinsic and extrinsic

catalysts and inhibitors from the complex mixture of incumbents' digital transformation strategies and experiences and the respondents' biases.

I had evaluated the option of adopting a pragmatic multi-strategy research by employing quantitative strategy to for compensating for the reliability issues associated with the qualitative strategy and to enable generalisation of the observations from the qualitative research. However as Wilson (2014: 40) notes, mixed-strategy or mixed-method research is very time intensive and may not necessarily be executable or effective due to inherent characteristics of the two paradigms. I therefore concluded to adopt a mono-method qualitative strategy, primarily considering the time duration available for completion of this dissertation.

Researchers in the field of business research like Ghauri and Gronhaug (2005: 15) and Saunders, Lewis, and Thornhill (2007) have argued that a quantitative research strategy is suitable for a deductive research approach while qualitative strategy augurs well for inductive research where theoretical developments are incomplete (Wilson, 2014: 36) . However, Wilson (2014: 37) acknowledges that such strict dichotomisation between qualitative and quantitative strategies for inductive and deductive approaches respectively is somewhat ambiguous and has been increasingly challenged by researchers in recent times; and that though not very common, a qualitative research strategy could be adopted for deductive approach. In the context of a descriptive research, Wilson (2014: 135) notes that both qualitative and quantitative research strategies are employable.

Research Design

Wilson (2014: 132) deefines research design as a detailed framework or plan that guides a researcher through the research process to increase the likelihood of achieving research's objectives. Yin (2003: 5) summarises the academic knowledge on suitability of different research design strategies for research situation to three criteria:

i. the type of research question

Yin identifies this as the first and the most important criteria for differentiation and choice of research design strategy. My research question has a "how" formation implying a explanatory or descriptive focus. Such questions are best addressed by experimentation, history or case studies research design strategies as support studying the phenomenon with their operational link over time. The survey and archival analysis strategy choices are eliminated due as they are better suited to predictive or confirmatory question forms.

ii. the extent of control an investigator has over the actual behavioral events

This criteria deals with the amount of ability of the researcher to control and manipulate the actual behaviour and outcomes of the phenomenon as a part of the study. In this dissertation, I have no agreement with any incumbent business to initiate, administer and observe the outcome of any change, action or phenomenon. Given the complexity of the digital transformation process and the inherent size of incumbent businesss, undertaking even a single plan-act-observe-reflect iteration of an action research strategy Wilson (2014: 137) for an inidividual element fo the transformation element is perceived to be a scope unfit for the short duration of this dissertation. I therefore eliminate experimentation as candidate research design strategy.

History and case studies are therefore appropriate choices with a large overlap among them except that case studies in addition also allows direct observations and capturing of first hand information directly from the participants (Yin, 2003: 8). I believe case study would also allow me to undertake a subjective deduction of the digital transformation through technology phenomenon in incumbents.

iii. the degree of focus on contemporary events

Yin (2003: 7) prescribes that histories are effective when then event or phenomenon of the research has already happened and there is virtually no access to relevant participants to describe the details of such events. Case studies are preferred otherwise as it is an empirical enquiry that investigates a contemporary phenomenon within its real-life context, especially when the boundaries between phenomenon and context are not clearly evident.

In case of this dissertation, I am interested in empirical evidence on how the digital transformation framework and related theories are applicable in the digital technology led digital tranformation of incumbent businesss. Digital transformation is a complex, multi-faceted and continous ongoing process (Matt et al., 2015; Matt et al., 2016; Osmundsen et al., 2018)– a contemporary phenomenon and I therefore conclude on employing case study design for the research aim.

Strategy	Chosen	Reasoning
Experiment	N	Inability to manipulate the actions and insufficient time to undertake iterations
Survey	N	Insuitability of strategy for descriptive study
Archival analysis	N	Insuitability of strategy for descriptive study
History	N	Inferiority of streategy for contemporary digital transformation phenomenon

Case study	Y	Best suitability to the research question and aim and accessibility of the participants for interviews

Fig. 12 - Summary of research design selection process

Case Study Style & Unit og Analysis

There unit of analysis of interest for the research question of this dissertation is the entire collection of incumbent businesses across the industries. The scope of such a unit of analysis is therefore too broad for the research timeframe. I therefore undertake an organisation based (Wilson, 2014: 140) classification and treat individual industry as candidate for unit of analysis. Examples for such industries are construction, automotive, pharmaceuticals, retail, logistics, tourism, education etc. I plan to restrict this research case study's scope to two holistic units of analysis(Yin, 2003: 40) – Communication service providers - CSPs and Pension and Life insurance providers - PLIs.

The two industries for unit of analysis were consciously elected based on basis of their context of technology adoption maturity in these industries for test of literal replication (Yin, 2003: 47). CSPs are in essence in the business of developing and selling technology and is often grouped into the ICT – Information and Communication Technology cluster in both academics and practitioners world. I therefore treat them as representative for industries that have high maturity and experience at adoption and capitalisation of technology and believe that analysing the front runner industry's actions and experiences with digital transformation through technology would contribute meaningful insights to both the digital transformation framework theory and follower industries. The PLI industry on the other hand represent age old industry that has not transformed significantly over many decades and but are one of the larger spenders on IT. If common findings can be derived from these two cases with varying contexts, they would expand the external generalizability (Yin, 2003)

Another factor in the selection of these units of analysis is that my professional network in these two industries allows me access to actors and experts in the field and also enable removal of barriers towards truthfulness.

As digital transformation is a multi-disciplinary or organisation wide process, the research requires to undertake a broad analysis of different disciplines or functions like technology, strategy, marketing, products etc. within each of these industries. These functions are tested under the replication versus sampling logic for multi-case studies (Yin, 2003: 47) and I

conclude that they represent different samples of individual cases and not an independent embedded unit of analysis within each case.

Data Collection

I have primarily utilized two of the six possible types of sources of evidence (Yin, 2003: 86) for this research – primary data source being interviews from participants from the two cases studies and secondary data source being documents that were either available publically from either the constituent companies or industry associations or reports from consulting companies and analysts generally advising or tracking constituent companies in the industries of CSPs and PLIs.

Interviews as Primary source of evidence

Interview is a formal consultation whose purpose is to gather descriptions of the life-world of the interviewee with respect to their experience and their interpretation of the meaning of the described phenomena (Kvale, 1983: 174; Seidman, 2006). Yin (2003: 89) has qualified interviews as one of the most important source of collecting primary evidence for case study research strategy as it allows a researcher to gain qualitative and subjective insights into a complex phenomenon from actors who are directly engaged with it. Interviews were chosen as primary means of collecting evidence as it was perceived as most flexible and valuable qualitative data collection method for this research.

i. Face to face and video-conferencing interview techniques:

There are primarily four interviewing techniques – face to face interviews, telephone interviews, focus groups interviews and elite interviews (Wilson, 2014). A combination of face to face, video-telephonic and elite interview techniques were employed for this research.

Face to face interviews are synchronous communication in time and place between the interviewer and the interviewee allowing the interviewer to not only communicate with verbal interactions but also through social cues (Opdenakker, 2006: 3; Wilson, 2014: 168). Another advantage with this interview technique is that it allows both the interviewee the flexibility to adapt the line of questioning based on the interviewee's verbal and nonverbal responses and that it entices spontaneous responses from interviewees without extensive and often biased reflection.

A telephonic interview is a synchronous in time but asynchronous in place between the interviewee and interviewer. Telephonic interviews though comparatively simpler to organize and not constrained by geographical and physical limitations, underperform the face to face interviews as it does not support nonverbal interactions and could be experienced frustrating due to multiple factors like cultural, language or knowledge differences between the interviewee and interviewer or simply due to technology challenges (2006: 5; Wilson, 2014: 172). Video-telephonic interviews can effective at mitigating many of the limitations associated with telephonic interview and also overcoming geographical barriers. I had initially planned to employ video-telephonic interview technique only for interviews where the interviewee was location in a far off geographic location. It later turned out to be an effective technique to mitigate the consequences of social isolation enforced by regulators in response to the Covid-19 pandemic.

Elite interviewing is defined as interviewing key decision makers and those in high ranked business or societal positions as they are best positioned to comment of strategic directions and decisions (Wilson, 2014: 175). Digital transformation is an absolute strategic phenomenon focused on existential threat or opportunity of any incumbent organization or industry and defining the future of the society at large. Also as described before, researchers widely concur that digital transformation is an organisation wide phenomenon and therefore leaders and experts who have a broad bird's eye view of the organisation and industry are the ideal source for the qualitative insights. Despite (Wilson, 2014) treating Elite interview as a distinct interviewing technique, I perceive it as a niche sampling frame selection and that elite interviewing can be conducted by employing any of the other three interviewing techniques.

ii. Interviewee Selection:

As described previously in choice of case study style and unit of analysis, the scope of research question covers incumbents across all industries. For limiting the scope of the research project, the unit of analysis were chosen to be the CSP and PLI industries. My target population for the research (Wilson, 2014: 221) was therefore set to all individuals – employees, experts, consultants and suppliers engaged in digital transformation of incumbents in these industries through exploitation of digital technologies.

