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"Augmented Intelligence is the *other AI* that we need"

How change agents engage in a trio of processes during the Technochange journey

Abstract

More and more companies putting their bets on Automation and Artificial Intelligence (AI) to improve their efficiency and profitability but the mindset gap has been a barrier for many organizations to successfully implement these emerging technologies. One suggested solution is to have change agents on board to create a need and vision for change as well as implement it. There are studies done at the macro and meso levels about digital transformation but there is a gap in understanding of how the change agents engage with such Technochange at micro level. This study sets out to provide an answer by studying change agents in Automation and AI initiatives across Telecommunications companies in Sweden with a focus on their "*lived experiences*". Sensemaking and sensegiving are at the heart of this study, together with translation theory, this research finds that the change agents engage in a trio of processes to arrogate and implement the Technochange. The association of these processes are then drawn and the importance of understanding this engagement in Automation and AI is then discussed.

Key words: Sensemaking, Sensegiving, Translation Theory, Change Agent, Technochange, Automation, Artificial Intelligence.

Author Mai Pham

Supervisor Frida Pemer

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Course Director Markus Kallifatides & Susanne Sweet

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Glossary

Artificial Intelligence (AI)	Is defined as the scientific studies that computers can think, do, interact and act in many fields as a human that people are good at. It is the science and engineering of making intelligent machines, especially intelligent computer programs (Stone et al., 2016).
Augmented Intelligence	refers to the idea that machines and humans working together to achieve better speed, and improved accuracy and quality.
Change Agents	(also known as *Change Implementers*) are defined as actors "who are responsible for identifying the need for change, creating a vision and specifying a desired outcome, and then making it happen" (Kanter et al., 1992).
Change Recipients	represent the largest group of people that must adopt, and adopt to change. Their response and reaction to change can fundamentally reshape that change (Kanter et al., 1992).
Digital Innovation	is defined as the employment of digital technology during the process of innovating. Digital innovation has significantly changed the essential attributes of new products and services, introducing novel value creation and value propositions (Nambisan et al. 2017) .
Digital Transformation	is the combined effects of several digital innovations bringing about novel actors (and actor constellations), structures, practices, values, and beliefs that change, threaten, replace or

	complement existing rules of the game within organizations and fields (Hinings et al., 2018).
Enterprise Resource Planning (ERP)	is a complex technology designed to integrate major business processes such as financial administration, human resource management, manufacturing, and supply chain management. ERP is seen as Legacy system.
Machine Learning (ML)	is a subfield of Artificial Intelligence. ML is concerned with building systems that improve their performance on a task when given examples of ideal performance on the task, or improve their performance with repeated experience on the task (Stone et al., 2016).
Robotic Process Automation (RPA)	is the technology that allows anyone today to configure computer software, or a "robot" to emulate and integrate the actions of a human interacting within digital systems to execute a business process.
Sensegiving	is a process of "attempting to in fluence the sensemaking and meaning construction of others toward a preferred redefinition of organizational reality" (Gioia & Chittipeddi, 1991: 442).
Sensemaking	can be defined as the process individuals undertake as they try to understand what is going on around them, as they try to *make sense* of events and experiences (Weick, 1995). Sensemaking is an active process that involves the interaction of information seeking, meaning ascription, and associated responses (Thomas, Clark, & Gioia, 1993).

Telecommunications	is the suite of technologies, devices, equipment, facilities, networks, and applications that support communication at a distance. The range of telecommunications applications is broad and includes telephony and video conferencing, facsimile, broadcast and interactive television, etc. (*Source*: The National Academy of Sciences – Engineering – Medicine).
Telecommunications Industry	includes suppliers of telecommunications equipment and software products sold directly to consumers and also to service providers, as well as the telecommunications service providers (*Source*: The National Academy of Sciences – Engineering – Medicine).
Translation Theory	"attracts attention to the fact that a thing moved from one place to another cannot emerge unchanged: to set something in a new place or another point in time is to construct it anew". It also depicts that an idea, object or action can only exist in a process of continuing *translation* (Czarniawska and Sevón 1996).

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1. INTRODUCTION

The greatest danger in times of turbulence is not the turbulence – it is to act with yesterday's logic.
(Drucker, P., 1980)

1.1. Mindset gaps in digital transformation: one way to address it

The last two decades have witnessed major advances in digital transformation on a global scale (Nambisan, Lyytinen, Majchrzak and Song, 2017; Hinings, Gegenhuber and Greenwood, 2018). Many studies have shown that "*achieving digital transformation is critical*" for enterprises (Fitzgerald, Kruschwitz, Bonnet and Welch, 2013) and there is an urgent need for people with skills and experiences with different digital technologies (cf. Soule, Puram, Bonnet and Westerman, 2016) as well as the mindsets needed to deal with this transformation (van der Bel, 2018). The speed of change is increasing though some argue that it is not fast enough to adapt to the increasingly digital market environments and to realize the full potential of digital technologies (Kane, Palmer, Phillips and Kiron, 2015; Kane, 2017).

For managers wishing to adopt digital technologies at organizational level, a critical task is to help their employees understand the values of the new digital technologies and start using them in their work, especially "*luddites"* and *"naysayers"* staff (Knight, 2015). One way that leaders could do is to have a network of *"champions"*, who work across organization and have good communication skills, on board so those champions can coach others on how to use the digital technologies to their own benefits (Knight, 2015; Fitzgerald et al., 2013). It is, therefore, important to recognize *how* the champions could create such desirable impacts on their organizations and in this study, I follow Kanter, Stein and Jick (1992) as well as Ford, Ford and D'Amelio (2008) to call them "*change agents"*. Change agents are responsible for "*identifying the need for change,*

creating a vision and specifying a desired outcome, and most importantly, making it happen" (Kanter et al. 1992, Ford et al. 2008, Iveroth 2010).

1.2. Automation and AI: everyone is talking about but not everyone is doing

Among the transformational technologies, one of the most discussed technology segments are Robotic Process Automation (henceforth: Automation) and Artificial Intelligence (AI). Last year, the worldwide spending on these two technologies has grown at 57% and 54% respectively (according to statistics from IDC Spending Guide 2018 and Gartner 2018). Notably, AI's spending is estimated to reach $58 billion by 2021, which is more than 10% of Sweden's GDP (based on CIA's 2017 statistic). That early adopters of Automation and AI functionality are believed to gain competitive advantages in their markets explain for the fact that many governments and enterprises examine and give priority to their strategies around AI (Pollard, 2017).

Given the pace of change and the pressure to adopt, it becomes more critical for organizations to bridge the mindset gap mention in **Section 1.1**. However, a recent study by Harvard Business Review (HBR) shows that many companies are still fallen short of setting their very foundation to ensure successful transformation (Bean and Davenport, 2019). Many companies are falling behind their commitment to become data-driven; particularly, 72% not yet forge a data culture, 69% not created a data-driven organization, 53% not treating data as a business asset. For these reasons, the leaders who want to have a good return on the (enormous) investment in these technologies should first attend to their employee' mindset gap in Automation and AI by having a network of change agents on board.

1.3. Research Purpose

1.3.1. Sensemaking

The question then is, what change champions or change agents do to play such an important role in ascertaining a demand for change, constructing a vision and implementing it in organizations. It is not simply a matter of achieving successful digital transformation results, it is their "*lived experience*" that peaks my interest. How do they label and categorize to comprehend "*what's going on here*?" and to know "*what do I do next"* (Weick, 1995)*?* Such experience of "*being thrown into an ongoing, unknowable, unpredictable streaming of experience in search of answers to these questions"* is known as sensemaking (Weick, Sutcliffe and Obstfeld, 2005). And the ongoing retrospective construction of conceivable explanations that help actors to explain the reality and take action have been studied under sensemaking (Weick, 1995) and sensegiving (Gioia & Chittipeddi, 1997).

When it comes to the domain of sensemaking, a suggestion from Weick et al. (2005) is to first think about the making of "*taken-for-granted*" label, let say, AI. Around 63 years ago, in June 1956, a group of scientists and mathematicians came together to build a machine that could think and back then, they referred to it as a "*strange new discipline*" which they had not come up with a name to call it (Talty & Julien, 2019). Today, AI has burgeoned and attracted more and more interest from various actors. The sensemaking process therefore, is an ongoing, instrumental, subtle, social and easily taken for granted (Weick et al., 2005). The sensemaking and sensegiving of change agents, therefore, are at the heart of this study.

1.3.2. Change Agents Working With Automation And AI

The roles of change agents who champion Automation and AI transformation by working across organizations and building bridges between technology and business are important. There is currently limited understanding about them. To give a voice to the change agents working with Automation and AI in the workforce today, by focusing on their perspectives, motivations and actions, I hope to inform the community about how they understand the impacts of those technologies on their organizations and driving the technological change correspondingly. My real interest is in how participants make sense of the rapid digital transformation, particularly Automation and AI, and how this perspective informs their actions and how they give sense to other stakeholders in their working context.

One of the key barriers in adopting Automation and AI is to quantify business values derived from deploying the Automation and AI solutions (Pollard, 2017). With this reason, I decide to focus on change agents having in non-technical positions, i.e. neither data scientists nor Automation and AI experts. To have a good focal point in studying the change agent role in driving Automation and AI adoption in Swedish organizations, Telecommunications (henceforth: Telecoms) is selected. Telecoms industry is under pressure from other industries such as software and finance to change and innovate (Allee & Taug, 2006; Peppard & Rylander, 2006; Stienstra et al., 2004).

I concentrates on professionals who are employed to develop or drive in-house digital innovations for those Telecoms companies in Swedish contexts. Those teams are making use of off-the-shelf products and developing tools, applications and algorithms concurrently for the use of their companies. By studying Automation and AI professionals working in Swedish Telecoms companies which have significant amount of data and complex infrastructures with high potential

to utilize the technological achievement of Automation and AI, the author seeks to understand the driving force behind the change.

1.3.3. Theoretical Relevance

With the emerging technology like Automation and AI, there is a dearth of research into its perception nor its actual application in business context. Previous literature has discusses the adoption of emerging technologies from regulatory and organizational perspectives but there is a gap in understanding from individual perspective. This study provides a different approach in understanding the role of change agents and how they construe the new technologies at the micro level. By examining sensemaking process of the actors at micro level, we can draw important references to macro level-analysis (Weber & Glynn, 2006) and have a clearer view about the "*micro foundations of institutions*" (Hallett & Ventresca, 2006).

1.3.4. Practical Relevance

The practical benefits are two-folds. First, this study aims to provide better understanding about how employees perceive and drive Automation and AI initiatives. Not only it then contributes to meaningful discussions from social perspective, it also enables leaders to realize higher benefits from adopting these new technologies. The result is expected to enhance the current understanding about emerging technologies for leaders, managers and relevant actors.

Second, instead of looking at the employees as reactive change recipients, this thesis adopts the proposition that organizations can consider the role of change recipients as change agents engaging them as active agents in the change process (Iveroth 2010). In the near future, to have an organizational or wider impact or adoption of Automation and AI, not only do we get change

agents on board but also need to engage change recipients taking more effective roles in the change process.

1.4. Research Question

How are the change agents working with Automation and AI making and giving sense of the rapid technological development? How are they translating such vicissitude in their organizations?

1.5. Delimitation and Demarcation

Within the time frame of four months, certain demarcations were necessary in order to conduct a meaningful qualitative research (Miles and Huberman, 1994). First, the empirical study is limited to Telecoms industry in Sweden. This enable a focused backdrop to understand the change agents working in this industry, which allowed for deeper engagement. Furthermore, it allowed the author to draw on the professional networks to collect empirical data. Second, in order to draw meaningful conclusions and not to divert the attention to the variation of many emerging technologies, the main technological focus is robotic process automation (RPA) and AI. The scope of RPA in this study is concerned as far as data-related business processes, and excluded manufacturing-related or industrial robotics automation. The terminology of AI here could be considered as narrow AI which is the whole constellation of computer vision, machine learning (ML), natural language processing (NLP) etc. The purpose of this generalization is to have the participants quickly understand my interview questions instead of spending time going over, mostly debatable, various definitions of AI. Last but not least, the change agents referred in this paper are internal change agents, excluding of external ones such as IT or management consultants.

2. LITERATURE REVIEW

This section starts with the current literature about Automation and AI (2.1), where this paper is set against. The significance of the research gap at micro level is then highlighted (2.2) by bringing in suggestions for further studies from other scholars from macro and meso perspectives. The main purpose is to accentuate that there is a research gap about these emerging technologies from management research angle. To position this study in an appropriate theoretical framework, the concept of Technochange and change agents in continuous Technochange are introduced in (2.3).

2.1. An Overview of Automation and AI

We always underestimate the impact of technology in the short-term and always overestimate the power of technology in the long-term. (Roy Amara)

2.1.1. Renaissance of Automation and AI

New technologies are created at a very fast pace and not all of them will last or matter to the business. For the clarity of the technical terminology, Dornberger, Inglese, Korkut, and Zhong, (2018) mapped together a summary illustrating the whirlwind of digitalization development phenomena and argued for the current renaissance of AI. I would like to draw the attention to Computational Intelligence categorized under AI (**Table 1**) as the main backdrop where this research is set against.

Timeline	Main streams of development based on Information System Literature	Changes in the interaction of humans with computers and between humans and computers to show how individuals, business and the government have been adapting to these changes
1970s to 1980s	Information System	• Data Warehousing, Record Management, Internet World-Wide Web • Process Workflows, Knowledge Management, Project Management, Programming Web Design • IT Strategy, IT Security, Innovation – Tech Management, Information Ethics
Late 1990s	E-Business Application	• Applications in Enterprise, Between Enterprise (B2B) and To Consumers (B2C) • E-Government Public Sector, Logistic, Supply Chain Management, Governance and Compliance
Early 2000s	Web 2.0 Revolution	• Social Media Networking, Cloud Computing, Location-based Services • Online Collaboration, Decision-making Support, New Business Models
2010s	The Renaissance of Artificial Intelligence	• 3-Dimension Printing, Internet of Things, Cyber Robots Human 2.0, Computational Intelligence • Robotics Automation, Health 2.0 MedTech, Virtual Reality, Machine Ethics • Cyber Security, Industry 4.0, Working and Fighting Machines, Blockchain Crypto Currency

Table 1: A short summary of the development and rise of computational technology over the last decades (Dornberger et al., 2018)

Automation and AI are employed to illuminate the inexhaustible pursuit of higher efficiency, higher productivity, lower cost, and lower resources of companies which have been suffering from decreasing revenues or profitability (Pollard, 2017; Dirican, 2015). The expeditious progression of these technologies in society has raised questions about its standing in the future (Acemoglu & Restrepo 2018; Smith et al. 2014; Brynjolfsson & McAfee, 2011). Future progress is expected to be even more dramatic and many commentators predict that these technologies will transform work around the world strikingly (Küpper et al. 2018; Goertzel & Pennachin, 2007). Across many industries, organizations are not only addressing their own digital transformation but also increasing their own Automation and AI adoption, which are believed to go hand-in-hand (Pollard 2017).

There has been a significant growth of interest in Automation and AI in the last few decades. Based on the new technological trends such as AI, Robotics Automation, big data and cloud computing etc., Dirican (2015) and Stiglitz (2014) hypothesized that AI and robots will replace the human race in many jobs and there would be tremendous changes in how societies function. However, there is a lack of empirical evidence on how organizations are working on those changes in the conjectural direction (Hinings et al., 2018). As it is believed that there are challenges that organizations have to address before adopting the technology such as AI Talents (data scientist, machine learning experts etc.). Also turning their existing infrastructure to AI-ready and quantifying values derived from having AI solutions are the other challenges (Pollard, 2017).