The research case study involved understanding the complex multifaceted digital transformation phenomenon subjectively and explore the applicability of the digital transformation framework and related theories, therefore a sampling frame was chosen

consisting the key decision makers and experts engaged in various disciplines at incumbents. Further a Norwegian geographical constraint was included in the sampling frame based on my feasibility to conduct face to face interviews and my ability to recruit interviewees.

Executive Officer	Chairman	Board of Directors
Strategy Officer	Digital Officer	Technology Officer
Information Tech Officer	Product Officer	Marketing Officer
Innovation Officer	Transformation Officer	Financial Officer
Partnership Officer	Customer Officer	

Fig. 13 - Summary of potential candidates as a sampling frame

Non-probability sampling was used to select the samples as sampling frame was relatively small considering the number of such individual in Norway. (Wilson, 2014: 228) also observes that non-probability sampling is often used in qualitative research especially when the intention to examine a real life phenomenon without statistical inferences. Quota sampling (Wilson, 2014: 228) technique was primarily planned to be employed to sample interviewees based on the role criteria described in Fig. 13. LinkedIn search was primary tool utilized to search and shortlist potential interviewees. Subsequently snowballing and convenience sampling techniques (Wilson, 2014: 229) were also utilised to capitalize from my professional network and their extended network allowing more efficient hiring of interviewees.

All potential interviewees were contacted through LinkedIn or email and given details about the research aim and the contributions they could make to the research, in order to recruit them for interviewing. Fig. 14 provides a list of interviews that were conducted for gathering the qualitative insights.

Interviewee Code	**Position**	**Industry**	**Interview length**	**Interview technique**	**Date**
I1	CEO	CSP	40 min	VTC	04.03.20
I2	Innovation Lead	CSP	25 min	VTC	04.03.20
I3	Director Corporate Strategy	CSP	42 min	F2F	09.03.20
I4	CEO / Industry Expert	CSP	49 min	F2F	09.03.20
I5	Head of Product / Commercials	CSP	45 min	VTC	12.03.20
I6	Digital Innovation / Digital Transformation Specialist	PLI	46 min	VTC	12.03.20
I7	Director IT Strategy / Technology transformation	CSP	51 min	VTC	17.03.20

I8	CIO / transformation expert	CSP	40 min	VTC	26.03.20
I9	CIO / CDO	PLI	34 min	VTC	03.04.20

Fig. 14 - List of interviews conducted

A reflection post conducting these interviews is that elite interviews are very effective in overcoming confidentiality related challenges for researchers. Elite individuals are empowered and confident and therefore much more comfortable at sharing detailed information both about the organisation and their individual opinions. Non-elite interviewees on the other hand are sceptical at sharing information due to confidentiality concerns.

iii. Semi-structured interview methods:

The three interviewing methods – Unstructured, Structured and Semi-structured (Wilson, 2014: 176) were assessed for the research and Semi-structured method was chosen as it allowed the advantages of both worlds - sticking to a line of question themes of structured interviews technique to ensure the interview objectives are met and allowing the flexibility for the interviewer of the unstructured techniques of adapting the line of questioning to pursue interesting insights that each interviewee has to offer.

My reflection from interviewing phase is that semi-structured interview method complements well with the elite interviewing technique. A structured interview will significantly limit the collection of valuable insights if the interviewer has not done an excellent job at developing the interview questionnaire. This is most often likely to be the case unless the interviewee is also an expert in the same or related domains. The amount of information from unstructured elite interview will overwhelm the non-expert interviewer and might leave a lot of aspects relevant to the deductive and descriptive research unaddressed. Though, it may be effective in an exploratory study where there is very limited prior understanding of the phenomenon.

iv. Interview Process

Interviews were planned after communicating the purpose for contacting the interviewees and explaining the objectives of the research, so as to ascertain that the interviewees participated in the interviews with the correct context and expectations. However, the interviewees were not given interview questions before the interview so as to ensure that I have the ability to capture their instinctive responses and not pre-determined ones. The interviewees were requested for consent to record the interviews for subsequent analysis and were also informed that the information they provide shall be published in academic journals and that the information provided was not governed by any confidentiality agreements.

The interview was initiated with a brief re-introduction of the research without giving insights into the theoretical background. An interview guide was developed as part of the case study protocol (Yin, 2003: 68) before initiating the interview phase based on the theoretical models and frameworks. The interview guide consisted of leading questions to steer the direction of the interview. The interview guide was adopted from the extended theory and empirical insights gather by Matt et al. (2016) and was also reviewed to validate that the questions were addressing the theoretical dimensions in Theoretical framework**Error! Reference source not found.**.

The interview guide in general consisted of approximately 15-17 questions. The interview guide was adapted for each interview depending on the objectives of the interview of the interviewee and from the learnings and insights from previous interviews. The common version of the interview guide consisting the set of 24 questions is attached in Appendix A. During the interview, the questions from interview guide served as anchor points to re-channel the direction of the conversation to a specific topic of interest in the line of inquiry after open ended discussions about the previous topic. It also served as a checklist at the end of the interview to verify that I had addressed all topics that

Documentation as secondary source of evidence

(Yin, 2003: 97) observes that the need to collect evidence from multiple sources for triangulation in case studies is higher than other research strategies as it makes findings more convincing and accurate. Secondary sources of evidence consisting of academic literature and publicly available resources about the industries of interest were collected any evaluated to verify the findings through interviews in an attempt to achieve triangulation of data sources (Yin, 2003: 98)

i. Academic literature

This dissertation started with readings on academic and business research from established researchers like Yin (2003), Wilson (2014) and Saunders et al. (2007) to develop a foundation of how research is to be undertaken and develop a research methodology.

Second, a search, vetting and shortlisting of relevant academic literature was undertaken on Oria and Google Scholar services in the context of digital technologies and digital transformation phenomenon to establish a theoretical foundation for the research including identification and refining of the research question and sub questions. (Yin, 2003: 28) states that developing theory in design phase of the case study research is necessary irrespective if the objective is to develop of test a theory. Academic literatures of exploratory, descriptive and

explanatory nature in the domains of Information Systems, Technology Management, Strategic Management, Operations Management and business research etc. were reviewed. As digital transformation is a contemporary phenomenon, emphasis was made in the theory development phase to select recent peer-reviewed literature to capture the most recent state of the academic knowledge.

Apart from defining the key terminologies and phenomenon as a foundation for this research, academic literature was utilized to identify the Digital Transformation Framework theory by Matt et al. (2015) and Matt et al. (2016). Literature search process was then focussed on reviewing further academic literature that had referenced to digital transformation framework and transformation through technology. Digital transformation as a multi-disciplinary process by Verhoef et al. (2019) and Inductive Framework for digital transformation by Vial (2019) were identified to be descriptive and explanatory in nature with the digital transformation framework. Further, the digital transformation framework and related theories were complemented by Topologies for digital transformation strategies by Tekic and Koroteev (2019) to elaborate on the alternative strategies incumbents can take based on their state of technology and business model maturity.

ii. Commercial resources

During the analysis of the interviews, external and primarily publically available sources of information have been reviewed either with the aim of validating or contradicting the findings from interviews and in some cases supplementing the findings. Wilson (2014: 204) notes that reliance on internet based resources as source of data could reduce the reliability of the research, especially when the credibility of the sources cannot be ascertained. Care has therefore been taken to only access sources with credibility. The external resources accessed have been restricted to company websites, news articles, shareholder communication and presentations, financial analyst reports, industry association's forums and LinkedIn profiles of employees of the incumbents' organisations in the two industries of this case study. Some of the secondary data accessed is described in Appendix B – Digital transformation responsible and remaining web resources are listed in the References.

Data analysis

Qualitative data analysis is a very exploratory kind of analysis that produces findings or concepts and hypothesis that are not otherwise arrived by statistical methods and requires researcher to have clear plan of steps for effectively analysing the data (Wilson, 2014: 284). Yin (2003: 111) prescribes that establishing a generic analytic strategy should take presedence over application of tools for data analysis purpose and proposes three strategies – Relying on theoretical foundations, thinking about rival explanations and developing a case study description. The data collection process including the interview guide of this research have been anchored on the theoretical foundations.

There are multiple approaches that researchers have advocated for case study data analysis, however there is no single widely accepted approach. I therefore chose the four steps analytical approach proposed by Wilson (2014: 286).