With digital technology as a forceful economic driver, more and more workers will become superfluous. Yet, thanks to automation and AI, some human work skills are more valuable than ever. (Acemoglu & Restrepo, 2018; Stone et al., 2016; Brynjolfsson & McAfee, 2011). Standford's "One Hundred Year Study on Artificial Intelligence" 2015 – 2016 report led by Stone (2016) has suggests that while the current AI technologies are impressive, they are highly tailored to particular tasks. Each application typically requires years of specialized research and careful, unique construction (Stone et al., 2016). One of the keys enabling such application development is to acknowledge that the foundation for Automation and AI in organizations are data and data-driven operations (Acemoglu & Restrepo 2018; Dornberger et al. 2018; Stone et al. 2016). Therefore, it is critical to understand the roles of data and data strategy in deploying Automation and AI.

2.1.2. Data as the driving force behind Automation and AI

We now move to the very foundation that enables such rapid development of Automation and AI: big Data and computerization capabilities. In short, it is the availability of big data, computing

power, the cloud and advances in algorithms – which make AI easier, cheaper and faster to implement. (Dornberger et al., 2018; Pollard, 2017).

Data science are emerging in interdisciplinary fields that overlap in content with big data, business intelligence and analytics (Miller, 2018; Lokers et al., 2016). As more data have become available on the Internet and from other sources, organizations have begun to collect it in growing volumes, new business models and algorithms have emerged, and data sales have become potential revenue sources (Lokers et al., 2016). The computational power has also enhanced the accessibility and storage of data, which in turns, enabled larger, faster and more complex data-intensive analysis across disciplines (Lokers et al., 2016). Organizations have utilized their data for evidence-based decision making, which introduces the notion of a of data-driven culture in organization. Deriving organizational benefits from the new technologies requires a unique set of organizational and technical implementation activities.

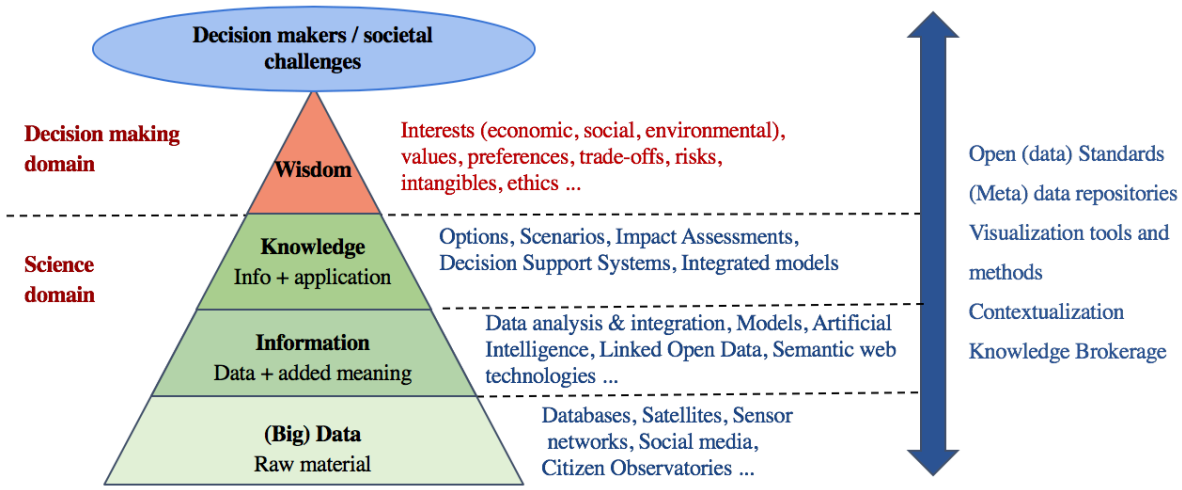


Figure 1: Data – Information – Knowledge - Wisdom hierarchy, from Big Data to Decision Making. Adapted from Lokers et al. (2016)

Given the emerging nature of Automation and AI, it is important to note that those technologies are not another fixed IT or IS infrastructure needed to be integrated into the organization. Rather, that Automation and AI needs to be interpreted requires high capacity on the ground to understand and make sense of the technologies before adoption. Once they are put in the right context, they can generate a lot of values for the organizations. Otherwise, it will be a complete waste of investments (Dornberger et al., 2018; Pollard, 2017). Although studies in change and project management in the field of IT and IS have examined the role change agents driving the Technochange (Iveroth, 2010), there is a gap in setting Automation and AI as the backdrop to appreciate how change is implemented.

In summary, Automation and AI are emerging technologies and their impacts are projectably significant yet unknown and unclear. They attract a lot of attention and investment but it is uncertain how companies are implementing them. Also, Automation and AI should be distinguished as two different technologies. Simply put, it can be summarized that automation collect data and automate business processes while AI system create wisdom from that data. This study has simplified the differences between them in order to put the focus on change agents working with them in practice.

2.2. Different Perspectives in Management Research

In general, regarding the field of technology research, technical publications is 100 times higher than all social sciences research, including of economics, finance, business management (Groen and Walsh, 2013). Scholars have suggested for more management research to be carried out regarding this interdisciplinary field. Among the literature, there are many discussions at macro

and meso level but there is a gap in understanding how actors at micro level are perceiving and enacting such rapid change in Automation and AI.

2.2.1. Macro Level

The adoption of Automation and AI is considered as competitive advantage and therefore, early adopters of AI functionality will see significant benefits (Pollard, 2017), which also speaks to the current urgency in the market for enterprises and governments to consider their approach and strategy around AI (Acemoglu & Restrepo, 2018; Manyika & Sneader, 2018; Belfiore, 2016). At macro level, Hinings et al. (2018) and Brownsword & Yeung (2008), have called for governments, private-sector leaders, and innovators to work together to better coordinate public and private initiatives, including creating the right incentives to invest more in human capital responding to the high-speed technological development. Brownsword & Yeung (2008), particularly, coined the term "*techno-regulation*", arguing that those new technologies are radically different from their predecessors and require new regulatory approaches. They raised the concern about a breakdown in the Rule of Law and ultimately its replacement by the Rule of Technology (Brownsword & Yeung, 2008; Stokes, 2010).

2.2.2. Meso Level

Regarding meso-level analysis, revealing connections between micro and macro levels, Hinings et al. (2018), Boxenbaum & Jonsson (2017) reasoned that the changes happening at the meso level are the emergence of a new and legitimated form of both organizational and institutional infrastructures. Svahn, Mathiassen and Lindgren (2017) hypothesized two-staged diffusion process of interdisciplinary innovation hub or teams working on emerging technologies at organizational level. The first stage concerns a free space for those teams to theorize and

experiment with novel digital technologies, gaining external and internal legitimations and engaging employees with the new organizational logic. The second stage imposes the amplification of this new organization logic to other parts of the organization. Without doubt, such a strategy also requires change at the field level through interactions with regulators and professional associations. The interest of this study sets out at the first stage discussed by Svahn et al. (2017), when the organization is nurturing start-up logic in the interdisciplinary innovation hub gaining legitimacy prior to expansion.

Another perspective concerning how technologies shape organizations is sociomaterial which has been intensively studied (Leonardi & Barley, 2010; Orlikowski & Scott, 2008; Orlikowski & Barley, 2001). A decade ago, Orlikowski (2007) pioneered this new emerging trend discussing how every organization practice is closely connected with technology. She and other scholars support for the important role which technologies play in organizational life by reasoning that technology itself is the result of socialization process and by advocating a view of the social and material entanglement (Orlikowski & Scott, 2008). This relational ontology is an interesting view to study the relationship between human and technology. However, sociomaterial studies have tended to adopt practical lens and explore how and why organizations overtime tend to use technology in "*exogenous, autonomous and homogeneous, predictable and stable*" ways (Orlikowski & Icano, 2001). A summary of all the presented perspectives is presented in Table 2 as below.

2.2.3. Micro Level

There are limited studies have been done at Micro level. Sensemaking and sensegiving studies are conducted various contexts, such as higher education (Gioia and Chittipeddi, 1997), utility

company (Balogun, 2003) or carpet tile (Driessen et al., 2012), but not in emerging technologies field. It is also important to understand from the micro level which is referred as "*inhabited institutions*" (Hallett & Ventresca, 2006), the sensemaking of the actors at micro level could help us to draw important references to organizational and macro level-analysis (Weber & Glynn, 2006). A summary of three levels of analysis could be found in **Table 2** as below.

Level of analysis	**Summary of Findings**
Macro	"There is a time lag between the emergence of new institutional frameworks seeking legitimacy, and existing arrangements, such as the state (regulators, parliaments, courts), reacting to them" (Brownsword & Yeung, 2008).
Meso	Two-staged Diffusion Model: (1) Interdisciplinary innovation hub or lab to carve out a free space for theorizing and experimenting with novel digital technologies. (2) Roll out the new organization logic to other parts of the organization. Without doubt, such a strategy also requires change at the field level through interactions with regulators and professional associations.(Svahn et al., 2017). Sociomaterial entanglement (Orlikowski & Scott, 2001, 2008)
Micro	Hallett & Ventresca (2006); Weber & Glynn (2006): recommended for studies at micro level. **Research Gap**: how do professionals working with Automation and AI make and give sense of the emerging technological developments?

Table 2: Summary of different level of analysis concerning emerging technologies

Although above studies have identified the recommendations to regulators and to organizations, little analytic attention has been paid to professional on micro level. I address this issue by demonstrating that the change process happening at micro level is critical to build upon. Therefore,

this study aims to understand how the change agents make and give sense of technology, before any homogeneous or institutionalized practices have become established. The Thesis selects the phenomenology ontology to study the "*lived experience*" from the first-person point of view. Further discussion about the emerging themes of sociomaterial entanglement will be discussed in **Section 7.** Overall, there is a gap in research at micro level concerning the emerging technologies like Automation and AI. The research undertaken in this thesis addresses the issue of this under-theorized area.

2.3. Change Agents in Techno-Change

2.3.1. Who are Change Agents?

Change agents are defined as actors who initiate, design, sponsor, and implement change (Caldwell, 2003), or in other words: "*those who are responsible for identifying the need for change, creating a vision and specifying a desired outcome, and then making it happen*" (Ford et al., 2008, Kante et al., 1992). Change agents position at the centre of many processes of organizational change (Caldwell, 2003). Kanter et al. (1992) distinguished the roles of change strategists who create a vision and influence the direction, change implementers who enact the vision, and change recipients who interpret the changes induced on them. The change agent in this study is what Kanter et al. (2007) refer as change implementer and is seen as separated from change recipient who is defined as the adopter of change.

Here, it is important to distinguish internal change agents, the focus of this study, from external change agents, e.g. external consultants. Some the internal change agents could be middle managers and some could be specialists working with Automation and AI as non-technical experts.

The role of middle managers is considered to be more significant, because they are both the "*object*" and "*agency*" of change (Storey, 1992, p. 214).

2.3.2. Technochange

Tyre and Orlikowski (1994) agreed that the process of technological adaptation has yet been well understood, and an important area of uncertainty involves the timing of adaptations. This coincides with Weick's proposal that "*beginnings are of special importance*" in determining the way that users make sense of new technologies and the problems that arise (Weick 1990, p. 21). Hence, the concept of Technochange is introduced as it is different from other change process. Here, technology is seen as the trigger and both material (technology) and social side are important to appreciate the change process.

Therefore, I follow the suggestion of Iveroth (2010) to adopt the term Technochange to position this change in this study as technology-enabled change. How change agents driving this Technochange by making and giving sense to the technology is at the heart of this study. This is recommended as the new field for research building on the current IT-enabled change (Iveroth, 2010) by addressing the emerging technologies, Automation and AI as the technological backdrop.

Furthermore, concerning Technochange, Iveroth (2010) discussed the interchangeable roles of change agent and change recipient. Change recipient can be considered as a course for change by treating them as change agent. For this research, I purely look at change agent as whom creating and driving the change in Innovation Team or Innovation Hub (Svahn et al., 2017), and working on Automation and AI technologies with high autonomy and direct impact on the business. Each team member comes from different backgrounds and functions.

2.3.3. Change Agent in continuous Technochange

As such, this study provides an additional insight to understand the change agents managing Automation and AI as Technochange. The analytic focus on the role of change agent enables another contribution. With the motivation to engage change recipient or sceptics to embrace the technological changes, this understanding from individual perspective could equip managers and leaders with well-informed strategy once rolling out the technology to the whole organization. The study analyses then how change agent make and give sense of the Technochange to themselves and to other stakeholders in the organizations.

It has been widely believed by academic and corporate experts that AI will be at the centre of the revolution that will continue to shape the broader industry landscape in the coming decades. (Dornberger et al., 2018; Pollard, 2017). The enactment of organizational transformation happens because of the use rather than the technology itself (Leonardi & Barley, 2008) and users enact technologies in response to their local experiences and needs which are everchanging. Given the Automation and AI journey is not simply a one-time deployment but rather a continuous wave of transformation, it is important to understand how the change agents making sense of the relentless technological transformation and using that interpretation in their daily task at work. Within Technochange, the individual actors are important, as their ability to make a difference is not proportional to their numbers. Indeed, they by themselves are vital, yet, what is of a more central concern is what they have in common (Iveroth, 2010).

2.4. Addressing the Gap

This thesis extends the knowledge about Technochange by focusing on the lived experience of the professionals working on such initiative in the organization. It aims to extend the theory about

Technochange process from the current literature by studying how change agent drive changes concerning emerging technologies such as Automation and AI at micro level. This approach could enhance our understanding of key institutional agents inhabiting digital innovation (Hallett & Ventresca, 2006). Studying the concrete evidence from experts at empirical level, the research aims to fill a gap in understanding so that future research would be able to connect Technochange processes on different analytical levels. Moreover, by understanding the sensemaking and sensegiving process of change agent, more effort could be made to engage change recipient during the Technochange process. As Iveroth (2010) discussed in his study, the change is found to be more effective when engaging the change recipients.

3. THEORETICAL FRAMEWORK

As a following section to the literature review, a theoretical framework is presented in Section 3. It guides the empirical research and forms basis for the analysis. This framework is built upon a trio of processes, namely sensemaking, sensegiving and translation (3.1). The model and usage of it is demonstrated in (3.2).

3.1. Theoretical Foundation of the Framework

In this study, in order to arrive at a desired level of clarity, certain simplifications have to be made to understand how change agents make sense of the new technologies and incorporate those interpretations into their working context. The presented theoretical framework is used to guide me through the initial phase of analyzing. After synthesizing these theories, I have arrived at a set of common or recurring themes, then reexamined the data in terms of the new set of common themes, paying particular attention to the enactment of change. The analysis based on the framework will be discussed in **Section 6**.

3.1.1. Sensemaking And Sensegiving

Change agent is seen as a "*sense-maker*" and a "*sense-giver*". Sensemaking and sensegiving, therefore, are made use to understand the implementation process of Automation and AI and to provide explanatory knowledge about the role of change agents.

- **Sensemaking**

Over the past decades, a growing number of scholars conducting research on the social construction of organizations have adjusted their focus to the analysis of the interaction processes

from the study of organizational structures (Weick 1995). To start with, sensemaking as a concept is first coined by Weick (1995) describing the process of social interaction in organizations which in turn, shapes interpretations. Sensemaking in organizations is a process of social interaction that shapes interpretations. This interaction among people occurs through action, in the form of communication and executing activities (Weick, 1995). Weick et al. (2005) continue to build on the ongoing retrospective development of plausible images that rationalize what people are doing.