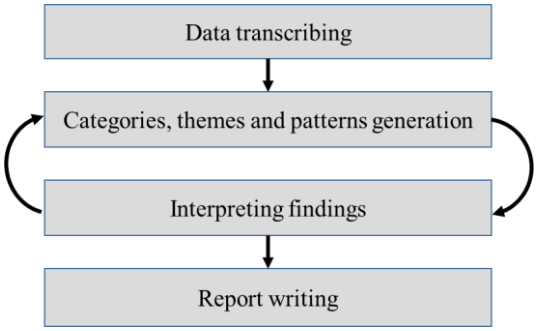

Fig. 15 - Data analysis process

The first step of the data analysis process was interview transcribing or formatting. Audio recordings of the interviews were listened to and transcribed into Microsoft word files. Verbatim transcription techniques and more specifically clean verbatim technique was used to produce more readable interview transcripts comprising of 74 pages, without sacrificing the contents or context of the gathered data

Post completion of the data collection and transcribing phase, the research was focused on analysing the transcripts through means of coding. Strauss (1987) has described the goal of coding to fracture the data and rearrange it into categories that facilitate the comparison of data and further development of concepts (Wilson, 2014: 288). Coding is thus a process of interpreting, grouping and organising data by tagging the data into groups such that all related data can be studied together to derive insights.

Deductive or priori coding (Wilson, 2014: 288) approach was utilised as this deductive research was based on an established theoretical framework. Thus a coding frame inherently manifested from the theoretical framework and the research sub questions identified at the start of the research. The codes in the coding frame related to the different themes of the digital transformation framework and related theories. Further, the multi-disciplined nature of the

digital transformation phenomenon and the integration of multiple theories implied that axial coding type (Wilson, 2014: 289) was necessary to be able to establish code hierarchies.

Once the coding frame was formally established, the process of coding was undertaken. Each interview transcript was read and individual elements of the interviewee's responses were colour coded in the Microsoft word files. In the first iteration, focus was done on mapping the data to at least the top level codes. A second iteration was again performed to both verify the top level code but also to tag sub code as the information was better understood.

Next, the coded texts were transferred to an excel sheet for each code hierarchies. Subsequently, individual code hierarchies were analysed. First, the transcribed text were interpreted and simplified or cleansed versions of the text were developed for easing the subsequent subjective analysis. This step also proved to be effective in eliminating the interviewee specific attributes for example language style, tone, sentence constructs to produce canonical texts while still preserving the subjective insights of each interviewee.

Finally, canonical text was analysed and findings were interpreted through a narrative analysis approach.

Credibility of research design

Wilson (2014: 145) observes that for a research to be credible, it is indispensable to address the issues of validity and reliability. Case studies method that this research engages in has been prone to concerns regarding methodological rigor in terms of validity and reliability (Gibbert, Ruigrok, & Wicki, 2008: 1). The following section discusses the self-assessment of validity and reliability of this research and describes the measures undertaken to address these aspects.

Validity

Validity of a research design deals with ensuring that the research is measuring what it actually intended to measure(Wilson, 2014: 149). Yin (2003: 34) further summarised three tests for checking the validity of the research:

First test is the construct validity that is defined by Yin as establishing correct operational measures for the concepts being studied. The objective is to ensure that the changes being studied are indeed related to the research aim. To ascertain construct validity, this research has been founded on the changes scholars have explored in the literature of digital transformation framework and multi-disciplinary models of digital transformation. The research sub questions

identified to answer the research question, the interview guide and the coding frame are all developed based on these literature foundations. The research is also complements and draws parallel from a similar case study undertaken by Matt et al. (2016) on German media industry.

Second test is the internal validity that is defined by Yin as the extent to which the instrument measures what it intends to measure (Wilson, 2014: 148) and is primarily a concern for explanatory case studies. This dissertation is of descriptive nature. However to strengthen the internal validity elite interview sampling has been chosen through quota and snowballing sampling techniques. Secondly, a narrative analysis approach has been adopted that imparts confidence on the validity of any causal observation made as part of the descriptive study. Third, secondary data from credible sources like press-releases and industry associations' surveys and reports is used to validate the findings from the primary data sources.

And the last test is the external validity that is defined by Yin as extent to which the research's findings are generalizable beyond the immediate case study. This research is anchored on the existing theoretical understanding of two theories - the digital transformation framework by (Matt et al., 2015) and multi-disciplinary model of digital transformation by Verhoef et al. (2019). It supplements the qualitative case study research by Matt et al. (2016) in media industry, for literal replication. Yin (2003) argues that using theory and replication logic strengthens the external validity of the research. The application of two parallel developed theory also contributes to the external validity of the research.

Reliability

Reliability of a research design has to do with it repeatability both in terms of process and the results (Wilson, 2014: 145) by eliminating the errors and biases (Yin, 2003: 37).

This dissertation addresses the testing and retesting reliability (Wilson, 2014: 145) by documenting the research methodology and case study protocol including interview guides and sampling frame for any researcher to undertake the same research once again. Case study protocol is a major way to increasing reliability of a research(Yin, 2003: 67)

Inter-judgemental reliability (Wilson, 2014: 145) is an area that required to be addressed for this research due my philosophical alignment towards subjectivism ontology and biased axiology. This judgemental bias is attempted to be mitigated by the choice of elite interviewee sampling and narrative analytics approach with extensive evidence building through interviewee citation as a means maintaining chain of evidence (Yin, 2003: 105).

This research does suffer with the threat of time error (Wilson, 2014: 146) as digital transformation is an ongoing phenomenon. The subjective opinion of the case study participants can change over time due to various factors intrinsic to the organisation or industry for example change in competition scenario may significantly alter the financial constraints for digital transformation. Certain extrinsic factors may also contribute reliability issues for example the data collection of this research was primarily collected before the Covid-19 situation unfolded in Norway, but the situation could significantly alter the responses from the same sources due to the dramatic changes observed in potentials of a digitally transformed organisations. Øen and Nesse (2019) have also acknowledged the time error challenge to reliability in the contemporary phenomenon of digital transformation.

Another reliability issue with this dissertation is the limited depth of the case study database. The interview transcriptions, notes and raw citation coding are destroyed to protect interviewees' anonymity. Preserving some of these artefacts through extensive editing was considered but was perceived to be not executable without the risk of significantly altering the subjectivism of the interviewees.

Ethical Considerations

Wilson (2014: 109) argues that a researcher needs to address a large number of ethical issues when conducting the research and have a moral responsibility of acting in an accurate and honest way. Following ethical considerations have been made towards two of the identified key stakeholders.

Interviewees

The interviewees were identified solely based on their suitability to the sampling frame developed as part of the research methodology, despite the fact that some of them were chosen by convenience sampling technique. Each interviewee had been formally recruited after explaining the research aim and the objective of interviewing them, thereby allowing them to grant an informed consent. In the recruitment process, I have also clearly communicated my employment details and the competitive dilemmas; including and more specifically to my employer's competitors. The focus on elite interviewing has also ensured that high ethical standards have been followed in interviewee recruitment.

The interviewees had also been made aware about non-existence of non-disclosure and confidentiality agreements and were advised to refrain from providing confidential information that they would not want to be in public or academic domain, as prescribed by (Wilson, 2014: 117). They were however requested to explicitly acknowledge when they could not answer a particular question due to confidentiality aspects, so as to not dilute the subsequent analysis.

The interviews were recorded after obtaining consent from the interviewees for the purpose of transcription and analysis as part of this research. The recordings, transcriptions, notes and coded citations are deleted and destroyed after the completion of the analysis phase.

None of the interviewees had requested anonymity. However, with an intent to protect the interviewees from possible unforeseen consequences, the identity of the interviewee as well as that of their employees have not been documented and disclosed both in this dissertation report as well as transcriptions and notes. These artefacts have been only accessed by me and have not been shared with anyone else. No private information about the interviewees was collected, processed or stored as part of the interviewing process.

Employer

I had informed my employer about my research topic and also about seeking interviewees from the employer organisation as its competitors and potential partners. I am also governed by the employment confidentiality and code of conduct agreements with my employer. Two specific actions have been take to safeguard the interests of my employer:

i. The interviewees have been recruited and interviewed solely on the premise of the research. Interviewees were informed about the audience of the research and the lack of ability to protect confidential information. There have been no formal or informal commitments made to the interviewees through coercion or inducement (Wilson, 2014: 115).
ii. The analysis is conducted solely on the basis of the data collected from the interviews and external documentation accessed through public means. No internal documentation, irrespective of its classification has been accessed for the research purpose.

FINDINGS AND DISCUSSIONS

This chapter discusses the findings and the analysis of the insights gathered from the primary data and also describes the validation of the insights gathered from the secondary data sources. The chapter is structured to document and discuss the analysis and findings for each of the four research sub question developed based on the theoretical foundations.

The key findings from the case study research are summarised in the Fig. 2 below.