Sensemaking is primarily a process theory, mapping mechanisms and sequences within a general perspective (Weick et al. 2005). Weick (2005) discussed that "*change is not a linear movement through the four stages but a spiral pattern of contemplation, action, and relapse and then successive returns to contemplation, action, and relapse before entering the maintenance and then termination stages*" (p. 373). Change agents shape the interpretation process by sharing a same language (Weick et al., 2005), which is seen as "talks events and organizations into existence". They "co-construct reality, meaning and knowledge". Sensemaking is an ongoing, instrumental and easily taken for granted (Weick et al., 2005).

- **Sensegiving**

On the other hand, sensegiving is different from sensemaking in the sense that it decomposes the phase when change agent is attempting to influence other people to perceive and interpret certain actions and events in particular ways (Gioia and Chittipeddi, 1991). In other words, change agents seek to give sense to other people. In their study of strategic change implementation, Gioia and Chittipeddi (1991) found that while sensemaking deals with interpretation and re-interpretation of meanings in order to comprehend the nature of change, sensegiving consists of attempts to alter and influence the way others think and act. Through expressive use of language, storytelling,

metaphor, and other sense giving devices, leaders help to shape the sensemaking processes of other stakeholders toward some intended definition of reality.

If sensemaking means "*how can I know what I think until I see what I say?*" (Weick, 1995), sensegiving corresponds to the *saying*. Weick et al. (2005) continues to build on this process by arguing that sensemaking and sensegiving are ongoing social processes because when "*you hear your self-talk, you see more clearly what matters and what you had hoped to say*" (Weick, Sutcliffe, & Obstfeld, 2005). Other researchers have used the concepts of sensemaking and sensegiving to study the changes in organizations (Balogun, 2003; Driessen et al., 2012; Rouleau, 2005) not only on different roles in the organizations but also on different types of changes emerging changes and so on. Notably, in this study, the change agents are both managers and specialists, the study by Balogun (2003) concerning the sensegiving of middle managers has shown the significance of lateral interactions between the middle managers themselves as part of the sensemaking process. He suggested new phases during the sensemaking and sensegiving processes, namely "*keeping the business going*, *helping others through change* and *implementing change"* (Balogun, 2003), and found that those phases assisted middle managers in their enactments. These add-ons are integrated in the theoretical framework discussed below.

3.1.2. Translation Theory

Translation theory is first originated by Callon (1986) and Latour (1986) and developed by Czarniawska and Sevón (1996, 2005). The fundamental concept of translation is condensed as "*to set something in a new place is to construct it anew*". Similarly, translation is also explained as a process in which "*ideas and models are adapted to local contexts as they travel across time and space*" (Lamb and Currie, 2012, p. 219).

Czarniawska and Joerges (1996) first theorized the travelling of ideas across time and space, claiming that in order for an idea to progress, it needs to be translated into a tangible object. The object serves as a mean to transfer the ideas which evolve in different organizational settings. They also noted that similar ideas often "materialize" in similar organizations concurrently. Established as the Scandinavian Institutionalism' translation theory, Czarniawska & Sevón , (2005) have explained a complex process of negotiation during which meanings, claims, and interests change and gain ground.

There are four main stages of translation process: *Disembedding*, *Packing*, *Unpacking*, *Reembedding* (Czarniawska & Sevón , 2005; Czarniawska & Joerges, 1996). Only human actors can, to the full extent, provide such "*disembeddedness"* or "*decontextualization"*, i.e. "translation from" and "*reembeddedness*" or "*recontextualization"*, i.e. "translate to" (Özen and Berkman, 2007). This study is not designed as a longitudinal study to examine the ongoing process, its main focus is *disembeddedness* and *reembeddedness* during the Technochange and therefore exclude the analysis of *packing* and *unpacking*. Besides, the "*translation capability*" (Savory, 2006) of the change agent plays an important role because it directly shapes the outcome of translation process.

3.2. Theoretical Framework

The framework used for analysing the empirical data and answering the research question is based on sensemaking, sensegiving and translation processes. The framework is presented and motivated in this section.

3.2.1. Bringing three theories altogether

Primarily, the aim of this paper is to generate a conceptual framework which is used to better our understanding about how change agent makes and gives sense in the Technochange process. The below framework is built upon the extensive examination of previous research concerning change agent role and Technochange theories to support my motivation in closing the identified research gap. Combining the three processes, the theoretical framework is shown as below.

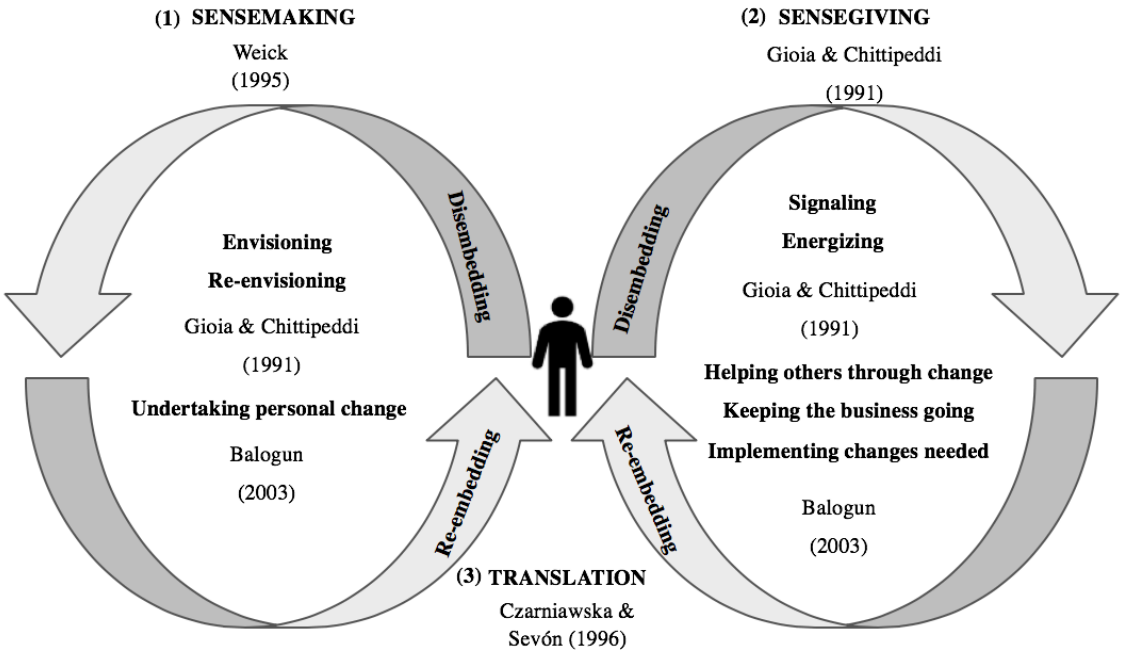


Figure 2: Theoretical framework, extended from Gioia & Chittipeddi (1991), Weick (1995), Czarniawska & Sevón (1996) and Balogun (2003)

3.2.2. How the Frame is applied

To answer the research question, the framework is applied in three steps:

- Analyzing the retrospective how the change agents construe the Automation and AI and the work that they are doing;
- Analyzing how the change agents implement the work and influence other stakeholders and customers;
- Analyzing how change agents communication, how the information or technology get disembedded and reembedded into the contexts of their work and others' reality.

Since this study focuses on the experiences of change agents, throughout the process, the voices of the informants are considered central.

4. METHODOLOGY

In this thesis, the principal methodology is adhered to the standard of systematic and abductive approach to grounded theory originated by Gioia et al. (2013), also referred to as the "Gioia methodology" which has been established over the years (Rheinhardt et al., 2018). Here, I will discuss and motivate the choices I have made during the execution of this research. Starting with the research approach (4.1), followed by selection criteria for companies' and change agents' sample (4.2), execution of data collection (4.3), data documentation (4.4), analysis of collected data (4.5) and lastly, quality assessment for this study (4.6).

4.1. Research Approach

4.1.1. Ontological and Epistemological Considerations

Motivated by the research purpose, this thesis takes an interpretivist stance (Bell, Bryman, & Harley, 2018). This onto-epistemological stance fits with the selected theoretical foundations of sensemaking and sensegiving (Gioia and Chittipeddi, 1997; Weick, 1995) to understand the lived experiences of our respondents; the meanings they themselves ascribe to their reality (Welch et al., 2011).

The focus on meaning and lived experience lends itself to the interpretive approach of social science (Maxwell, 2013). Positioning this research in the realm of interpretive approach, I acknowledge that meaning is inevitably subjective and restrained by the "*context of goals that the human actors seek to achieve*" and that action is derived from the human actors' construction of meaning (Gioia and Chittipeddi, 1997). The underlying assumption is that reality is socially constructed rather than objectively given (factum brutum) (Bell, Bryman, & Harley, 2018) and the

informants are "*knowledgeable agents*" who are aware of and able to explain their thoughts, intentions and actions (Gioia et al., 2013). My role as a researcher is then to give proper interpretation to their experiences and to problematize reality which is usually simplified by the actors (Gioia et al., 2013). The contextual understanding, therefore, plays a central role because different contexts generate different meanings.

With this understanding, I have made a disciplined effort to "*give voice*" to the change agents in the early stages of data collection and analysis and to "*represent their voices*" in the reporting of the research in order to allow opportunities for new emerging concepts rather than to affirm existing concepts (Gioia et al., 2013). Concurrently, another basic assumption is that I am knowledgeable enough to carry out this research and analyze data to make sense of the patterns as well as construct thoughtful and relevant discussions.

4.1.2. Qualitative Method

The research interest is in uncovering the experience of change agents in their relationship with Automation and AI and how they make and give sense in their work context. This inquisitiveness has led me to the selection of qualitative research, focusing on "*meaning rather than the measurement of organizational phenomena*" (Daft, 1983, p. 539). The qualitative method is suitable when the phenomenon being studied is socially constructed (Alvesson & Sköldberg, 2009). Furthermore, qualitative research is employed due to the fact that research about Automation and AI on management is emerging and existing research has not fully comprehended how professional perceive these technological adoptions and how they act upon these perceptions. The focus on the sensemaking and sensegiving of change agents rather than the Technochange nor the technological developments themselves, makes the research an interpretive study (Gioia et al., 2013).

4.1.3. Multiple-case study

Since the level of analysis is the individual change agent, the focal point of interest is the lived experiences of the informants. I have studied each of the respondent independently as individual cases to consider this study as multiple-case study (Bell, Bryman, & Harley, 2018). All in all, this paper examines totally 15 cases to analyze the broader phenomenon of how change agents make and give sense of technological adoption and engage in ongoing translation concerning particularly Automation and AI. While case study designs have a strong positivist legacy (Gehman et al., 2018), another developed viewpoint is that case studies could have a more pluralistic approach including the use of case studies in interpretive research (Welch et al., 2011). Furthermore, case studies could have different approaches to coding and display of data depending on the research questions, collected data and even researchers themselves (Gehman et al., 2018).

4.1.4. Abductive Approach

The change agents in this research form their own interpretations and meanings of their work contexts. As a researcher, with this motivation and discipline to study this phenomenon, abductive grounded theory (Gioia et al., 2003) fits very well as methodology.

Considered to have the advantages from both deductive and inductive methods, abductive approach is suitable for qualitative research in general (Alvesson & Sköldberg, 2009). Based on the Gioia methodology (Gioia et al., 2013) which argues that in an initial (semi-) inductive, first-order phase leads into an abductive, second-order phase, as visualized in **figure 4**. Throughout the course of the research process, the empirical scope is successively developed, while theory is refined and adjusted accordingly.

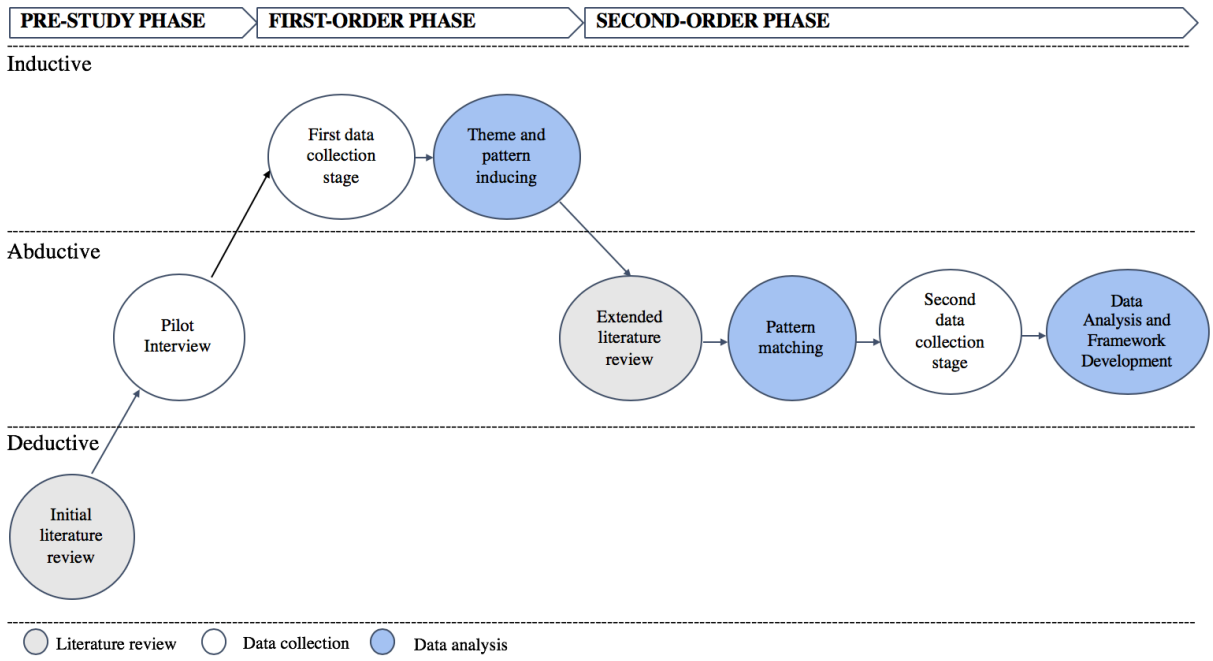


Figure 3: Three-phase research process. Adopted from Gioia et al. (2013)

4.1.5. Reflexivity

Reflexivity has been practicing through conscious and personal reflexivity where I have documented the progress and my thought process in my research journal, which collected my assumptions, context and interpretations. This is critical to me as a researcher because I had prior experience working with Automation and AI and during the course of this research paper, I was working on a part-time basis in one of the studied companies. Therefore, I am considered as an "*insider*" who was studying the "*familiar*" (Berger, 2015) and was sharing the experiences of some of the participants (Berger, 2013). On one hand, this has provided me access to respondents, pre-existing understanding about the technologies and more nuanced understanding of respondent reactions (Kacen & Chaitin, 2006). On the other hand, such embeddedness also requires constant reflection to avoid attributing my own experience onto the respondents (Berger, 2015). My commitment to reflexivity is reflected through three processes.

First of all, I made an effort to be a conscious reflexive author constantly bringing awareness to the field and to be mindful of my deep values, needs and insecurities, which might surface while conducting this research (Gabriel, 2015). Data, in this study, are not facts or representations of facts but records of particular types of social encounters between the informants and me as a researcher. I am mindful of my listening skill when interviewing informants (Gabriel, 2015) and I made an effort to listen to all the records at least three times when handling empirical data. The first is during transcribing (which already requires going back and forth the records a few times); the second is when I go through the completed transcript; and the third is when I compile all the interview transcripts, before deleting all of the recordings on my phone adherence to ethics in conducting research. This helps me to question my previous understanding about the "data" that I collected and the consequences of my interpretations (Gabriel, 2015).

Furthermore, positioning myself as a management student who is having a real internship working on Automation & AI, I have gained significant insights when professionals shared their in-depth experiences during the interviews, which some of them consider as retrospective sessions. My identity as a management student is important for the informants to understand that I am not technically trained in Automation and AI technology and that they have more experience and stories to share during the course of the interviews. This enabled me to explore the "*unknowns-unknowns*" (Mullins, 2007), to have the flexibility for new emerging concepts and to avoid "*confirmation bias*" (Gioia et al., 2013).

Lastly, reflexive practices are used in the data analysis (see section 3.5) as a way to make use of my subjectivity to generate deeper insights (Symon et al., 2018). On a personal reflexive note, it is important for myself that approaching my research and analyzing the empirical data in this way has allowed me to tap into my own passion for this subject matter, the role of change agents in

driving technological adoption while maintaining high business research ethics (Bell, Bryman, & Harley, 2018), diplomacy and transparency (Gioia et al., 2013). On some occasions, towards the end of the interviews, the informants shared that they had a good chance to reflect upon their experiences guided by the questions in the interviews. In this sense, as Morgan (1983) as put it, "*research is engagement*", for me as a researcher and for the informants.

4.2. Sample

In this interpretive multiple-case study, cases are selected based on the opportunity for learning (Welch et al., 2011) as well as on variety and balance. Besides, purposeful random sampling helps me to achieve a more meaningful and criterion-specific understanding (cf. Glaser & Strauss, 1967). As such, all the interviewees are selected from various positions, functions and companies within Telecoms industry in Sweden as long as they meet two selection criteria, currently working with Automation and AI as well as having non-technical or business-related roles.

4.2.1. Anonymization

Automation and AI developments are considered as strategic and political development which requires heavy investment (Pollard, 2017). Therefore, all the respondents were guaranteed anonymity to enable them to speak as freely as possible and to enable myself as a researcher to achieve credibility of the findings (Bell, Bryman, & Harley, 2018). Consequently, all of the respondents, customers and competitors are also anonymized. It is notable that all of the respondents are promised anonymization but not confidentiality (Gioia et al., 2013) and they are all aware that their sharing and stories are used for research purposes. For the ease of discussion in the subsequent discussions in **Section 5 and 6**, pseudonyms have been randomly assigned to

the respondents. The summary table of informants' pseudonyms and relevant details are shared in **appendix 2**.

4.2.2. Company Sample

The predominant goal of firm selection is to achieve a variety and balance of Telecoms companies in Sweden (Bell, Bryman, & Harley, 2018) with different core product and service offerings, sizes and markets. Four Telecoms firms with offices in Stockholm were contacted and agreed to participate in this study. Research has been carried out to understand how Telecoms companies in Sweden are putting in efforts to drive digital innovation. The firms were selected during the pre-study based on their technological adoption, in particular, Automation and AI.

All the four companies in this study are originated from Scandinavian and among them, three are originally established in Sweden and one is abroad. Those companies offer a wide range of products and services for both businesses (B2B) and consumers (B2C).

4.2.3. Selection of Respondents

As part of the research process, the criteria for respondent sampling had changed as this study progressed to achieve relevant and meaningful analysis (Pratt, 2009). The respondents are selected according to three categories. The first criterion is the relevance of the participants, meaning they are working with Automation and AI and having none-technical or business-related roles in those companies as discussed above in part 4.2.2. In order to achieve a balance and diverse interview sample, professionals working on across different corporate functions, e.g. Human Resource (HR), Information Technology (IT) and Sales etc. are contacted via LinkedIn or my professional

network. In the end, a total of 17 respondents participated in this study throughout three stages of research.

Reaching out to various people from different functions and backgrounds during the second stage provided me opportunities to conduct two interviews with one data scientist and one manager working for Internet of Things (IoT). Although these two interviews are not included in the analysis during the third phase of research, when I have already narrowed down my research question, these two interviews have provided me background knowledge about Automation and AI as well as helping to set a meaningful boundary in setting up a structure for the subsequent data collection.

Secondly, screening questions about their roles and contributions are used to make sure the interviewees meet the definition of change agents in this study. Finally, all the participants should agree voluntarily to participate in the research and give their consents by agreeing to be interviewed by the researcher. Considerable effort was taken to ensure that all participants were fully aware of what was expected of them in terms of time commitment and sharing of their experience I have anonymized all the companies and participants following the ethical responsibility to make sure that all participants know and agree to what will be disclosed about them and that they understand the risks and benefits of the research (Bell, Bryman, & Harley, 2018). The research has the responsibility to fully explain the research topic, it is being taken for the purpose of the master's thesis and it will be shared with the publics as seen from the Interview Guide.

4.3. Data Collection

The three data-collection phases are closely linked to the three stages of the research process. Each data point drove me to reconsider my understanding and to motivate the research questions. After each interview, I made use of the downtime to reflect upon the provisional findings and committed to an iterative circle that compels me to perpetually move back and forth between literature, theoretical framework, data collection and data analysis..

4.3.1. Data Collection Phases

- **Pre-study Phase (First Phase)**

I first started with a pilot interview exploring different themes with a decision-maker who works with Automation and AI and hold the decision-maker role (in company 1's Leadership Team) to narrow down the research question in a practically relevant way. These three themes are: (1) required skills and competence to realize the full potential of Automation and AI, (2) new business models given the digital innovation and (3) the new partnerships or emerging business value propositions. Again, the assumption is that the interviewed expert is a knowledgeable agent who know what he is attempting to do and can articulate his actions and thoughts (Gioia et al., 2013). The pre-study phase was explorative, focusing on inductively building empirical themes in relation to the research question.

During this stage, an initial literature review had been conducted to have some understandings about prior literature. However, I applied what Gioia et al. (2013) described as a "*willing suspension of belief*" to maintain an inductive stance and let the informant' "voice" speak for itself.

- **Second phase**

The second phase increasingly focused on the first theme - requirements to realize the full potential of Automation and AI, as well as tentative relationships emerging from the pilot interview to maintain flexibility for respondents' voices (Gioia et al., 2013). Prior to the second phase, findings from the first pilot interview are compared with existing literature to investigate how they confirmed or diverged from each other, and in what ways the data contribute. In this stage, 5 semi-structured interviews were conducted (from Companies 1 and 2) validating and nuancing the empirical findings, allowing me to deep dive into particularly relevant topics. During the second phase of data collection, the participants are limited to people who are working in Automation and AI, both in non-technical and technical roles from Project Leaders, HR Automation Specialist to Data Scientist.

- **Third phase**

The third phase, which is also last phase of the participant sampling, the selected participants then are fine-tuned to those who are in non-technical roles. During the third stage of the data collection, it is made clear in the email and verbal communication that the participants need not to perform technical role at their current job to ensure consistency in the participant selection.

4.3.2. Semi-structure interviews

The semi-structured interviews are at the heart of this study (Gioia et al., 2013). This approach is a preferred in qualitative research to generate deep insights since interviewees can bring up aspects which they find relevant. (Miles & Huberman, 1994). This method ensured that relevant topics were covered, while maintaining flexibility for respondents to elaborate on their thoughts and motivations (Bell, Bryman, & Harley, 2018). A list of interview dates, durations and participants is found in **appendix 2**.

Since I am interested in respondents' lived experience, which is an immensely personal subject, diplomacy, respect and transparency are important to maintain high quality from interviews (Gioia et al., 2013). Empathy is gained by conveying my genuine interest in the subject matter and informants' experiences while trust is built by guaranteeing anonymity and assuring research ethics (Lee & Aslam, 2018).

The interview is conducted in English, which is the second language for me and majority of the interviewees so there might be some gap in understanding. Some nuances might be lost due to the fact that we are not communicating in our first language, in all cases, I engaged by showing interest and listening to what the informants are saying. I used a mobile phone to record the interviews and a small notebook to take down key words from the informants in order to follow up with the exact words and phrases that the informants used. Yet, all of the companies in this research are multinational companies having English as the official internal and external communication language, so I have to trust the informants that they are best suited to answer the topic about the work that they are doing in English (Gioia et al., 2013). For some informants, when they mentioned many important points in their answers, I tried to summarize and double check with them by asking clarifying questions, in those cases, I could see that they appreciate hearing the "*same words said by them*" and besides confirming, those were good opportunities for them to add on any points that they have not thought previously (Gioia et al., 2013).

4.3.3. Interview Guide

As suggested by Bell, Bryman, & Harley (2018), an interview guide was utilized as a guide for discussion, rather than a manuscript. The initial guide was based on the initial literature review and my industry knowledge. The guides were then adjusted in the subsequent research stages and

the third interview guide was the final version which was used for the rest of the study. Its purpose was to generate enough data to thoroughly and truthfully answer the research question, while minimizing superfluous information. The interviews started with information regarding the anonymity of the respondent to ensure that the respondent felt able to speak as freely as possible (Bell, Bryman & Harley, 2018).

4.3.4. Interview Setting

The interviews were mostly carried out in person at the interviewees' office to ensure their convenience and to make the participation effort minimal. When the informants preferred interviews via video or phone calls, I agreed with their suggestions making sure they are having the most convenient and comfortable settings for themselves.

Every interview lasted for approximately 30 to 60 minutes. The effort to be open-minded during the fieldwork implied letting the studied organization "*talk to me*", and not forcing my framework on the subjects studied (Iveroth, 2010). By keeping the interviews open-ended, I could allow the informants substantially influence on the discussions, although naturally the topics taken up were kept within the overall themes of this research.

4.4. Data Documentation

4.4.1. Transcribing

All the individual interviews were transcribed and shared with the interviewees for their perusal, except for some who refused to read the transcripts. Among all the transcripts, only one interviewee read through and corrected some of the wordings in the transcripts. All of these then

were analyzed, compared and categorized. Transcription is done as exactly as what the interviewees said, word for word.

Transcribing is a very time-consuming task, but it gave me a valuable chance to be closer to the data. I listened a few times to the record and cross-checked the transcripts before analyzing the collected data using data reduction methods and an inductive approach (Gioia et al., 2013).

4.4.2. Memo-writing

Throughout all the interviews, I made use of a note book to note down important notions or key words from the participants. This approach has help me in three folds. First, it helps to capture the exact spoken words from the participants to use in follow-up questions during the interviews. Second, within the duration of an interview, I could identify either repeating concepts or contradicting answers to clarify on the spot with the interviewees. Last but not least, for one particular case where the recording was broken, the recording has helped the researcher to have some quick summary of the interview to reflect upon.

4.5. Data Analysis

To analyze the data, I relied on the "*Gioia methodology*" (Gioia et al., 2013), complemented by recommendations for rigor qualitative studies by Pratt (2008, 2009). A large number of informant terms, codes and categories emerge early towards the end of the second stage of the research. After the first 5 interviews, I have shared the first-order analysis, which is made sure to stay faithful to informant terms, to my supervisor asking for feedback about the emerging themes. My thesis supervisor had been providing me with outsider perspective and challenging my interpretations, questioning my assumptions and findings, which improve the reliability of this research (Gioia et

al., 2013). There was rich amount of data that take me through different literature readings. Having an experienced researcher to guide and to provide critiques is important.

4.5.1. Data Analysis Method

The data analysis was carried out within two phases: a first-order, open-coding phase using informant-centric terms, and a second-order, axial-coding phase incorporating researcher-centric concepts, themes, and dimensions (Rheinhardt et al., 2018; Gioia et al., 2013).

In the first-order analysis, I have set up for "*semi-ignorance*" or willingness to suspend of prior knowledge or belief – not knowing the literature in details because it could lead to "*confirmation bias*" (Gioia et al., 2013), adhering to informant terms and letting the data speak for itself and beginning to answer the research question in non-theoretical terms. It is followed by refining categories and starting to see some similarities and differences between emerging themes. A theme is described as "*a pattern in the information that at minimum describes and organizes the possible observations and at maximum interprets aspects of the phenomenon*" (Boyatzis 1998, p.161). A suitable code apprehends the qualitative fruitfulness of a phenomenon and involves recognizing an essential moment and encoding it prior to the interpretation process. It is essential to develop codes, words or phrases that function as labels for segments of data (Boyatzis 1998). Initial theoretical insights are necessary to formulate the proper research question and carry out the thesis in a reliable way prior to being able to oscillate between empirics and theory abductively throughout the rest of the thesis process. When analyzing collected data, a thematic analysis method was used for categorizing qualitative data through emerging themes that are considered important to the description of the research phenomenon (Boyatzis 1998).

In the second-order analysis, I stay firmly in the "*theoretical realm*" (Gioia et al., 2013), following the extended literature review. In this phase, data and existing theory were considered simultaneously (Gioia et al., 2013). I connected emerging empirical themes with existing theories and concepts by iterating between raw data, emerging concepts and dimensions, and the relevant literature. After generating a set of themes and concepts, these were distilled further into aggregate dimensions (Gioia et al., 2013). I have developed data structure allowing me to sculpture my data into a reasonable visual aid, providing also a graphic representation of how I have progressed from raw data to terms and themes in conducting the analysis which is considered as the key component of demonstrating rigor in qualitative research (Pratt, 2008; Tracy, 2010). The resulting set of first-order codes, second-order themes and aggregate dimensions provide the basis for our data structure (Gioia et al., 2013), exemplified in figure 5 and presented as a whole in appendix 4.

4.5.2. Categories of meaning from data

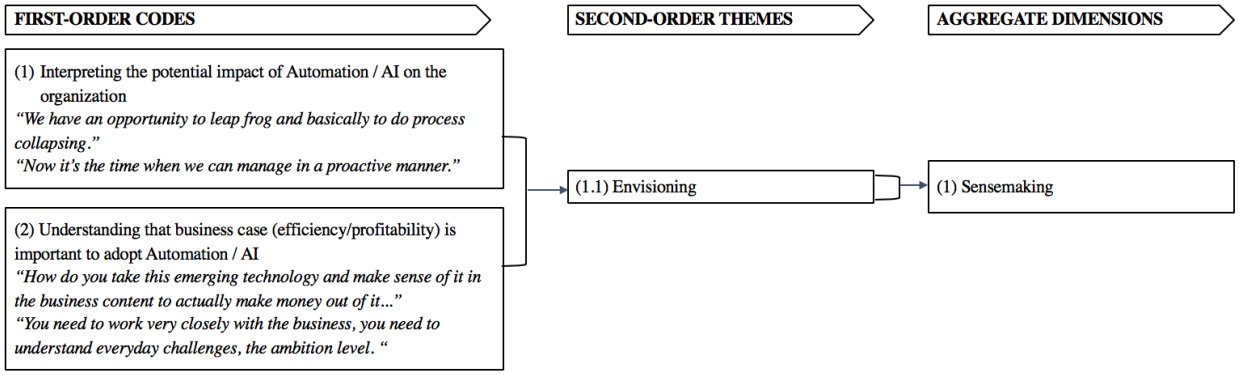


Figure 4: Partial extract from data structure

4.5.3. List of Codes

Code number	Code name
1	Interpreting the potential impact of Automation and AI on the organization
2	Understanding that business case (efficiency/profitability) is important to adopt Automation and AI
3	Constructing plausible stories of the future state in the industry or workforce
4	Analyzing internal and external environment w.r.t Automation and AI
5	Constructing the meaning of their work and its impact to the organization
6	Putting efforts to learn on the job and close the gap in technological understanding by themselves
7	Constructing a strategic plan or vision for Automation and AI (e.g. data strategy)
8	Keeping the business going - building a future-proof business
9	Having implementation plans based on the strategic plan
10	Being aware of and voicing out the challenges in implementation
11	Adjusting the job scope according to stakeholders' feedbacks
12	Actively engaging other stakeholders, constituents and customers via workshops/meetings/newsletter/email
13	Communication styles to stakeholders
14	Collaborating with technical colleagues to develop Proof of Concept to sell their ideas

Table 3: List of codes

4.6. Data Quality Assessment

Being the sole interpreter of the interview text has its pros and cons. It has enabled me to run through a few analysis rounds, from transcribing reflecting on what has being said in the interview to going back and forth between the empirical findings and theories, it has provided me with insights added on to the previous understandings. Being embedded in one of the studied

organizations has enabled me to understand some of the technical terms and gaps and for me to comprehend myself the work that the studied informants are doing in their respective organizations. Following the suggestions by Bell, Bryman, & Harley (2018), I will evaluate the reliability, validity, trustworthiness and confirmability of the research in this section.