Dimension	**Sub dimension**	**CSP Findings**	**PLI Findings**
Use of technology	Ambition towards emerging digital technologies	• Early adopter strategy in the new operations • Follower of established technologies strategy for majority for current operations • Selective instances of Technology innovator ambition • Technology use for digitalisation and digital transformation phases	• Limited early stage adopter strategy, especially in customer facing channels • Follower of established technology • Technology use focused on digitisation and digitalisation phases of transformation
	Ability to exploit emerging digital technologies	• IT perceived to be the enabler for strategic goals • Emphasis on utilizing global scale for enabling scalable technology exploitation	• IT perceived to be the supporter for strategic goals
Changes in value creation	Digital Nature of interface to the customer	• Multi-interface approach • Ambition to offer non-related digital offerings through a digital platform role	• Ambition to digitally enhance the classic offerings to improve customer experience

	Revenue models from future business	• Platform and revenue sharing model from distribution • Primarily subscription based recurring revenue from classic as well as digital offerings	• Existing revenue models strengthened by improved customer experience
	Scope of future business	• B2C classic business model leading to commoditisation. Ambition to sell add-on offerings and platform role • In B2B, CSPs role changing from owner of customer relation to being an integrated part of larger value chain	• Customer relationships model shifting from primarily B2B to B2C
Structural changes	Responsibility of the Digital transformation endeavour	• CEO owns the responsibility and delegated to individual unit heads	• CIO has the responsibility for transformation and often takes over the role of CDO
	Integration of new operations into existing or separate entity	• Multi-strategy approach adopted • Operational transformations integrated in existing structures Strategic transformations integrated / separated from the existing structure dependent on	• Transformed operations are integrated into existing structures as transformation happens around the core capabilities

		interdependencies or synergy evaluation.	
	Expectations on operational changes	• CSPs expect operational changes in all dimensions – Products & Services, Business Processes and skills • Organisational culture change anticipated focused on platform strategy	• Business processes are expected to change through technology • Some changes expected in the technology skills expectations across the firms
	Acquisition of necessary skills	• Skills on digital technology, technology management and business models are expected to be changed • Leadership in digital business is a key skill gap • Skills procured internally, recruitment, externally, partnerships and acquisitions	• Skills on digital technology and customer experience management are expected to be acquired • Skills procured internally, recruitment and externally
Financial aspects	Threat to the current business	• Commoditisation of industry offerings and high competition leading to consolidation, but margins remain strong • Focus shifting from intra industry competitors to inter-industry competition	• Regulated industry or with high regulatory barriers for new entrants and switching cost for customers. • Moderate operating margins remaining constant • Threat of increased intra-industry competition by regulatory changes,

		• "Burning platform" situation well recognised by all stakeholders • Low risk appetite or trust by shareholders for investing in DT	especially in the pensions industry
	Source of funding the digital transformation	• Digital transformation is primarily funded through internal means • Selective instances of external funding	• Digitisation and digitalisation initiatives are funded internally by the firms with top management and board commitment
DT strategy	DT strategy topology	• Business model driven for strategic domains • Technology driven for operational domains	• Technology driven transformation primarily focusing on customer experience and operational efficiency

Fig. 16 - Summary of key findings

Industry background

Case study is a qualitative research mechanism that allows the researcher to study and analyse the phenomenon in its real life context (Yin, 2003). This research is also influenced by interpretivism epistemology where the objective has been to understand the social world of the interviewees (Wilson, 2014: 34). It is therefore imperative to understand the context of the industries to which the interviewees belong.

Communications Service Provider industry is a collection of companies that offer product portfolios in fixed line telephony also known as landlines, fixed line broadband, mobile telephony and internet services and TV distribution services. According to Norwegian communications regulator- Nkom (2020), the communication service provider market size in 2019 in Norway was 45 BNok with an average of 1% yearly growth over the last 4 years. The industry is dominated by 6 players with an accumulated revenue market share of 91% and top two players account for 73% revenue market share. The industry in the past decade, has been witness to significant M&A activities resulting in both industry consolidation as well as vertical

and horizontal integration. In the same time period, the industry has also gone through multiple core business model innovation as a result of intra industrial competition and competition from digital players.

Pensions and Life Insurance industry is a collection of companies that offer products portfolios in Employment pensions, private pension savings, municipal pensions and Group and individual life insurances to both business and consumer customers. According to Nordisk Forsikringstidskrift (2019), which is a co-operation between insurances societies in Norway, Denmark and Sweden; the pension and life insurance market size in 2018 in Norway was 100 BNok with a 7.5% growth over 2017. Employment pension is the primary product contributing to 81% of the total market. The industry is dominated by six companies with a accumulated market share of 89% and has been such for many years, despite market share of individual companies changing significantly in this period (Nordisk Forsikringstidskrift, 2019). Interviewee I9 summarised the industry situation and its cause as:

> *Norwegian pensions are highly regulated so it's very much the same products that we're offering and they're decided by the authorities more or less* (I9).

Phases of digital transformation

Verhoef et al. (2019) observed that incumbents travel through three sequential phase of the digital transformation phenomenon – digitisation, digitalisation and digital transformation.

Insights gathered from the case study show that under the influence of the digital disruption and disruptive innovation forces, incumbents are challenged to approach these phases in parallel. The stronger the nature of disruptive force or opportunity, the greater the degree of parallelism among these phases is necessary. For example one of the CSPs whose employees were interviewed, is undertaking a digital transformation initiative of establishing digital platform and non-communication related digital services, a digitalisation initiative to increase customer self-service through its digital channels as well as a digitising its network management routines in parallel. A PLI incumbent is executing a program to significantly redefine its customer experience in parallel to replacing its decades old IS core system.

Industry \ Phase	**Digitisation**	**Digitalisation**	**Digital transformation**
CSP			X

PLI		X	

Fig. 17 - Summarisation of state of digital transformation of industries

An attempt to map the state of the industries of case study is shown in Fig. 17. It implies that CSPs are attempting to undertake the digital transformation of their business while they are also executing on the digitisation and digitalisation phases. Similarly PLI industry's ambitions are towards significant digitalisation of its customer engagement while it digitised and automates its core functions.

Use of Technology

The first sub question RQ2 relevant for the research question RQ1 is, how incumbents are positioning to capitalise on the emerging digital technologies?

Ambition towards emerging digital technologies

An incumbent needs to establish its ambitions with regards to exploration and exploitation of emerging technologies.

Incumbents have multi-strategy approach. For the core operational capabilities and for digitisation, the strategy is to adopt established technologies. These capabilities are renewed with the cost efficiency focus or because they are the foundational blocks for digital innovation on the top. CSPs and PLIs do not expect these capabilities to be the key competitive differentiator. For example interviewee I9 described an initiative as

> *We are currently in the process with two of our competitors for a jointly adopting a new core system from a vendor to replace a, expensive legacy core system. That can help us become more efficient and utilize the technology that the vendor has developed for other customers in other countries.*

For the digitalisation and digital or strategic transformations, CSP and PLI incumbents are embracing an early adopted strategy for examples in the areas of customer interfacing channels, analytics and marketing or new products and services. Example of early adopter for products and services is Telia's FutureHome that is productifying technology developments in the IoT and analytics and AI domains through very early adoption. CSPs have also indicated an ambition for taking technology innovator strategy for significant business transformation. Examples include Telenor's ICV Comoyo in 2011 with an ambition of streaming TV similar to

Netflix today and Telenor's acquisition of Tapad in 2016 for acquiring bleeding edge digital marketing and customer insight technology.

It is often luring to establish a vision to be technology innovator but the risk and enablers are often underestimated. In a strategic transformation case, the technology innovation risk is further amplified by the business model innovation risk. Incumbents therefore need to carefully design their technology strategy. Interviewee I8 described one such strategy as:

> *The strategic thinking is that when there is a technology wave you, want to hit that wave not too early because you need to mature a bit and we see that this is actually going to be a good wave, and that the high is not just the hype. You want to hit that wave and get to new technology and then at the same time that's the trick you want the business to move as well to modernize at the same time. And such waves don't come every year, they come every fourth or fifth year.*

Ability to exploit emerging digital technologies

All respondents acknowledge that IT is an essential component for delivering on the business and efficiency objectives. CSPs have acknowledged IT and digital technologies as an enabler of business strategy. CSPs have been recruiting digital competence in its business division and IT division as well as establishing digital business units directly at the CMO level. Another observed phenomenon is that CSPs have initiated consolidation of their global digital and technology competence to build the scale and capacity to undertake organisation wide digital transformation.

PLIs perceive IT as a critical support function to deliver on its cost efficiency and customer experience objectives.

Changes in value creation

The second sub questions evaluates how are incumbents' value creation changing to enable capitalising on digital technologies?