4.6.1. Reliability

Taking a qualitative approach is believed to derail reliability (Bell, Bryman, & Harley, 2018). As a specific version of social reality is presented, it cannot be considered definitive, as it is constantly changing (Bell, Bryman, & Harley, 2018). Besides, the interpretation of the data influenced by a researcher's world view and knowledge and therefore, another research reading the interview transcript will have different interpretation than mine. Researchers' interpretations of data are always potentially influenced by their experiences, pre-existing ideas, and interpretations of the surroundings (Maxwell, 2013). Hence, another dimension to evaluate the reliability is transparency and, in an attempt to enhance the potential for replication and, finally, to provide transparency, the research process has been described as comprehensively as possible. During the process, I shared the research topic openly with the participants, as well as briefly explained the definitions of *sensemaking* and *sensegiving* to the participants to ensure transparency.

4.6.2. Validity, Trustworthiness and Confirmability

The degree to which the research is replicable is referred to as the external reliability which is a difficult criterion to meet in qualitative research (Bell, Bryman, & Harley, 2018) because the social setting and circumstance in which this study is carried out are changing to make this study replicable. Regarding internal validity, which is the inner-observer consistency, also can be understood as credibility. The researcher provides the participants the interview transcript in order

to seek for confirmation and give them a chance to understand their own voices, "*how can I know what I think until I see what I say*" (Weick, 1995). By this, I hope to achieve the internal validity to a certain extent. Other criteria for trustworthiness are transferability which has been met by thick description for readers to make their own judgment about the possible transferability of findings to another milieu (Lincoln and Guba, 1985). In summary, this research paper has been conducted in good faith to achieve a level of confirmability.

5. THE EMPIRICAL FINDINGS

This section presents the empirical findings in five parts. First, a brief background about Telecoms industry in Sweden and Automation and AI initiatives in Swedish Telecoms are introduced in (5.1). It is followed by the Sensemaking (5.2), Sensegiving (5.3) and Translation (5.4) processes as the aggregated dimensions in this study. Finally, we present our findings as a list of codes (5.5), in preparation for the subsequent analysis in Section 6. Some representative quotes from the informants are illustrated to ensure the persuasiveness of this paper. A breakdown of which respondents addressed which codes is found in appendix 3.

5.1. Change Agents in Swedish Telecoms Industry

5.1.1. Telecoms Industry is under pressure for change

In general, Telecoms industry is under pressure from other industries such as software and finance to change and to innovate (Allee & Taug, 2006; Peppard & Rylander, 2006; Stienstra et al., 2004). Over the past decades, three forces of change, namely institutional forces (privatization and liberalization), internationalization forces and technological innovation forces have tremendously changed the landscape of European Telecoms industry (Stienstra et al., 2004). To be able to sustain their business, Telecoms organizations in Sweden have to strategically renew themselves and expand their competencies. This factor has demanded a shift in managerial mindsets (Peppard & Rylander, 2006).

To commit to the promise of anonymization, no in-depth description of the Telecoms companies or individual change agents can be provided. The senior interview experts and the experts who

belong to the Automation and AI Committee discussed that the speed of Automation and AI implementation in Telecoms has not been as rapid as compared to other industries.

> "We're a little behind in that sense. We're not a [Software] Developer company, we're a Telecommunications company." (Lina)

However, the companies are speeding up their own capabilities in this race towards digital transformation.

> "Telecoms, for sure, is not in front at the moment. I think the Finance industry together with general IT are definitely ahead, then maybe Telecoms. And then all the industries are lining up, basically. So, in a sense we're kind of a little bit late in Telecoms. But that is now picking up quickly." (Charles)

> "…things are moving quite fast in the market…but here we have opportunity to speed up and accelerate this effort." (Daniel)

Telecoms industry is considered by the interviewed experts to have rich amount of data and the technology in terms of computational speed has not started to help them create values out of the data which they are having.

5.1.2. Change Agents in Automation and AI Teams

To contextualize how change agents are driving Technochange in Telecoms industry, the emerging themes from the collected data are summarized as following. First, change agents construe their roles in implementing the strategic changes powered by Automation and AI by translating the impacts of Automation and AI into the business values for their organization. Also, they bridge the gap of knowledge by learning from technical experts or from other sources such as conferences

and books. Second, they proclaim strategic business plan powered by Automation and AI to ensure that their organizations are "*future-proof*" and actively engage other stakeholders via different communication channels such as email, newsletter and workshops. Lastly, on top of translating the Automation and AI technologies to the context of their organizations, change agents also translate their communication towards different stakeholders, such as non-technical and technical professionals. They are "*actively inviting other stakeholders to submit their business ideas for Automation and A*I".

Second, there are mixed perceptions about the risk of Automation and AI that some of the informants mentioned. They suggested that robots are built to do what they are programmed to do.

> "We have to believe that the robots do what they are programmed to do right? And we cannot also control humans so why can't we trust the robots?" (Jacob)

> "A robot won't do that if we have not programmed them to do, then it is a human error again if we program it to do the wrong thing." (Fiona)

Others voiced out their concerns regarding more thoughts and actions needed to be put in regarding the ethical and security aspects of implementing Automation and AI.

> "AI Ethics, cross-border data collection and data anonymization are very critical aspects." (Gorm)

> "Simply put, we have AI which is a human brain. We have technology from automation perspective that can do what we can do on the computer and could be much faster. Yes, I believe this is very dramatic but there is going to be huge change. I think we need to control it. We can't control it too much, but we need to have real security. This is not something I thought about myself but look at the AI researcher Max Tegmark and Nick Bostrom, they are shouting about AI security." (Mikael)

> "But one thing is that, it is a text book thing, people and employees sometimes see it as a threat. We try to mitigate this risk because we're saying it is not a threat. It is here to help you, but you

know, if a manager is keen on cost saving, he might leverage this as a way of changing an employee. That's how I see it. So, it is actually can be a threat which we don't intend to make." (Monica)

5.1.3. Automation and AI through the lenses of change agents

Overall, the change agents in this paper are making sense constantly from what they see and hear from the surroundings, e.g. conferences, articles, newspaper etc., and also re-confirming their perceptions such as increasing digital connections, automation as a natural result etc. After which, they translate those interpretations into the substances for their respective contexts, attempting to give meanings to their work results for their respective organizations. What they are doing is understood to enable their companies to survive in the rapidly changing environment.

One point to note in the empirical findings is that the change agents discuss the values of Automation and AI but none mentions about the cost versus benefit analysis. They focus more on the benefits and the business values of those technologies but take the technologies for granted. One informant mentioned that Automation is the "*bread and butter*" for their organization while AI does not bring any benefits yet. For the rest of the informants, however, there was no uncertainty made known during the course of the interviews.

5.2. Sensemaking

According to the change agents in the researched sample, it is crucial to first interpret the impact of Automation and AI on their organizations (5.2.1) and then to understand the business values of the technologies (5.2.2). They do so by constructing stories of how the industry or workforce will be in the future (5.2.3), analyzing both internal and external environments against that backdrop (5.2.4) and identify the impacts of their work in driving the Technochange (5.2.5). Having done that, once the actions start, the change agent realize the gap in their technological capabilities and

emphasize on learning on the job and learning from other sources to close this gap (5.2.6). They are aware of the challenges in implementation from various factors (5.2.7) and are willing to adjust their implementation scopes based on their stakeholders' feedbacks (5.2.8).

5.2.1. Interpreting the potential impact of Automation and AI on the organization

A majority (80%) of the respondents comprehend the potential of Automation and AI on their organizations by seeking cues from other industries such as Financial and Technology and reference back to the Telecoms Industry where they are working. They mention that it is time to do things which was not possible in the past and elaborate further that the technology helped them to make value of the data which they are having, They refer data as "*new oil*". The tools referred here are automation and AI, and often the word "*transformation*" is associated with those technologies in the interviews.

> "I mean not only in this organization, not only it helps decreasing margin and becoming more profitable, Automation and AI will be helping us to achieve more with less. If you go beyond this organization and look at the company as a whole, in other departments, AI is going to be everywhere." (Filip)

It is referred that the Technochange is not simply incremental compared to the past, but its impact could be tremendous.

> "We have an opportunity to leap frog and basically to do process collapsing" (Charles)

5.2.2. Understanding that business case is important to adopt Automation and AI

One of the themes which all of the respondents agree is the instrumental role of business values in adopting Automation and AI. Whether it is to drive efficiency or to improve profitability, they all

start with a business case whenever they start discussing about technology. Regardless of how the technology is perceived, the need to have a positive commercial impact for their companies is vital. This is interesting to note that the technology value lies in how it can be used in the business or how the experts see it and see it as an argument to sell their ideas within the organizations.

> "When you talk about AI, one of the big requests is to reduce OPEX [Operating Expense]. Of course, they are looking to have additional benefits such as customers experience or predictive behavior but OPEX is the big mandate." (Calle)

All of the respondents in this analysis are working on the business side of Automation and AI initiatives and it is understood that this finding reflects the nature of their jobs, driving change by creating business results for their organizations. Quite often, the respondents emphasized that they need to work closely with the business to understand the everyday challenges either from external or internal stakeholders

> "You get both efficiencies internally which increase the work happiness among the employees. And then customer satisfaction that we could be more rapid towards the customers. Then also the accuracy." (Fiona)

5.2.3. Constructing plausible stories of the future state in the industry or workforce

Majority of the informants have their own picture of how the future would look like, either for the Telecoms industry or for the workforce with the increasing adoption of Automation and AI. They do so by extending the consequences from interpreting the impact of Automation and AI as discussed in 5.2.1. The informants mentioned "*never seen before*" when referring to how technology is making radical changes in their working context.

> "Because all new technology creates new jobs, new types of skills are in higher demand than certain types of skills. And a lot of people are realizing that the career path they've been on might **not** be the one that will bring them all the way to retirement." (Charles)

> "This technology will have a huge impact on the human workforce." (Mikael)

The respondents further discuss how they perceived that technology is changing how people think about their job.

> "As people start to think about their job in a different way, they start to think maybe there is a better way to doing things so they become more curious and you know, they brag about their robots." (Monica)

Part of the justification for the change and the replacement of old jobs and old skills are the empowerment of the technology, informants discussed how the technology will help humans to perform more meaningful work rather than repetitive tasks. It is how they interpret the idea themselves and verbalize it.

> "Every human being is a very creative individual which our processes have been forcing them in to a manufacturing. Now we're filling up capabilities, I think that's fantastic, that's why I kinda like to tell the machine what to do and then they collaborate and then the human can do something more value-creating which is more inspiring for people as well." (Charles)

5.2.4. Constructing the meaning of their work and its impact to the organization

The importance of having a meaning of the work they are doing and its impact on their organizations is reflected through all the informants in this sample. All of the change agents construct their own interpretation by referring to their previous experiences.

> "Previously we are very reactive, that's not a very good way to manage our work. Now is the time that we can really harvest the power of data. We're definitely in a very good and right direction." (Gorm)

The interviewed experts come from diverse backgrounds and their experiences reflect the differences in how they create meaning for their work.

> "The kind of work that you've been doing in the past, this kind of technology will transform it completely. So, you need to reinvest yourself, you need to reinvent the job role and description and see how it is more value-adding to the company as well as to the employees. It does not mean that what I am doing in Supply does not have any impact on. It will impact Finance, Sales and the rest of the organization. Everything is interconnected." (Knut)

5.2.5. Analyzing internal and external environment with respect to Automation and AI

During the process of construing their senses about the technological development and applying to their work context, change agents engage in analyzing internal and external environments with the focus on Automation and AI development. One informant discussed the benefits of working in a technological company given changing landscape of technology.

> "It helps so much to be in a technology company where people understand technology and, or being forced, by customers to make business sense of what's going on." (Charles)

On the other hand, another looks for cues from external environment to make sure that they are not left behind in the race of digital innovation.

> "You need to be on top of all these upcoming developments, a lot of convergence happening, a lot of telescoping of new tools which are coming up, which I think is revolutionizing in the overall industry." (Knut)

5.2.6. Putting efforts to learn on the job and to close the gap in technological understanding

In order to develop their understanding and competence in driving the Automation and AI initiatives, the change agents realize the needs of having substantial knowledge about the technology itself and the requirements of using the technical know-how to the advantage of performing their roles.

> "I think it is a combination of self-learning and talking to experts, whether they are data scientists, whether they are domain experts or architects. It is really important that you're combining knowledge from different sources and paint the bigger yourself." (Filip)

In this regards, having different perspective on how the technology is applied is considered as a preferred result by change agents.

> "Doing change management and communication in general about things that you don't really understand because there are all these integrations...that you try to make sense of but without being techie and it is really hard to understand what is going… my later projects I am an owner of the chatbot in HR, I did the whole thing from start to end and I am still working on it… However, I think in many cases it is actually good and that I am not a techie. Because you don't really see the limitations either. I am mostly focused on the end user experience and employee experience on how the content if it actually works." (Beata)

The attitude of continuous learning and implement is reflected throughout the 18 interviews.

> "I think you need to have that mindset, or the learning, take every opportunity to learn something new and implement it." (Fiona)

5.2.7. Being aware of and voicing out the challenges in implementation

While driving the change, which will be discussed in the following parts 5.3.1 – 5.3.3, the change agents are mindful of and also voice out the challenges they face. They discuss about the challenges with an attempt to see thing for how it is and to empathize with the people.

> "It is not really resistance. You could say it is not a show stopper but it is slowing down the game. But I really understand as well that when you talk to the processes owners then this is the process, they might be strict about it." (Isak)

On the other hand, the change agents in this sample also identify the need to adjust their way of working with suitable methodologies and flexible ways of working.

> "And also, with these kinds of automation, it doesn't matter so much if one automation fails. That is part of the business case. ... Now we're doing 50 parallel projects on going with just robotics and we know that some of these would fail. As long as the majority of them will be delivered on time with quality then it is fine, then we can manage." (Daniel)

There are challenges in terms of mindsets as well as in terms of technology. The change agents who are in managerial roles stress the importance of safety in their teams.

> "It is my responsibility to make them feel safe that if something happens, if you didn't go that way, if they would fail or whatever you call it then I will be there, I will be standing next to them and make them feel safe. It is the key that you have to create a culture that is supporting people to fail." (Fiona)

With the agile way of working, the change agents are to seek for feedbacks of stakeholder. This links to the below themes that with those feedbacks from the "*fail fast*" approach, change agents then adjust their scope towards those feedbacks.

> "If the idea doesn't work, then we fail fast." (Filip)

5.2.8. Adjusting the job scope according to stakeholders' feedbacks

More than half of the change agents in this study (60%) make clear that they put effort in adjusting the job scope according to stakeholders' feedbacks. Being aware of the challenges in implementing emerging technologies, the informants know that the feedbacks from other organization members and stakeholders are valuable for them. They are aware of the importance to create partnership, to seek for feedbacks, to adjust, and to work with their limitations.

> "We can't dictate our customers into cloud and all these things. We become their partners in a sense. We could partner in digital transformation, but we can't force or take decisions for our customers just for our own needs. We have to work in our own limitations. ... We have to be very surgical to do this transformation, we can't transform everything." (Gorm)

Sometimes due to uncertainties, the vision when they first started could be much different from when they proceed. That is when there is more pressure on the work that they are doing and more requirements from the Management requiring them to change the approach.

> "My feeling was like well, there is not too much pressure because the leadership team in HR, they have no idea what it is so they didn't expect anything… what they told me was: OK let's give it a try, do the pilot and see how it goes!
>
> … I look it at it from a positive side because I got to do something new and I don't get that much pressure.
>
> Now it becomes a pressure because I already have the clear KPI at the end of this year, I have to create 20 more robots. When you think about that big amount number robots, it is not only to create

and analyze the robots anymore, but it is also to have a beautiful business case on how many hours, how much money you save up if you create that many robots." (Jacob)

5.3.Sensegiving

Apart from making sense of the Technochange and the work that they are doing, change agents are actively engaged in creating strategic plan or vision for Automation and AI (5.3.1) in parallel with keeping the business going, which, to some of the change agents, means building a future-proof business (5.3.2). To deliver the change, they set up implementation plans (5.3.3) based on the strategic plans or vision together with vigorously engaging other stakeholders both internally and externally (5.3.4)., as well as selling their ideas by collaborating with other stakeholders to build Proof of Concepts (POCs) (5.3.5).

5.3.1. Constructing a strategic plan or vision for Automation and AI

A clear empirical finding is that a greater number of respondents construe strategic plans or vision and articulate the steps to get there, which is reflected through 73% of the interviewees. The informants are unable to drive the change on their own. The senior expert mention how the technology should be embedded into the organization as the way to go to implement the Technochange.

"The way we kinda operate now in the company that this must happen in the line organization, it cannot be a certain activity happening on the side, in the fancy little box called "the AI for the future" (Charles)

"People need to be educated about the technology and what it can do…if they don't know what automation technology is and what it can do, it will not help. But if people actually understand it and they actually could discover more areas that can be automated or more efficiency that can be

gained, that's like education. People need to know about this and learn about this, that will help a lot as well." (Alva)

5.3.2. Keeping the business going - building a future-proof business

In addition to having strategic plans in place, the informants frame the need to keep the business going in parallel to building a future-proof business. From the understanding they construct in 5.2, change agents see the need to become more efficient to survive in the rapidly changing business landscape. This is further enhanced their views in 5.2.4, how they value the impacts of driving Automation and AI initiatives in their organizations.

> "Even though we have many contracts now … but we still need to change the way of working to make ourselves faster and more responsive to the customers and reduce lead time. That will actually increase our ability to compete. … if the whole machines is too slow and not efficient enough then you can't compete with the vendors…
>
> It is like we have to use new technology, we need to use automation to reduce cost to be more efficient. Otherwise, the whole unit will be sold out of the company." (Alva)

5.3.3. Having implementation plans based on the strategic plans

According to the change agents, the implementation plans are quite clear and they verbalize the process in details during all the interviews. 87% of them discussed about implementation and emphasized on the importance of the execution phase. To them, having a structure or plan of how they engage team members and other stakeholders is essential.

> "Also put the right structure in place for people to be able to get things done" (Fiona)

The implementation plan could mean continuously develop proof of concepts together with technical experts in order to sell their ideas to internal or external customers.

> "First of all, it was about identification of couple of cases where we can use the technology: talking to different people across organization talking about technology how it can be elaborated, and we found one good case. Then we did proof of concept of showing the technology how it works and making sure people are onboard. That process took a long time just to show it and then it is about how can we implement this in the organization, how do you onboard a new tool within this company, going through IT, Security, Architecture etc. That was a completely new journey." (Mikael)

They see the Technochange as a long journey where both long-term strategic plans needs to be balanced with short-term goals.

> "Making things happened has been quite a challenge. I think it has not been a project, it has been more of a journey – how do we get to where we are today from where we were three years ago." (Mikael)

5.3.4. Actively engaging other stakeholders, constituents and customers

All of the change agents in the sample industriously engage with other stakeholders, constituents and customers via different channels such as workshops, meetings, newsletter and emails to drive change.

> "I think like 70% of my time I spend discussing in meetings with people and so on to really get through and to really enable us to succeed. Right now, we are driving 18 different discoveries, out of these 18 perhaps 10 is coming to the production phase or execution phase. There are so many challenges that I need to resolve with different teams in Company 1." (Isak)

5.3.5. Collaborating with technical colleagues to develop Proof of Concept (POC) to sell their ideas

To make the ideas of developing business case for the Automation and AI technology more tangible, it has become quite prominent that most of the respondents take Proof of Concept very seriously to sell their ideas to other stakeholders.

> "Every new thing that we might use it in enterprise level with Automation and AI focus is also kind of POC." (Elis)

> "So, we started it of by running some proof of concepts, that's how we started this journey." (Knut)

5.4. Translation

An important empirical finding throughout all the interviews is that due to the nature of cross-functional or multi-disciplinary team in which many change agents are working, the respondents find it important to have appropriate messages to different stakeholders. In order to do that, there are two main approaches mentioned by the change agents: translate the messages differently towards different stakeholders and present facts to the audience. Both are coded as "*Communication Styles to Stakeholders*".

5.4.1. Translating the messages differently towards different stakeholders

The first way to make sense and give sense to themselves or to other people is to translate in two ways: to come to terms what the technology is about and to construct different messages depending on the receiving audience. Working in the middle ground, between the Top Management Teams and change recipients, change agents rectify the importance of create a clear understanding for different people they work with.

> "The only thing is that when new transformation technology kind of thing comes into the picture, that was when a lot of our senior members and operations people need simplified definitions of those market buzz words and how these will impact their lives. That is when I was given this responsibility and I think I became a natural choice because on one hand, I was good in understanding the market buzz and transforming, translating that market buzz into simple language which our management, senior people as well as operation people they can understand. So, bringing that down into like functional, architecture flow as well as tools, processes and capabilities mapping. That helped me a lot." (Gorm)

5.4.2. Presenting "cold" facts to the stakeholders

The second approach taken by the informants is to present the facts to their stakeholders because they consider numbers and Key Performance Indicators (KPIs) as the universal language for any audience. This is considered quite common that people link to the numbers such as KPIs to create credibility.

> "Everything is about aligning KPIs with the business needs and measure them right. We set the KPIs during the assessment phase, we conduct interviews. We did interview with both business and technology people. In these technology interviews, you are looking to align IT with business and create a plan with the technology according to what the business is looking for." (Calle)

6. ANALYSIS

The analysis is divided into three parts. I first presented the sensemaking process of the change agents (6.1), highlighting some of the similarities and emerging differences. Then the sensegiving (6.2) aspects of the change agents to the change recipients is considered. The last part focuses on the translation process (6.3) illustrating how change agents disembed and reembed meanings in different contexts. On the basis of these three-part findings, I first summarize, interpret and analyze how change agents drive change in the Automation and AI journey. Some surprising factors of differences are highlighted as the potential area for further studied in ***Section 8.4*** *as they were not discussed in previous literature.*

6.1.Sensemaking

To begin with, change agents make sense for themselves that their work bring value to the organizations and further a future-proof business. These interpretations from envisioning (6.1.1), re-envisioning (6.1.2) and undertaking personal change (6.1.3) further motivates their actions.

6.1.1. Envisioning

The envision starts with construing the meaning (Gioia and Chittipeddi, 1997) of technology in their organization and visioning the industry and workforce in the future. It is followed by an impulse to reflect upon their jobs and their skills to answer for themselves how they will be relevant in the future. With those interpretations, acting as change agents in their respective organizations, the informants start acting by developing business cases with quantified impacts in parallel with analyzing both internal and externally environments. They make attempts to meet customers in order to understand their customers' needs and to extract "*cues*" from them (Weick, 1995). Change

agents in this study examine with respect to what type of products or services are needed and whether these products could be deployed into the organizational context. They are deemed to see of their working context as an advantage, "*to be in a technology company where people understand technology and, or being forced, by customers to make business sense of what's going on*".

6.1.2. Re-envisioning

When driving the Technochange, there are challenges during the implementation phase. That is when the informants seek to receive feedbacks from other stakeholders and "negotiate" with those stakeholders regarding the business processes as well as the technological adoption. They are aware that in the context of emerging technologies, there is a gap to learn and it is important for them to "*be humble, you won't be the best at this, you want to work with experts that are*".

They extract "*cues*" by taking actions (Weick, 1995), either by seeing that their POCs do not appeal to other stakeholders or by moving on with another POC to validate their interpretations. There are uncertainties in the early phase of the implementation when their work' impact is not clear. As they move along and acquire more interpretations, the way they approach the technology has changed when new business cases are developed. In a sense, the reembeddedness or recontextualization has been employed (Czarniawska & Sevón, 2005). This evidence of how the agents readjust their views and plans based on sensemaking from other stakeholders is linked with the "*re-envisioning phase"* as described by Gioia and Chittipeddi (1997).

6.1.3. Undertaking personal change

Drawing references from the research done by Balogun (2003), by appreciating the fact that the change agents in this study are also positioned in between the top management and the change recipients, I will analyse how Balogun's theories are confirmed and validated. The findings have

shown that there are additional aspects of sensemaking that the change agents went through and one of them is "*personal transformation*" (Balogun, 2003). The change agents show that they reflected upon the meanings of their job either by referring to their past experiences and comparing the different requirements from the past to the current roles. They interact with other experts to extract "cues" via this social process (Weick, 1995) and construct the meanings of driving Technochange. When being asked about whether the work that they are doing driving their organizations "*to the right direction*" (Bean & Davenport, 2019), majority of the change agents provided positive answers with justification and reflections of how their works are translated to meanings for their companies. They made effort to "*reinvent the job role*" and examine how their jobs add values to the organizations or to other people. This transformation from personal perspective is significant and it is considered to be a part of the process under sensemaking (Balogun, 2003).

6.2.Sensegiving

The change agents provide signs of upcoming technological evolution by signaling the change (6.2.1) they carry out to the wider organization and other stakeholders (Gioia and Chittipeddi, 1997), keep the business going (Balogun, 2003) (6.2.2) by setting up structure to make sure the work gets done. Besides, by building business will last through the digital transformation to meet the rising demand of efficiency and customer demand, they have implementation for the business plan (6.2.3) as well as actively engaged other stakeholders to help them go through the change (6.2.4).

6.2.1. Signaling

First of all, change agents mentioned the importance of having both business expertise and technological understanding. Some of the informants were trained as engineers, either electrical or telecommunications, or in business but all emphasized the importance of continuous learning given the high-speed technological development. The intention is to build their own capabilities to disembed the technology and to reembed it into relevant contexts depending on the stakeholders whom they are dealing with (Czarniawska & Sevón, 2005). That step enables change agents to develop well-reasoned strategic plans for the Technochange. Those plans are communicated to the stakeholders to signal that the change is coming.

On top of that, to further the signalling, change agents collaborate with the technical experts to develop proof of concept (POCs) in order to showcase the technological application in a specific use case or business case in order to gain support for their plan, "*we did proof of concept to show the technology - how it works and to make sure people are onboard*". This evidence indicates that the Technochange is desired to take place at the organizational level, not on a separate unit. POCs then become a signal showing other stakeholders what are possible and what kind of use cases will be implemented, *"this must happen in the line organization…not…on the side, in the fancy little box called AI for the future".*

Last but not least, the metaphor (Czarniawska & Sevón, 2005) of "*burning platform*" is used to convince other stakeholders to get onboard with the desired speed of implementation for such strategic plan. The idea of "*change or die*" brings more pressure to the community making use of the power of storytelling (Czarniawska & Sevón, 2005) from their previous experience about the competition. Providing education and conducting trainings are also other ways for change agent to signal the coming change to other stakeholders and to their organizations.

6.2.2. Keeping the business going

Building on the last argument regarding using metaphor and storytelling (Czarniawska & Sevón, 2005), the studied change agents appreciate the importance of keeping the business going (Balogun, 2003) by building a "*future-proof*" business by driving efficiency or by improving profitability. At the same time, , they desire the co-existence of both the current way of working and the new plan of Technochange, "*also put the right structure in place for people to be able to get things done*". This is referred to as "keeping the business going" as Balogun found in his study (2003).

6.2.3. Implementing changes needed

Implementation is important to the change agents in Telecoms industry and a structure approach is the preferred way to go to, "*we have a structured approach to solving this problem and we also tried to quantify the results and the benefits that we would achieve as a company, I think that's where we are better than most of the people*". Change will not happen on paper, and similarly to what Balogun (2003) described, the change agents in this case are the ones directly driving the change. Not only do they influence top management who make the final decisions to enforce change from top-down but also get hands-on responsibility to make the change take place across bottom-up level as well.

6.2.4. Helping others through change

In order to drive changes, engaging other stakeholders in the company become crucial. The other stakeholders in this case could be considered as change recipients (Kante et al., 1992), who could be engaged or empowered as change agents Iveroth (2010) to drive Technochange in their respective organizations. Therefore, all of the change agents are interacting with other stakeholders

on a regular basis through various means of communications, e.g. emails, newsletters, workshops etc., helping them to go through the Technochange. This is done by actively engaging stakeholders, holding workshops or educating them about the applications of the technology which change agents have translated into a specific business case and illustrated with the POCs. Three informants mentioned in their interviews that they found it effectively to engage change recipients by leveraging on change recipients' strengths, "*…try to make them apart of the project in some way, like: I need your knowledge for this as it is something that you want to take part in".* By understanding the sensemaking and sensegiving process of change agents, we can also make use of this comprehension to encourage change recipients to take charge of the Technochange (Iveroth, 2010). Future research about this enactment is discussed in **Section 8.4.**

6.3. Translation Process

The recurring themes of translation process have also been discussed as part of sensemaking (6.1) and sensegiving (6.2). Disembedding and reembedding the technologies in different contexts, using metaphors and storytelling (Czarniawska & Sevón, 2005), change agents engage in the translation process to make sense and give sense.

The translation outcomes impact the depth and width in which shape the change outcomes driven by the change agents. There are three reasons for this. First, one of the most profound translation done by the change agents in Automation and AI journey is the construction of meanings of their own job roles. This ongoing process (Weick, 1995) requires them to make sense of what are expected from them as well as to engage in discussions and negotiations with their colleagues. This sensemaking process is ongoing and gradual. It also requires good translation skills from the change agents to disembed their interpretations from the future influenced by Automation and AI and to reembed to their jobs in the current working context.