Digital Nature of interface to the customer

Incumbents have a choice of deciding to what extent their customer perceive and experience the digitalisation. Some niche companies choose to continue to offer classic products with some digital distribution interfaces or none at all (Tekic & Koroteev, 2019).

CSPs can be broadly distinguished into two groups – value for money proposition CSPs and full service proposition CSPs. The first category of CSPs aspire to target extreme cost efficiency through technology application and simpler business models to serve cost conscious customer segments. Digital technology application include online only sales and distribution, complete digital self-service support with limited or no human customer support, digital payments, lean digital marketing and analytics etc. The second category of CSPs target the less cost conscious customer segments that have higher willingness to pay for premium services and often have a more diversified business. These CSPs aspire to increase revenue per user or reduce churn through distribution of additional offerings. Digital technology application include all the cost efficiency aspects but also development of new offerings, business models and value chains.

PLI's experience a trend that their engagement is gradually shifting from business to business to business to consumer or business to end user interface as individual customers get greater access and control to their pension capital. For PLI incumbents, it implies an increased competition and cost for retaining or acquiring customers. This shift also presents an opportunity for incumbents to increase market share as well as increase their revenue as consumers do not have the volume bargaining power as business customers. PLIs digital distribution and self-service as one of the key elements of the value proposition to consumer.

Legends: T – Today A - ambition	Digital distribution of classic offerings	Extension to classic offerings through Digital Channels	Digital enhancements to classic offerings	New digital offerings related to existing offerings	Unrelated digital offerings	Digital Platform provider
Value for money CSPs	T	T	A			
Premium CSPs	T	T	T	T	A	A
PLIs	T	T	A			

Fig. 18 - Summary of digital interfaces with the customers

Revenue models from future business

Incumbents need to redefine the value propositions for customers from digital transformation. Digitalisation of classic offerings does not always translate to same or increased willingness to pay. In the digital world, customer has come to expect many of the digital service for free or

cheap due to the innovative business models by digital disrupters. Digital business models have also come to rely heavily on scale which pushes digital disrupters to subsidise the growth with substantial equity.

CSPs for long, especially in the developed markets have mastered the subscription based revenue model where there is a constant recurring revenue streams for acquired customers. This provides predictability in terms of future revenues. Digital disrupters have also reinvented transaction or even micro-transactions based business models, for example in the game a lot of mobile applications provide in-app payments for individual events or fermium models where basic services are free but compelling premium features are paid either per transaction or service basis. CSPs continue to pre-dominantly focus on subscription based revenue models, both for the digitally transformed core services and also incremental or new digital innovations. Examples of such new digital innovations include services like MinSky, Minekontakter, Safe by Telenor, SmartHome and Switsj by Telia which are all subscription based. CSPs try to capture this value either through bundling of services with core services or through upselling and cross-selling or in some limited cases through core-independent services. A key value proposition that especially CSPs plan to build their digital services around is the trust they enjoy from their customers.

PLIs except to continue with the existing revenue models, which are centred on the service charges for the pensions account and investment charges or commissions which are percentage of the pension capital. For the life insurance offerings, the revenue is from the insurance premiums based on risk profile modelling. PLIs do not anticipate major changes in their revenue model to some extent due to the regulated nature. Therefore, the aim for PLIs is based on the value propositions of usability and customer experience.

Scope of future business

Increased adoption and exploitation of digital technologies into the core business and the redefinition of business models to align with the digital world could result to changes in the scope of an incumbent's scope of business activities.

CSPs traditional products are being commoditised and therefore that business is rapidly moving towards simplification, especially on the consumer market. CSPs are transforming to become a platform for these categories of customers, where their customer relationships and brand value have significant distribution potential for offerings by partners, innovative start-ups or internal digital ventures. For examples CSPs through their partnerships with mobile operating system

and app store providers have allowed consumers to pay their app and in-app purchases through their CSPs invoice, or CSPs are selling device and identity-theft insurance products. On the business customer segment, CSPs play a crucial role in the digitalisation journey of their customer's business. CSPs are getting integrated into their customer's transformed value chain. For examples, most car manufacturers are pre-integrating telematics capabilities from CSPs in their newer cars to both provide in car entertainment but also for operational purposes including providing self-driving capabilities. A consequence of this evolving value chain on business customer segment is that CSPs risk losing the ownership of customer relationships are they are now a part of the bigger value chain being delivered by a partner or customer, frequently referred to as B2B2C or B2B2B relationships. Interviewee I4 explained the phenomenon as:

> *You become one piece of the whole value creation opportunity space, which means that you are developing a much more proactive, strategically ecosystem thinking. It is very evident in the B2B segment but also, but also becoming more relevant in the B to C segment. And what it means is that, uh, the digitalization both from a technological point of view and from a business model point of view, to link yourself to other players whose value proposition you can enhance. And you can look at your telco product as a part of the bigger value proposition, which is evident in the IOT segment right? Look at water supply or waste collection service to a municipality for example. For telcos, it's a big journey in terms of learning to lose control of the value chain, and then engage in building business models linked to the use of the technology (I4).*

PLIs are experiencing three significant trends on pensions, which is their largest offering. First is the rise of private pension savings as a proportion of total pension savings due to government's emphasis on sustainable pension system (Norway Government, 2009). Second, regulatory changes like EPK is giving more flexibility and control on pensions in the hands of individual members. Third, is shift in pension providers from being a total investment provider to investment facilitator or advisor, such that the individual members make active investment decisions. The result is that relevance of the individual members in their customer relationship management increases significantly. That is their scope of customer relationship and offerings is being redefined from being B2B dominated to B2C dominated.

Structural changes

The third sub question of the research deals with understanding how are incumbents' organisational structures changing for and as a consequence of digital transformation through technology.

Digital transformation, as any other type of business transformation, impacts a company's organizational structures(Matt et al., 2016: 132). Structural changes are not only a consequence of digital transformation but are also essential imperatives (Verhoef et al., 2019) or facilitators for the transformation.

Responsibility of the Digital transformation endeavour

Matt et al. (2015: 341) recommends that the person responsible for digital transformation should have sufficient transformational experience and be engaged with the firm through its entire digital transformational journey and candidates for such roles could be the CEO, CIO, CDO or the head of a significant business unit.

The CSP industry is observed to have established the responsibility of the digital transformation with its CEOs or the strategy office of the CEO. A LinkedIn search and assessment on the profiles associated with Norwegian CSPs incumbents did not reveal any explicit CDO or transformation responsible designation. A digital transformation tracker survey by TmForum showed CEO most common candidate for the responsibility. A summary of the LinkedIn search and TmForum survey is available in Appendix B – Digital transformation responsible. The CSP industry veteran has clarified this phenomenon with the justification as:

> *I'm not critical to the role itself, but the chief digital officer type of thinking, which might be smart in some way, shape or form. But reflects the thought process that, there is some person who's going to take responsibility for the digitalization and the rest of us can do whatever we want to do. And that's definitely not the telco type of thinking. It doesn't mean that the role is wrong, but that in those companies the role reflects really old fashioned thinking. So, instead of building up pockets of competence in building a technology, building a business model, building an operations model and in executing the digitalization; it needs to now encompass or include a lot more is a holistic manner. So it's not just tool development, it is really to see how, and where do you place the platform, the technology, the digitalization as a part of the value proposition and the whole business model (I4).*

The PLI industry on the other hand is observed to be establishing the responsibility of digital transformation on the CIO or CDO, including the CIO co-owing the CDO responsibility. A LinkedIn search and assessment on the profiles associated with Norwegian PLI incumbents summarised in Appendix B – Digital transformation responsible, reveals a significant trend towards CIO or CDO as the digital transformation responsible in the industry.

The role perceived appropriate for the responsibility of digital transformation is observed to be a function of the phase of the digital transformation the incumbent is in or its ambition levels.

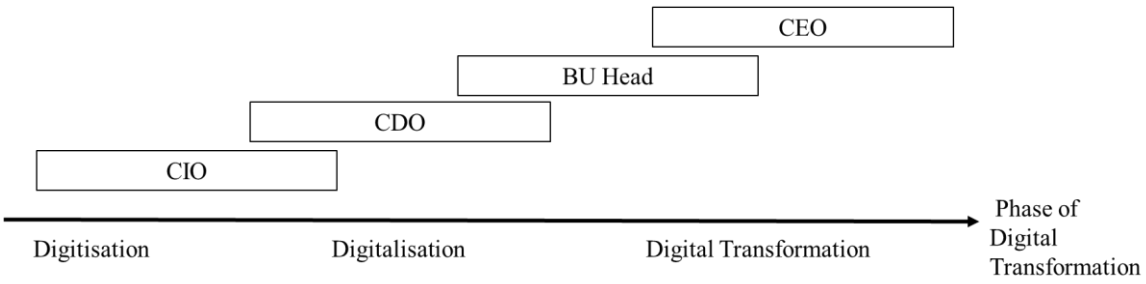

Fig. 19 - Role suitability for digital transformation based on the scope

Integration of new operations into existing or separate entity

A digital transformation can redefine an incumbents' business model and therefore challenge how the new operations shall integrate with the existing one (Matt et al., 2016: 134). FLI industry if focused on operational transformation i.e. digitisation and digitalisation and all such transformed initiatives are fully integrated into the current structures with small adjustments being made into the current structures.

CSPs on the other hand have adopted multi-strategy approach. All operational transformation are completely integrated into the existing structures due to its interdependencies. Certain adjustments are being made to optimize the structures as interviewee I3, a strategy officer in CEO office; described the restructuring of moving the IT division from being a sub division of the technology to directly reporting to the CEO.

> *A change in our organization chart was that we established an IT division that was previously living as part of technology, and then bringing the chief information officer to the top management team. And that has changed the discussion in the executive management group. They are being challenged more, and well the challenges are making sure that we use our scarce IT resources in, in the way that gives the most business impact (I3).*

On the strategic transformation front, CSPs have adopted both approaches dependent on the suitability. A large proportion of the strategic transformations are either from start or eventually integrated into the existing structures. Newer and strategic transformed operations are most likely dependent on the existing structures. For example a Telenor has developed a portfolio of digital services like cloud storage, payments, insurance that are completely independent of its conventional telecommunication network related business model. However these initiatives rely significantly on Telenor's existing structures and assets like its customer base and distribution scale , brand perception, customer data and insights etc. that it is more effective to have it although relatively more loosely but integrated into the existing structures.

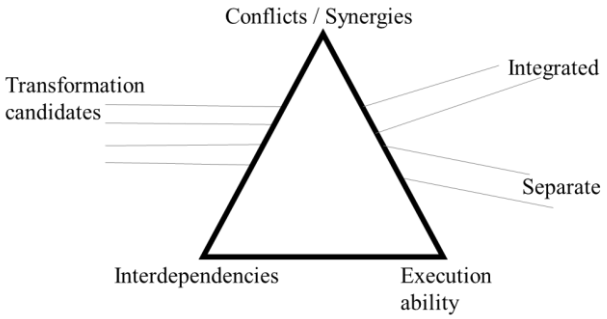

Fig. 20 - Considerations for integration of transformed operations

At the other extreme, some strategic transformation are organisation in separate structures independent of the existing ones. These are either due to them having no interdependence or have significant conflict or needs to be measured quite different from the existing structures. An example is Telia Next, an IoT ecosystem division was created outside of existing structures to allow them to operate and be measured differently than the existing structures.

Expectations on operational changes

Digital transformation, irrespective of whether its scope is limited to operational transformation or also include strategic transformation was observed to effectuate changes in products and services, business processes and skills.

Products and services change expectations are discussed in Changes in value creation section. The incumbent's expect the business processes to be significantly changes as a consequence of the digital transformation. At the very core, business processes are becoming extremely data driven- be it externally exposed processes like sales, customer support, payment etc. or internal administrative processes like strategy management, product portfolio management, HR, employee performance management, investment management etc.

Second aspect of business process is governance. Incumbents have acknowledged that traditional top-down governance is ineffective. Interviewee I4 described the situation as

> *In old fashioned companies for many years, you sat at the end of the table as a head of a big organization and said that I'll make that decision or those kinds of decisions. Such kind of governance is going to happen less and less on a factual and on a subject level. It may continue on the direction level, yes but not beyond that. Because you are not better equipped. As a matter of fact, you are worse equipped than most people around the table and others in your organization. So any governance structure in organization and the decision making as to be federated and institutionalised (I4).*

Third aspect of business process and in a way part of governance is the KPIs and metrics. Incumbents are beginning to loosen up on traditional, long term and finance oriented metrics and KPIs and adopting digital services and platform friendly metrics. During the transient phase, this leads to dichotomy where at the organisational levels traditional KPIs and metrics are employed but in selected digital areas new metrics are engaged, as described by interviewee I3:

> *At the strategic level, we still have a long term metrics like make a forecast based on very simple forecasting techniques. And then set goals for improving particular KPIs by a certain percentage and thereby create an ambition. But then on the initiatives, for teams that work to deliver that KPI, then you need something that's like much more short term OKRs. That's what that particular team is working on, but in the reporting to the top management team, it's usually the long term KPIs. So I believe that we're working with a blend (I3).*

Fourth aspect is way of work that incumbents are adopting for catalysing digital transformation and innovation. Incumbents are designing the operating models for encouraging engagement of self-contained cross-functional teams operating with higher degree of self-governance and agility. This reflects the acceptance of digital transformation as multi-disciplinary agenda by the incumbents. The idea behind this is to localise the competence, ambition and governance functions.

The fifth aspect is the size of the incumbents. Exploitation of digital technologies allows reduction in size of the incumbents in terms of not only number of employees but also organisation breadth and depth. Interviewee I9's described the experience from such a transition as:

> *As we become a much smaller company so the cooperation between the, more of the business part of the company and the digitalization part or the IT part, has become much*

> *closer. So, together we can see opportunities and then pursue them, with a much shorter time from idea to actually execution, which is maybe in essence one of the other competitive edges of being a smaller company. In bigger organisations, you have more bureaucracy and a longer process or more or less lengthy decision processes (I9).*

Interviewee I3 emphasised on the impetus on agile way of work as:

> *Agile is the way of bringing, cross functional teams together with more digital competence actually in the team than we've had before. I think that's definitely a way that we're going to work and it's going to change things (I3).*

Size of a firm is often a reflection of its complexity – both internal as well external. Incumbents are actively strategizing for simplification of its business as well as its IS portfolio to achieve size advantage.

Sixth aspect is skills and culture change in the organisation. Skill change is one of the most significant aspect of the digital transformation. It is not restricted to the technical skills but also leadership and technology application and people management. Closely associated with the skills is the mind set and culture development.

> *We have seen very clearly that it demands more and more crossover competence, for example originally marketing, branding knowledge was a very much field or a sort of a trade in itself. A lot of that stuff is going to be much more insight based on based on access to data, which is a totally different trait. So you need to marry those kinds of skills, both in terms of person and in terms of teams (I4).*

The need for changes in skills is relevant across the board from top management, or even the board and to the more operative layers of the organisation.

> *I think it will be difficult in a future, to get a commercial or an executive management role without having a more than a basic understanding of technology. I believe the top management understand they have to, but they are not really prioritizing it (I5).*

However large incumbents struggle in overcoming the skill gap due to the effects of digital transformation. Operational transformation and even re-focusing due to strategic transformation implies that incumbents have to reduce the number of employees (Heljar, 2017; Magnus, 2019; Marius, 2020) while at same time they are to acquire skill relevant for digital transformation through different means described in the next section. Digital transformation requires embracing the culture of trying and learning by overcoming the fear of failure.

Establishing such a culture in situation perceived to be professionally unsafe if paradoxical challenge.

Acquisition of necessary skills

Incumbents have been testing different strategies for acquiring the skills sets that are pre-requisite for planning, executing the digital transformation and for subsequent operations. CSP and PLI incumbents have employed the conventional methods of upskilling internal workforce, hiring new employees with relevant skills and experience as well as hiring external expertise. For example, Telenor has launched a 40 hours a year learning program (Telenor, 2018) and intrapreneurship program (Telenor, 2016a) to upskill its employees.

Further CSPs have also employed more aggressive skill acquisition strategy like partnerships, and acquisitions. For example, Telia has partnered with Start-up Norway (Benedicte, 2020) and Telenor has partnered with StartupLab (Telenor, 2019) and research institutions like NTNU and SINTEF (Telenor, 2016b) to secure skills with emerging technologies combined with its applications and potential business models. Similarly Telenor acquired Tapad (Telenor, 2016c), Telia invested in Spotify (Ingrid, 2015) and erstwhile TV and broadband provider GET had acquired FutureHome (Lucas, 2018) with one of the objectives being acquisition of digital competence and technology. The effectiveness of these aggressive strategies are as of yet, not well established.

Financial aspects

The fourth sub questions deals with how incumbents deal with financial aspects for enabling digital transformation. According to Matt et al. (2015) financial aspects are both driving and a bounding force for digital transformation.

Threat to the current business

A brief introduction to the CSP and PLI industry context is described in the section Industry background earlier in this chapter. The key objective of this sub dimension is to assess the perceived urgency in the industry to undertake digital transformation. A diminishing core business can create the motivation to invest in a transformation either for operational efficiency or strategic business remodelling or diversification.