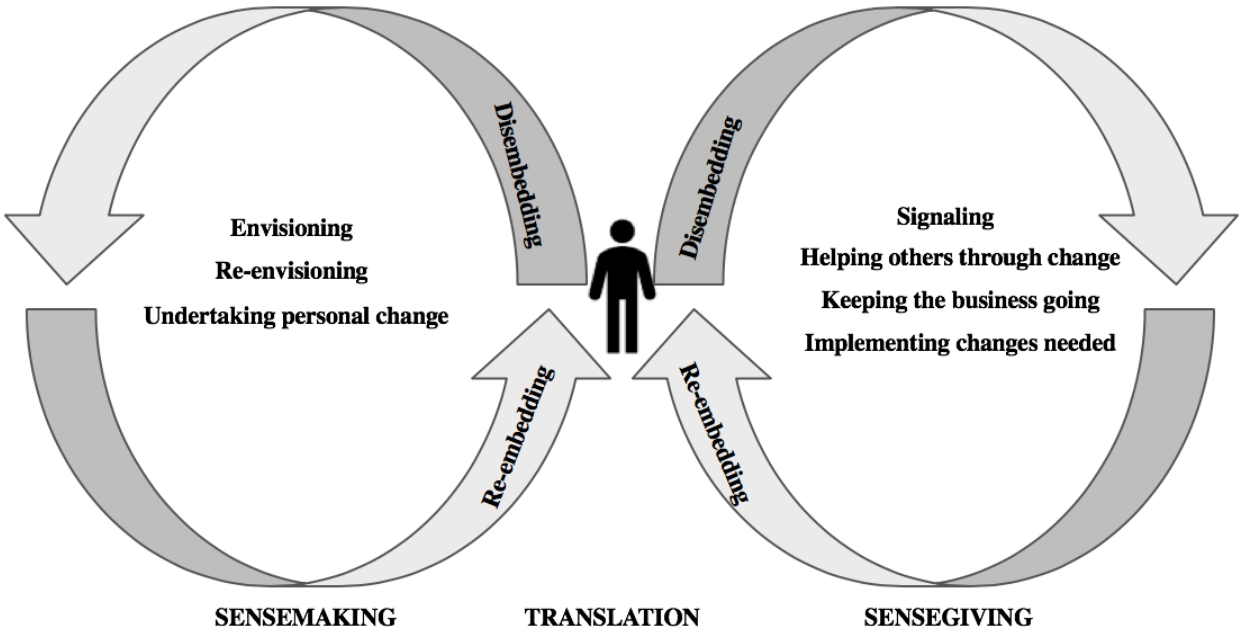
Second, change agents also disembed and reembed meanings for other stakeholders by developing different messages towards different stakeholders or by presenting the universally agreed results, also known as numbers and KPIs. Informants translate the technology happening in the market either from the vendors they interact with, from the conferences they go to and so on. They then build a business case, disembedding the technology developed by technical experts and reembedding it into a business case or a use case. Furthermore, by listening and taking into account other stakeholders' feedbacks, they disembed the from others and reembedded to the strategic plan or implementation plan. They have done that for other stakeholders. This process resulted in a change of the scope or the nature of the change altogether. It could be one of the explanation for the fact that the adoption of Automation and AI is widely accepted among the change agents. "*You want to get something, but you need to be flexible as well. It is a negotiation, I think. The requirement changes, the goal changes as well so it is a bit of that. You have long-term goal but you're changing all the time*".

All in all, the translation process, therefore, acts as the mechanism for sensemaking and sensegiving to happen. Translation is carried out both for themselves and for other stakeholders. This has enabled the Technochange in the studied organizations.

6.4. A Developed Model Engaged by Change Agent

To summarize all the analysis, change agents in the Swedish Telecoms industry engage in a combination of three main processes to drive the adoption of Automation and AI. These processes are sensemaking, sensegiving and translation. All of them are social, ongoing and often taken-for-granted processes (Weick et al, 2005) but due to the time limitation of this study, only a snapshot of the change is captured in this analysis. Therefore, the "re-energizing" phase as initiated by Gioia and Chittipeddi (1997) is not supported by any evidence in this case. A longitudinal study could

have been deployed to validate the theory coined by Gioia and Chittipeddi (1997) in a new context concerning Technochange.



Model 1: A trio of processes - Sensemaking, Sensegiving and Translation engaged by change agents in driving Technochange

In Model 1, I have synthesized the findings, and proposed a model of how a change agent engages in a trio of processes – sensemaking, sensegiving and translation while driving Technochange in their working context. With these analysis, further discussions concerning the contribution of this study are conveyed in **section 7**.

7. GENERAL DISCUSSION

This section connects the analytical findings to the theoretical framework presented in Section 3, discussing multi-level considerations of how and why the findings diverge, and where the new model is positioned with the trio of processes.

7.1. Understanding at Micro Level

This research has developed a multilevel and multifaceted perspectives on the change agent roles in Automation and AI journey by studying the change agents at the micro level. Change agents are considered as inhabitants (Hallet & Ventresca, 2006) of the newly emerging organizational form. Studying this phenomenology enables better appreciation of how "*shared typification*", such as plausible stories of future workforce, has transformed into externalized "facts" shared across change agents in this study (Hallet & Ventresca, 2006; Berger & Luckmann, 1967). This "*fact*" will then shape their future actions and their organizations (Berger & Luckmann, 1967). The change agents have not only made sense of their working environments but also given sense and sought to re-envision the change in that context. Their success in implementing the change will therefore impact how the business strategy is set.

> "Now, how do we scale fast? …We have like 150 bots in production. How do you make it 1000? That's how we're trying to move."

This has confirmed the pursuit of higher efficiency, higher productivity, lower cost, and lower resources of companies in response to their competitors and customers' demands (Pollard, 2017; Dirican, 2015) in the development and deployment of Automation and AI.

On the basis of the above findings, the present research refines and extends the theory of sensemaking and sensegiving by integrating the translation theory throughout the process of

Technochange. The observations have been made against a rather broad background of events and actors. It is clear that other explanations of the developments along the Technochange process are possible. Hence, the findings have limited replicability in the strict sense of the word. Nevertheless, they serve as an illustration of how the change agents make sense and drive the change in Swedish Telecoms industry context.

7.2. Advances from The Original Model

The thematic analysis strongly suggests that the concept of translation is very significant for an understanding of Technochange where technology has to be adjusted into the context of different organizations. This research paper has advanced the current understanding on two-folds, first, integrated and validated the sensemaking and sensegiving of change agents and second, combined the translation process to the model.

7.2.1. Extended with integrated and validated sensemaking – sensegiving from both leaders and middle managers' roles

The findings provide evidence that sensemaking and sensegiving (Weick, 1995; Gioia & Chittipeddi, 1997) as well as translation (Czarniawska & Sevón, 2005) can be usefully employed to describe the essential processes used by change agent in driving the Technochange. The Technochange process first start when the change agents make attempts to construe and assign meanings to the technological developments, business opportunities, their roles etc. Then go through personal changes by taking initiatives to learn the technical knowledge required for them to provide meaningful work to their organizations. It is then followed by constructing strategic plan or vision for the technological adoption at organizational level and by engaging with technical experts to develop Proof of Concepts (POCs) in order to sell their ideas to other stakeholders in

the company and gain internal legitimacy (Svahn et al., 2017). They keep the business going, implement the change, take into account the difficulties, adopt the agile mindset of "*fail fast*" and move on with helping other through change. The mechanism which helps them to work with different emerging technologies and work across functions is translation process. The divergence between the proposed model and Gioia & Chittipeddi (1997) is in energizing phase, which can be explained as this study only captures a snapshot of the process and does not carry the strength of a longitudinal study to witness the evolving phase.

Furthermore, with the adding findings from middle managers giving sense to their organizations, I have extended the original model from Gioia and Chittipeddi (1997) to have a better understanding on the nature of the innovation hub: how the change agents in this study carry both the role of decision-makers and the role of middle managers because they both create and implement technological strategies for their respective organizations. Combining and validating the findings from both Gioia & Chittipeddi (1997) and Balogun (2003) have provided us with meaningful understanding about the role of change agents in driving Technochange.

7.2.2. Extended with additional translation theory

Together with the extended translation process (Czarniawska & Sevón, 2005), this study has contributed to the pool of research regarding the ongoing social process of sensemaking and sensegiving. In particular, with respect to the Technochange, change agents have come to terms with the new technological development on their own to translate into meaningful business impacts for their working context. In this research, I argue that for an organization to gain greater success in their Automation and AI transformation. The trio of processes are the intermediaries between the AI strategy and realised goals.

One impediment to be aware of is the organizational constraints (Balogun, 2003) which hinder sensemaking, sensegiving and translation activities associated with developing interpretations when these activities do not receive sufficient support or attention. If change agents have different interpretations and different levels of understanding, which may be affected by self-interest and other political issues, they would engage in negotiation with other stakeholders to resolve the differences. After doing so, they also need to spend time communicating the message of change to their teams (Balogun, 2003; Weick et al., 2005). This notion is important because it indicates that the results then depend on how change agents interpret what they can personally do versus what required, and the activities they choose to carry out as a result of these interpretations. The sensemaking and sensegiving activities they engage in and the meanings they construct are crucial to the outcomes of the Technochange.

On top of that, regarding the translation process, it might not be effective with insufficient translation competence which prevents the movement of a practice from one context to another (Savory, 2006). The translation capability of change agent is another important factor to take into consideration. For an organization to gain greater success in their Automation and AI journey, the ability of change agents to interpret and translate the technological development to the job role, to their respective organization is essential.

7.3. Human Aspects of Technochange

This study has focused more on the social aspect of Technochange, trying to understand how the actors make sense, give sense and translate in their working contexts. Therefore, the purpose to address the research gap at micro level is achieved. This paper contributes to the research gap which Hinnings et al. (2018) have proposed regarding the potential impacts of emerging of

technologies. The findings in this study have also extended the current understanding about professionals dealing with emerging technologies.

Furthermore, that those Agile and DevOps concepts (Dornberger et al., 2018, page 65 -78) are adopted widely by the change agents suggests an interesting point for managers to consider while implementing Technochange. It also indicates a new way of working and potentially an emergence of "*software culture*" across organizations. 80% of change agents in this study make use of the Agile and DevOps methodology, some mentioned Scrum and Sprint as the way of working. The mentality of "*fail fast*" as a way for them to overcome difficulties in implementing the change and they think that it is the "way to go".

Last but not least, as discussed in **section 5.1.3**, through the lenses of the informants, Automation and AI have become a given, they focus more on the execution rather than analyze the implementation cost. It can be concluded that hose emerging technologies have been transformed into "*externalized facts*" that shape future actions of those actors (Hallet & Ventrsca, 2006; Berger & Luckmann, 1966). This finding has extended our understanding about those technologies on the micro foundations (Hallet & Ventrsca, 2006).

8. CONCLUSIONS

This section returns to the research question and explicates my answer (8.1). I then outline the theoretical contribution (8.2), the practical implications of my findings (8.3), and finally limitations and suggestions for future research (8.4).

8.1. Answer to The Research Question

This thesis has explored how change agents engage in a trio of process when driving Technochange. Specifically, the following research questions have been addressed:

> **How are the change agents working with Automation and AI making and giving sense of the rapid technological development? How are they translating such vicissitude in their organizations?**

In conclusion, these findings suggest that sensemaking (Weick, 1995), sensemaking – sensegiving in driving strategic change (Gioia and Chittipeddi, 1997), as well as translation theory (Czarniawska & Sevón, 2005) can provide a useful springboard for the investigation of Technochange process. As the answer to the research questions, a model of a trio of processes has been developed. A key finding of this research for is that sensemaking – sensegiving processes of middle manager (Balogun, 2003) could be employed in understanding strategic technological change. The findings indicate that a snapshot study of such change implementation does not indicate the energizing phase as identified by Gioia and Chittipeddi (1997).

8.2. Theoretical Contribution

The main contribution of this research is the trio model describing the three main processes engaged by change agents while driving emerging technological development in their working

context. By answering the research questions, this paper has contributed to the literature on individual-level responses to Technochange and provided meaningful discussions from social perspective. The result is expected to enhance the current understanding about emerging technologies for leaders, managers and relevant actors. Specifically, the literature is enhanced to the context of emerging technological development in Swedish Telecoms industry. The unique context of Telecoms industry which is under high pressure to transform (Allee & Taug, 2006; Peppard & Rylander, 2006; Stienstra et al., 2004), could provide insights to other industries and organizations wanting to initiate such transformation. This paper has provided a perspective from social sciences concerning the impacts of emerging technologies, which is needed (Hinings et al., 2018) and contributed to understanding of the "*micro foundations of institutions*" (Hallett & Ventresca, 2006).

Furthermore, regarding the sociomaterial aspect which focuses on technology as given, as a fixed artifacts, the literature review shows that the emerging technologies in the studied organizations are still being constructed and developed with the exponential growth of data. By seeing that the change agents are constantly engaging with technical experts to develop POCs and adjusting their projects according to their stakeholders' feedbacks, it shows that the emerging technologies could be shaped by the change agents as well. Therefore, this study has provided another perspective to this aspect.

8.3. Practical Contribution

The findings of the present research complement previous literature regarding the commercial benefits of implementing Automation and AI (Pollard, 2017; Dirican, 2015) by showing that the most important factor in adopting emerging technologies is the business case or use case. Moreover, addressing the mindset gap in digital innovation, this understanding contributes to

Technochange management across organizations. A better understanding of how change agents make sense, give sense and translate the technological changes has been achieved. It has highlighted that the translation capabilities (Savory, 2006) and the enactments are important to start engaging other stakeholders, particularly change recipients, in order to realize the full potential of the technological adoption. It is important that the "*knowledge translation capability*" plays an important role on the outcome of "*good*" and "*bad*" translation (Savory, 2006). This finding could be applied to other organizations or industries that are confronted with similar digital innovation forces.

8.4. Limitations and Suggestions for Future Research

The proposed theoretical model does not come without limitations. The focus of this study on knowledge-based change agents and Automation and AI is subject to local contextualization. This is the first limitation. In reality, Automation and AI might not be grouped together as in the studied organizations. Additional studies are envisaged upon the completion of this research. Notably, the Technochange of other emerging technologies, e.g. Internet of Things or industrial robotics, could stimulate a wide variety of works in the future.

Secondly, my classification of Technochange process into three processes, sensemaking – sensegiving – translation, implies some simplifications. It does not allow for as many nuances as would a review of only one or two perspectives. This, however, must be balanced against the need for a more overarching approach that reveals the whole processes engaged by change agents and exposes the potential for synthesis, which is an achievement in this paper.

Furthermore, due to my deliberate intent to interview change agents having non-technical background with at least some experience in Automation and AI, the present research implies that there might be a divergence of interpretations between technical and non-technical change agents,

especially given the if the disproportion between technical and social research. As sociomaterial perspective indicates, social research has put too much emphasis on the social aspect and too little on the technology, further cross-collaboration research is recommended. Also, the pursuits of longitudinal studies to understanding more in-depth about the enactment process between change agents and change recipients are suggested. Alternative, further studies concerning the transformation of emerging technologies with respect to organizational policies could provide better insights. More studies linking meso and macro level of analysis could better informed actors on how the logics could be influenced or interpreted from micro level (Hallett & Ventresca, 2006; Weber & Glynn, 2006).

Lastly, as an explorative study in qualitative form, within the scope of a master's thesis, there are also other contextual factors that may have influenced the presented findings. For instance, the findings from hierarchical cultures might be different compared to Swedish organizations with less hierarchical structure. Although it is often thought that generalization across settings is limited in qualitative research, it is possible to generalize from small samples by extracting transferable concepts, since structures and processes are not entirely distinctive across settings (Gioia et al., 2013). Still, further research is recommended to confirm the findings and validate them in other settings.