CSP industry is in essence a technology industry and has experienced multiple iterations of technology and business model innovations. Until the early 21st century, the industry primarily

experienced competition from its direct competitors that is to say intra industry competitors. Incumbents defended the direct competitors by either differentiating themselves on quality or bundling of offerings or by launching or acquiring brands targeting cost conscious customer segments. Subsequently with the proliferation of internet and smartphones CSPs core products and services started facing disruption from outside the industry digital players. For example Skype, WhatsApp, Facebook Messenger and Apple's iMessage disrupted CSPs SMS and voice calling services. CSPs responded by not competing with the digital disruptors but aligning with then trend and changing their business model to be based on data services. Now, the treat to CSPs is the commoditisation of this data business model leading to increased competition among CSP players. The CEO of a CSP summarised it as:

So, the burning platform is understood by everybody in the industry and investors (I4).

Top management in CSPs have therefore have digital transformation very high up in the agenda. The Telecommunication industry forum has digital transformation as its most important focus area and have developed frameworks for organizational structures, IS Architecture, partnerships, capability map and governance (TmForum).

PLI industry in Norway had been under rigorous regulation until 2009. In 2009, pension reforms were introduced and the government, regulator and the market have set a direction for service pensions from being defined benefits to defined contribution in addition to increased retirement age. Subsequently government have also introduced private pension to encourage private savings by citizens including the launch of IPS scheme with tax deferment benefits. This has resulted in about 39% increase in pension commitments from 2013 to 2018 (Nordisk Forsikringstidskrift, 2019). Along with market expansion, competition among participants of PLI industry has been flattening out (Tore, 2016). The PLI industry does not experience a burning platform. The industry however, is confronted with a potential increased competition between the industry participants as a consequence of the "Egen pensjonskonto" reform due to be implemented from 2021. PLI industry is adopting digital transformation's digitalization objectives to mitigate this threat.

Source of funding the digital transformation

CSPs are high margin businesses with average EBITDA of 35% and despite being capital intensive generate billions in yearly free cash flow. Telenor for example in 2019 had generated a free cash flow from operating activities of NOK 34.2 billion (Telenor, 2020: 7). Incumbent CSPs have the financial capacity to fund the digital transformation.

PLIs ambition for digital transformation is constrained to digitisation and digitalisation which are funded through its internal accruals. Operational transformations, being less pervasive (Verhoef et al., 2019) are relatively easier to create business cases. Interviewee I9 described the financial availability situation as:

> *So far, it's been a high willingness to invest in technology all the time. So, in terms of our organization, technology is the only area which is still recruiting and growing in size (I9).*

CSPs, despite generate free cash struggle to sell investing in strategic transformation. Despite a universal acceptance of the burning platform phenomenon of the CSP industry, investors or specifically the owners do not perceive the situation in the same way. The reason is the role CSPs play in the owner's investment portfolio. CSPs have had long tradition of generating free cash and distributing dividends and that implies investors have allocated to their stable, low risk and high steady income or dividend generating sections of their portfolios. Multiple interviewees confirmed the phenomenon as listed below and identified that as one of the biggest inhibitors for digital transformation vision.

> *The incumbent telecom owners, have bought into a dividend stock, which means that it's a fight for capital to do the necessary changes, not just in investment in technology, but the investment in the competencies necessary change of organization and so on and so forth. Right. And then, you have a lot of start-ups building up with tremendous amount of access to money. So from a strategy point of view, this becomes a pretty big struggle for incumbent telcos. The owners say, well, I don't need to do that because I can do it on the stock market. So I'll shift my money from company A to company B on the stock markets. So I want you to be a dividend yield company, and then harvest that. And if I need to make changes, I don't want you to do it. I'll do it myself, uh, by investing in a growth company (I4).*

> *We had agreed separate KPIs with a separate board, separate governance structure and separate funding establishment; and felt we had very good kind of anchoring and understanding in the board and we were actually delivering on those KPIs. And then we received a decision just made kind of from the top level also to shut it down regardless of the KPIs on that structure. And this decision wasn't actually taken through the normal governance structure or the board. So it's a little bit like, even though you get, it's kind of a, a separate structure, separate funding and they agreed KPIs even with a board, if*

> *you don't have a very deep commitment and understanding from top management and owners, it's still at risk. I think, it shows that we were probably underestimating the kind of the political needs for continuous stakeholder management, because we were relying on kind of, we have a board, we have KPIs and that's, that's what's we focus on (I1).*

CSP industry forum TmForum in its digital transformation tracker surveyed 185 executives from 95 distinct CSP incumbents in 64 countries and discovered that owner's reluctance is significant inhibitor facing the industry globally in digital transformation (TmForum, 2017).

CONCLUDING REMARKS

The macro trend of digital technology led disruption and opportunity creation is acknowledged by the incumbents. Significant proportions of the incumbent perceive digital disruption as a threat to the business continuum, while some perceive it as opportunity to pre-empt the disruption and capture the first mover advantage. In either case, the notion of the need to undertake a digital transformation is omnipresent. The scope and ambition of the digital transformation through varies significantly and is a function of the disruption observed or anticipated by the industry. The three phases of the transformation – digitisation, digitalisation and digital transformation are well understood but the perception of strategic versus operational nature of these phases is not consistent and the disconnect stems from the perceived disruption in their respective industry at the macro level as well as the incumbents and the managers ambition at the micro level. The phase of digitisation is largely historic even in the incumbents of industries.

The role of digital technology as a central enabler for transformation is also well anchored in the incumbents. Though initial experimentation and learning by doing, incumbents have come to realise two things. First, digital technologies often referred to in various literatures like artificial intelligence, big data, blockchain etcetera are very relevant for operational transformation but for strategic transformation; matured applications preferably using these or other conventional technologies as building blocks are more relevant catalysts. Second, digital transformation is far overarching than just increased use of technology and that all organisational dimensions needs to be aligned included in a homogenous strategy. These aspects validate the applicability of the multi-dimensional digital transformation framework theory that formed the basis of the four research sub questions.

Incumbents have different ambitions towards exploitations of digital technologies and perception of the role of IT in the digital transformation journey. Incumbents with historic experience with technology and have experienced higher degree of disruption tend to have more aggressive ambition towards adoption of technology – often of being an early adopter and in selective cases of being a technology innovator. They also perceive IT as a critical enabler of new business models. The incumbents with less challenging environment tend to adopt a technology follower ambition and perceive IT as a supporter of business. CSP industry is observed to have similar traits as media industry analysed by Matt et al. (2016).

Matt et al. (2016) notes that the changes to a firm's value creation dimension of the digital transformation framework are strongly related to the dynamics of the industry it relates to and often not replicable to other industries. CSPs core business of classic offerings is gradually moving towards commoditisation. Multiple trends are visible in CSPs future business scope which include high cost efficient CSP operations targeting value for money customers with commodity services, digital platform provider allowing digital services from partners to its customer base, joint value creation with partners while losing customer ownership and tight integration into its customer's own digital transformation process. CSP, however continue to focus on the subscription based recurring revenue model that they have mastered over their classic offerings. PLI industry anticipates a significant shift in the customer relations, especially for the pension line of business from B2B to B2C; catalysed by the regulatory and industry trends and therefore PLIs diversifying their digital interfaces towards consumer customers from a customer experience perspective.

Incumbents in both CSP and PLI industry expect structural changes to support the digital transformation and as a consequence of it. The approach however is quite different between the two industries. The responsibility of the digital transformation is dependent on the ambition and pervasiveness of the incumbent industries digital transformation. CSPs focus on both operational and strategic transformation and therefore the responsibilities lies at the highest level of the organisation, i.e. its CEO. PLIs primarily focus on operational transformation which is technology led and therefore the responsibility of the digital transformation is with the CDO or CIO role. Most transformational initiatives in both CSPs and PLIs are integrated into the existing organisational structures owing to its close inter-dependencies and synergies. CSPs' attempt at significant strategic transformation implies that specific initiatives are separated from the existing structures. Skills for digital transformation is a critical need identified by both industries and varies dependent on the nature of changes that are part of the digital transformation strategy.

As digital technologies are the key catalyst of the digital transformation, financial aspects of an incumbent is a key enabler or inhibitor of an incumbent's digital transformation. PLIs are not under a significant disruption threat and therefore have a measured response that is often financed through internal sources and supported by the top management. Despite CSPs generating substantial amount of free cash flow and top management and industry participants acknowledging the burning platform phenomenon in the industry, owners of CSPs either do not agree with the burning platform situation or do not trust the CSPs in addressing it. The roles

that CSPs play in the portfolios construction of the owners is also a significant inhibitor of their commitment to investments in digital transformation.

Evidence of systematic similarities with the industry as proposed by Matt et al. (2016) are observed. However, we have also uncovered sub grouping of behaviours within a single industry like CSPs.

Limitations and recommendations

The study has had limitations as discussing further in the chapter and is important for readers to qualify the study against.

First on the insight generalisation, Seidman (2006) proposes the criteria of sufficiency and saturation to test if sufficient data sources are employed for generalisation of the insights from a case study. Sufficiency deals with the quantity and assortment of research participants that are consulted for bring representative of the population. Saturation refers to the depth of information gathered such that conducting more interviews would no longer yield newer insights. I believe that the insights gathered from the CSP industry participants fulfil both the sufficiency and saturation criteria for the geographical constraints identified in the research methodology. Further empirical evidence and potentially comparative case studies are deemed essential to test the literal replicability of observations across geographical, cultural and macro-economic and factors related to local industry dynamics.

The research on PLI industry constituents does not fully meet the sufficiency and saturation criteria. The interviews with the PLI participants have been in depth tempting to conclude the saturation criteria is met. However, firms in PLI industry are in most cases consolidated into a larger banking and financial services firms resulting in the dynamics of banking and financial industry into influencing the study on PLI industry. Further empirical evidence gathering is therefore considered essential both aggregate level of banking and financial services and individual level of PLI industry for effective generalisation of insights at PLI industry level.

The goal of this research was to provide empirical evidence for the digital transformation framework by Matt et al. (2015) and generate comparative elements for similar empirical study on media industry by Matt et al. (2016). There is an element of difference in the nature of unit

of analysis, wherein I have focused on the subjective personal viewpoints of the managers of the CSP and PLI industries while Matt et al. (2016) have based the findings on the organisational viewpoint through the managers.

This case study by its nature only addresses data triangulation of the four types of triangulation proposed by Patton (1987); (Yin, 2003: 98). Further research on the same industries by other researchers would help increase validity of the research through investigator triangulation. Researchers can also test the findings from this study by applying other congruent or contradictory theories and contribute to theory triangulation. The research shall also benefit on methodological diversification especially through a quantitative research to validate the insights.

A critical finding through this research is the conflict of opinion between the top management and the owners in an incumbent's digital transformation journey in the CSP industry. The argumentation for the influence suggest that the phenomenon is generalizable to all industries that have historical track records of being high dividend yield companies. Further research is recommended to both understand the owners' viewpoint of the observed phenomenon and to develop strategies of how can top management and owners of such incumbents co-cordially navigate the digital transformation journey.

The findings of the case study also serves as a learning artefact to the practitioners that they need to devise a digital transformation strategy both at macro industry level of the industry and micro firm level. The digital transformation framework and its dimensions along with the strategic imperatives serves as a good guiding template in developing such a strategy. This study also provides examples to practitioners on how two industries in a different ecological situations have developed very different strategies looked through the lens of the same theoretical dimensions.

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APPENDIX A – INTERVIEW GUIDE

Theoretical Concept	Questions
Financial aspects	How is the overlap competitive situation of your Industry?
	How is your company's situation similar or different to that of your industry?
Nature of disruption	Who would you identify as your company's most important competitors?
Motivation, Financial aspects	Why is digital transformation relevant for your company?
	What are the expected outcome or value drivers from Digital transformation?
Changes in Value chain or network	How do you see your interfaces towards customer becoming digital? What are your ambitions?
	How does the digital transformation affect your value propositions and earnings?
	How do you see the role of your company or industry changing in the transformed value chain?
Transformation Process	How do you relate to the phases of Digitisation, digitalisation and digital transformation, Or Strategic and Operational transformation?
Technology exploitation	What is the perceived roles of Digital Technologies in the digital transformation strategy?
	How high are the perceived ambitions of your organisation towards exploring and exploiting digital technologies?
	What in your opinion should be the ambition level?
Structural changes	Who in the organisation is responsible for digital transformation?
	How are transformed capabilities planned to be integrated / associated with existing capabilities? In the same unit or in segregated units? What is the rationale behind it?
	How do you perceive the operations different functions of your organisation will change during and after the transformation?

Organisation structure imperatives	How has the organisation changed to enable Digital transformation? In terms of organisational hierarchy, legal structures, reporting structures, KPI allocation etc.?
	How are these Metrics / KPIs in the transformed operations different from the current KPIs? And why?
	How and what capabilities or resources are being created in the organisation to capitalise on digital technologies for transformation? E.g. Way of work, way of organising, agility etc.
Structural Changes	How do you see the need for skills and competence changing with the digital transformation?
	What are your sources of digital competence? Ref. Internal, External, Partnerships, M&A etc.?
Technology exploitation	What do you associate with the term technologies? Which technologies can you think of being important?
Financial aspects	How is the digital transformation funded? How strong is the commitment from top management and stakeholders?
General open ended	What are the key challenges in the use of digital technologies for operational and strategic transformation?
	What are the key learnings you have collected from your engagement in digital transformation initiatives?

Fig. 21 - Consolidated interview guide

APPENDIX B – DIGITAL TRANSFORMATION RESPONSIBLE

A LinkedIn search was undertaken on 20.05.2020. The top 8 industry players accounting for 96% of PLI industry's revenue market share and top 4 industry players accounting for over 85% of revenue market share in CSP industry were analysed for professionals who have or have had transformation responsibilities. Search keywords used were "CDO", "digital", "digitalisation", "digitalisering", "transformation" and "transformasjon". The profile of the shortlisted candidates were read and assessed to determine if it indicated responsibility for digitalisation or digital transformation. The Fig. 22 below summarised the roles observed to have digital transformation or digitalisation responsibility and number of such profiles having that shortlisted role.

Company	**Role with digitalisation responsibility**	**# of profiles found with that role**
Gjensidige	CDO	2
Sparebank 1 Forsikring	CIO who is also lead for digitalisation	1
Storebrand	CDO	1
KLP	CIO is also the Director of digitalisation	1
Nordea Life and Pensions	CDO for pensions and life insurance CDO for Nordea group also has the designation Head of transformation	2
DNB	No explicit role found	X
Oslo Pensjonforsikring	No explicit role found	X
Danica Pensjonforsikring	Head of IT was also the CDO with responsibility of digitalisation and change management	1

Fig. 22 - Summary of LinkedIn profile search for designations with digital transformation responsibility in PLI industry

Company	Role with digitalisation responsibility	# of profiles found with that role
Telenor Norway	No explicit role found	X
Telia Norway	No explicit role found	X
Ice Norway	No explicit role found	X
Altibox	No explicit role found	X

Fig. 23 - Summary of LinkedIn profile search for designations with digital transformation responsibility in CSP industry

CSP Industry association TmForum in its digital transformation tracker for 2017 surveyed 185 executives from 95 distinct CSP incumbents in 64 countries. A question in that survey dealt with where in the organisation is the responsibility for digital transformation and its results are as shown in Fig. 24.

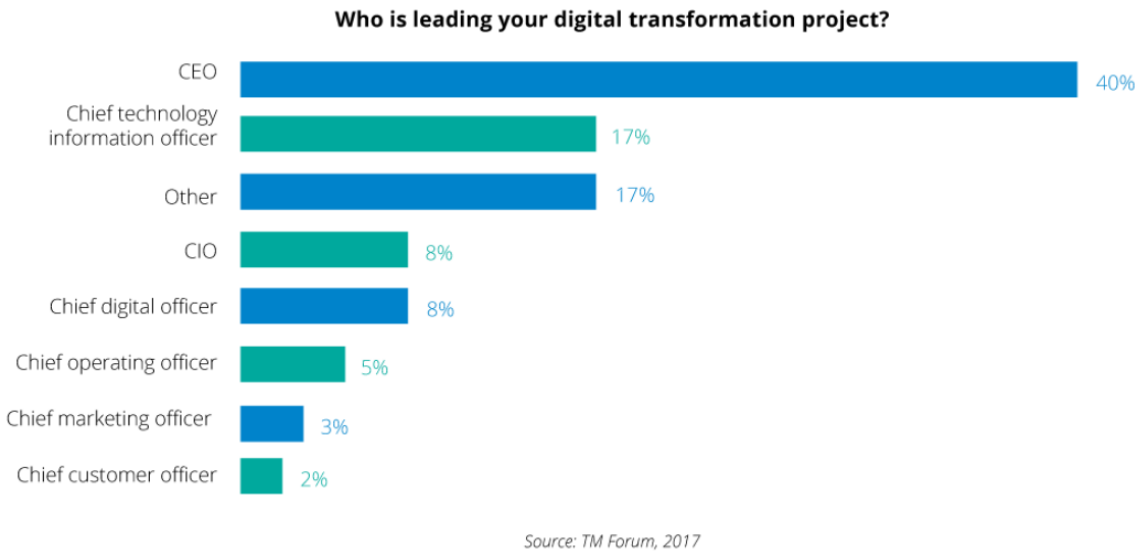

Fig. 24 - Survey on digital transformation responsibility (TmForum, 2017)