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Appendices

Appendix 1 – List Of Sensemaking Sensegiving Translation Phases

<table>
<tr><td>PROCESS
Theorized by</td><td>1. SENSEMAKING</td><td>2. SENSEGIVING</td></tr>
<tr><td rowspan="2">Gioia & Chittipeddi (1991)</td><td>(1.1) Envisioning
Information gathering
Evolve an embryonic strategic vision based on past experience</td><td>(2.1) Signaling
Public declaration of the strategic change effort
Symbolize the reality of change</td></tr>
<tr><td>(1.2) Re-envisioning
Moderate adjustments based on stakeholders and constituents' feedback</td><td>(2.2) Energizing
The emergence and communication of an organization-wide commitment to action toward the vision</td></tr>
<tr><td rowspan="3">Balogun (2003)</td><td rowspan="3">(1.3) Undertaking personal change
Reflected on the change
Defining their own roles</td><td>(2.3) Helping others through change
Handling resistance
Providing coaching, training and support</td></tr>
<tr><td>(2.4) Keeping the business going</td></tr>
<tr><td>(2.5) Implementing changes needed</td></tr>
<tr><td>3. TRANSLATION
Czarniawska & Sevón (1996)</td><td colspan="2">(3) Disembedding and reembedding</td></tr>
</table>

Appendix 2- List Of Respondents

Pseudonym	**Current Role**	**Function**	**Technological Focus**	**Company**	**Date of interview**	**Length of Interview (minutes)**	**Format**
Charles[2]	Director	Digital solutions provider	Automation & AI	1	2019-02-12	50	Face-to-face
Jacob	Specialist	HR	RPA Automation	2	2019-02-26	49	Face-to-face
Lina	Project Leader	Innovation Project	Automation & AI	2	2019-02-26	60	Video Call
Casper[1]	*Data Scientist*	*Innovation Project*	*AI*	*2*	*2019-02-26*	*58*	*Face-to-face*
Monica	RPA Lead	Finance	RPA Automation	2	2019-03-05	50	Audio Call
Filip	Architecture Head	Digital solutions provider	Automation & AI	1	2019-03-08	45	Audio Call
Malte[1]	*Product Manager*	*Sales & Marketing*	*IoT*	*4*	*2019-03-20*	*40*	*Audio Call*
Gorm[2]	Portfolio Director	Digital solutions provider	Automation & AI	1	2019-03-29	45	Audio Call
Charles[2] (Follow-up)	Director	Digital solutions provider	Automation & AI	1	2019-04-03	30	Face-to-face (Follow-up)
Mikael[3]	Head of Delivery	IT	Automation	1	2019-04-03	47	Face-to-face
Fiona	Product Owner	Sales	Automation	3	2019-04-05	30	Face-to-face
Elis	Transformation Manager	IT	Automation	1	2019-04-09	56	Face-to-face

Jacob (Follow-up)	Specialist	HR	RPA Automation	2	2019-04-15	30	Video Call (Follow-up)
Daniel[23]	Head of Transformation	IT	Automation & AI	1	2019-04-16	56	Face-to-face
Calle	Application Development Lead	Digital solutions provider	Automation & AI	1	2019-04-17	60	Video Call
Monica (Follow-up)	RPA Lead	Finance	RPA Automation	2	2019-04-17	30	Video Call (Follow-up)
Knut[3]	Transformation Manager	Supply	Automation	1	2019-04-22	50	Video Call
Isak[3]	Transformation Director	IT	AI	1	2019-04-23	60	Face-to-face
Alva	Strategy and Innovation Lead	IT	Automation	1	2019-04-25	40	Face-to-face
Beata	Specialist	HR	Automation	2	2019-04-30	50	Face-to-face

[1] Interviews are excluded from the empirical findings and analysis

[2] Informants are part of Automation and AI Leadership Committee

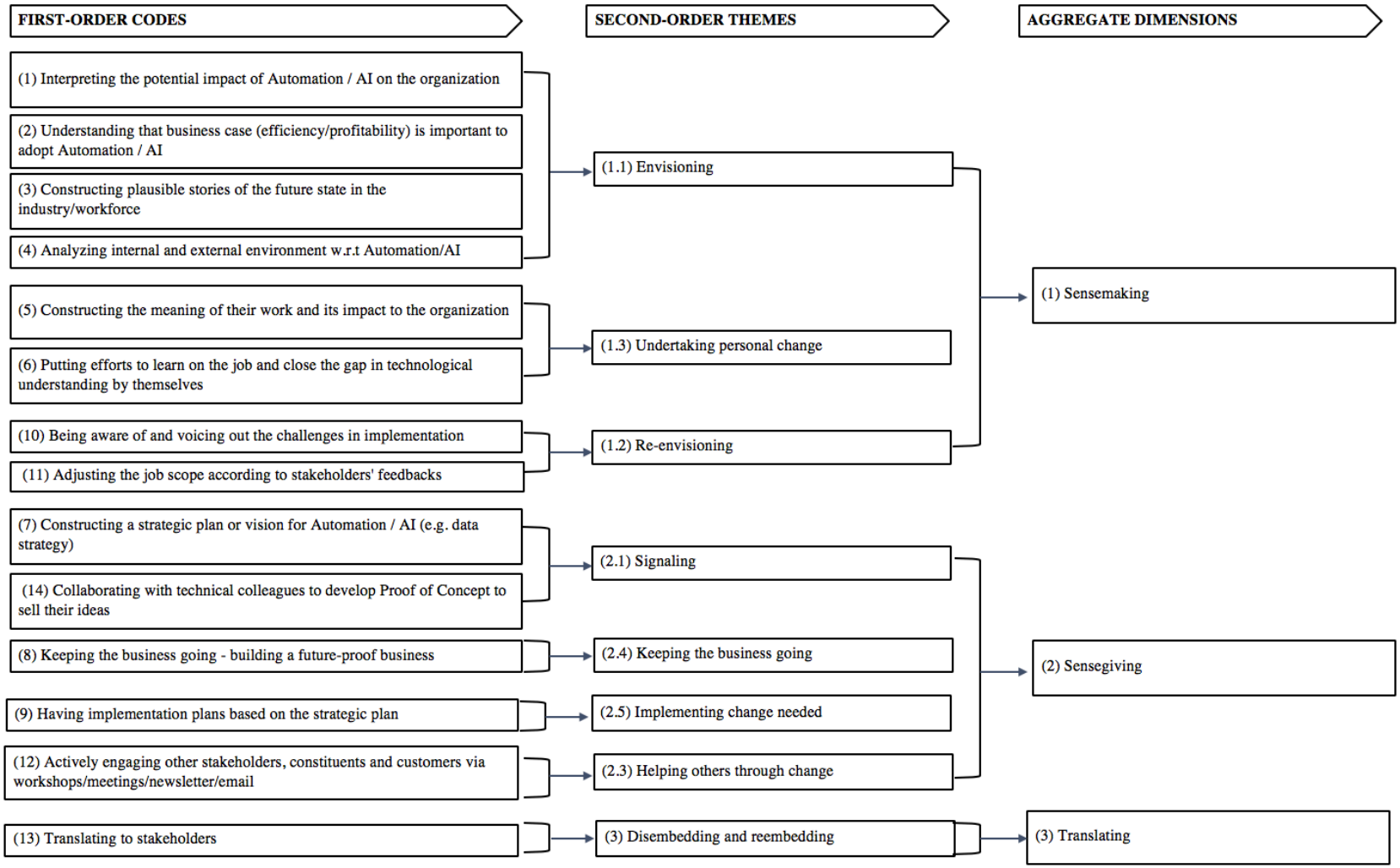
[3] Informants worked as consultants in their previous roles

Appendix 3 - Interviewees And Empirical Codes

Inductively Identified Codes	**Charles***	**Jacob**	**Lina**	**Monica**	**Filip**	**Gorm***	**Mikael**	**Fiona**	**Elis**	**Daniel**	**Calle**	**Knut**	**Isak***	**Alva**	**Beata**	**TOTAL**
(1) Interpreting the potential impact of Automation / AI on the organization	x		x		x	x	x	x	x	x	x	x	x	x		12
(2) Understanding that business case (efficiency/profitability) is important to adopt Automation / AI	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	15
(3) Constructing plausible stories of the future state in the industry/workforce	x	x			x		x			x	x	x	x		x	9
(4) Analyzing internal and external environment w.r.t Automation/AI	x	x	x		x	x	x	x	x	x	x	x	x	x	x	14
(5) Constructing the meaning of their work and its impact to the organization	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	15
(5.1) Referencing to previous experiences or organizations	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	15
(5.2) Detaching oneself from others' opinions and emphasize on one's own observation	x	x		x	x	x	x			x		x				8
(6) Putting efforts to learn on the job and close the gap in technological understanding by themselves	x	x	x	x	x	x	x	x	x			x	x	x	x	13
(7) Constructing a strategic plan or vision for Automation / AI (e.g. data strategy)	x	x	x	x	x	x	x			x		x	x	x		11
(8) Keeping the business going - building a future-proof business	x	x	x	x	x	x	x	x		x	x	x	x	x	x	14
(9) Having implementation plans based on the strategic plan	x	x		x	x	x	x	x	x	x		x	x	x	x	13
(10) Being aware of and voicing out the challenges in implementation	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	15
(10.1) Handling resistance or "slowing down" factor to change	x	x	x	x			x	x	x	x		x	x		x	11
(10.2) Expressing being comfortable with failure if one automation or model fails	x	x								x		x	x		x	6
(10.3) Adopting new flexible way of working: Agile, DevOps, Sprints			x	x	x	x	x	x		x	x	x	x	x	x	12
(11) Adjusting the job scope according to stakeholders's feedbacks		x	x			x	x	x			x	x	x		x	9
(12) Actively engaging other stakeholders, constituents and customers via workshops/meetings/newsletter/email	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	15
(13) Translating to stakeholders	x	x	x	x	x	x			x	x	x	x	x	x	x	13
(13.1) Translating different key messages towards different stakeholders	x	x			x	x				x		x	x	x	x	9
(13.2) Translating to numbers, e.g. KPIs			x	x					x		x	x		x		6
(14) Collaborating with technical colleagues to develop Proof of Concept to sell their ideas		x	x		x	x	x	x	x	x	x	x	x			11

Appendix 3. Interviewees and Empirical Codes

Appendix 4 – Analytical Codes, Themes And Dimensions



Appendix 4. Analytical Codes, Themes and Dimension

Appendix 5 – Interview Guide For The Pilot Interview – Stage 1

Interviewee's perception about AI

1. What is your responsibility concerning the development of AI solutions within the company 1?
2. What issues are you concerned with on a daily basis?
3. Where do you turn to know more about the development of AI/ML?
4. To what extent are you consuming/engaging with information concerning the technological development and the business application AI?
5. How do you make yourself stay relevant and updated in the changing environment?
6. Do you experience any differences in the change process when implementing AI compared to earlier technological change?
7. What is different now and what is similar to earlier technological change?
8. To what extent do you use AI/ML in decision making? Can you give some examples?
9. What does AI/computerization mean to you?
10. What application do you believe it will have for Company 1 and other companies? - transition

Company's direction and strategy

11. Can you tell us about the impact that AI has/will have for company 1's business? (industry dynamics, competition, benchmarking)
12. Do the company have a long-term vision of how AI/ML should be developed in order to sustain a competitive player in the industry? Broadly speaking what are the main changes that you have to handle?

13. Access to data is a prerequisite for AI/ML solutions, to what extent do you collect data internally versus externally (from public or open-source, stakeholders)?
14. What type of data?

Industry

15. Who are the key players in AI/ML development in telco industry? Who do you consider company 1's customers / partners / competitors?
16. To what extent do you need to create new partnerships (and customers) in order to implement new AL/technological solutions?
17. If they have the same as before: How would you describe the nature of the relationship that you have with these stakeholders/customers? (relational vs. transactional? Developing strategies together?

Wrapping up

18. Is there anything we have not asked you?
19. Do you have anything else that you come to think of that we have not covered during this interview?
20. Do you have any questions for us?
21. Who else have the big picture of AI/ML in the company that we should talk to?
22. If we have any follow-up questions can we re-connect with you?

(End of Interview Guide)

Appendix 6 – Interview Guide Stage 3

Opening questions

1. Can you tell me about the Automation and AI project or business initiative that you work on?
2. What are your contributions?
3. When was the first time you were made aware and involved in such initiative?
4. Why did you want to work on such initiative or Automation and AI journey?

Comparison

5. Did you involve in any other change project aside from the mentioned project, which help you reflect on the differences?
6. What are the differences between Automation and AI journey and other technological change initiatives based on your experience?

Methods or Methodologies that they learn on the job

7. What are the methods/methodologies that you make use of for your work, which you were not taught in school?
8. What are you doing to stay relevant and value-added to the organization in the future?

Sense of direction

9. How do you think that this Automation and AI initiative move the company in the right direction?
10. How do you think that it is important to have a data-driven culture? What are the requirements?

Influencing and engaging team members / stakeholders

11. To what extend do you try to influence other people you work with to adopt the same mindset?
12. What are the challenges?

Skills and competence

13. What are the important skills and/or competences required for Automation and AI now? In the future? E.g. Data literacy, machine-learning models etc.

Wrapping up

14. Is there anything else that you'd like to share related to what we've talked about?
15. Is there any important question that I have not asked you?
16. Do you have any question for me?

(End of Interview Guide)

Appendix 7 – Perceived Differences Between Constructed Meanings Of Work, Challenges In Change Implementations And Communication Styles

Code	Description	Illustrative Quotes
(5.1) Referencing to previous experiences or organizations	Reflect on previous role or experience to compare / contrast with the current work	"I was a project manager for the strategy project back then. My background is in management consultant transformation and strategy, and I am not at all a programmer or developer or data scientist." (Daniel) "Earlier in the consulting line of work, you are given a mandate to run certain things. You do it, right? You prepare recommendations and you move on most of the time. But when you work for a global company like company 1 with a global presence, you need to understand how the work is going to impact the people, how it's going to impact the company." (Knut)
(5.2) Detaching oneself from others' opinions and emphasize on one's own observation	Mention the point where they detach or remove themselves from the working context or the situation that they are in to make sense of what is happening	"The challenges are to detach yourself from listening to what the person is saying, meaning that they talk about the problems they have. You really want to fix them of course, you want to help them." (Monica) "We have faced several escalations but then the important mindset to have is you know, you remove yourself, you start putting the interest of the company, you start putting the interest of the team and try to see how you can solve the problem." (Knut)
(10.1) Handling resistance or "slowing down" factor to change	Aware of the barrier factor as well as how to handle it	"I think there is always resistance when you do change. You need to do a good change management and you need to trust the method as a leader." (Fiona)
(10.2) Expressing being comfortable with failure if one automation or model fails	Mention about failure as part of the implementation process	"We cannot anticipate every single scenario and the robots always have some exception. It will fail here and there and we have to standby, jump in and fix it." (Jacob) "That's only possible if you do some projects jointly, collaborate with them, do it, fail, repeat and incorporate the validate learning so you know, it's a closed loop feedback." (Knut)
(10.3) Adopting new flexible way of working: Agile, DevOps, Sprints	Demonstrate the adoption of new way of working which is adopted form software engineering culture	"I think the DevOps is the way to go for the people to change the company. Because we are still a very big and slow company, with a lot of different processes and very difficult to get things done. We need to change them, we need to be able to make it easier to achieve a task." (Lina)

		“If you're not willing to change, not quick to change, you're gonna fail fast, which is good because you're gonna learn how to be more adaptable.” (Monica)
(13.1) Translating the language towards different stakeholders for communication purpose	Reembed the meaning in different contexts towards different stakeholders	“For me the ability to translate the tech knowledge into more first of all common sense, and then relate it to the term that we use HR for example. The ability to translate … so that the tech people and the business people can understand each other, it’s the skill that I think it’s quite important for me.” (Jacob) “I was good in understanding the market buzz and transforming, translating that market buzz into simple language which our management, senior people as well as operation people they can understand.” (Gorm)
(13.2) Presenting "cold" facts to the stakeholders	Numbers, KPIs or “truth” are the vehicles to communicate to other stakeholders	“Everything has to be started with these KPIs to measure. In this KPI, you will find how the business needs are aligned with these KPIs. Then, you create a plan to do the realization of these benefits. This is a concrete example of a customer looking to achieve 100% test coverage.” (Calle) “I'm not gonna defend my initiative too much. I want to stay truthful and I don't want to delude myself and think it's as a perfect solution to all the problems.” (Monica)