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"Impact of Automation in Platform Business for Sustainable Performance"

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Synopsis

The purpose of this research is to analyze the influence of automation in platform business for achieving sustainability. It has been investigated based on the case of American company named, Project 44 which is a platform business. Because a gap was found within literatures relating to automation and platform business, this research aims in helping to get the deeper understanding of the context.

This research comprises of various chapters such as introduction, literature review, methodological approach followed by data collection and so on. In addition, the research has also been investigated from a theoretical and international perspectives respectively.

It has been concluded through data collected that, the automation has a key role in platform business when it comes to achieving sustainability as it impacts on all three dimensions of sustainability pillars; environmental sustainability, economic sustainability, and social sustainability. In the end, the limitations and further recommendations for future research has been added.

Preface

This research has been conducted as the Master Thesis by students named; Rheenzin Dolma Moktan and Puja Khatri K.C. who are enrolled in the program "International Business Economics" or "Economics and Business Administration" of Aalborg University. The research has been developed in the semester period of February to June 2021.

The researchers would like to express their gratitude to semester supervisor Dr. Mohammad Bakhtiar Rana for his guidance and mentoring during the challenges faced by researchers during the development of this Master Thesis. Likewise, the researchers express special thanks to all the professors who assisted in sharing their great knowledge during the master's program as it contributed to understanding and development of necessary background of international business knowledge. And finally, the researchers deeply appreciate for the efforts shown by employees mainly, Marek Bella, Mai-Britt Frost Larsen and Rasmus Holdt Weidemann within Project 44 for the agreement to interviewing and as well as Ramon as from one of its customer company.

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Chapter 1: Introduction

The firms need to have more flexibility in adapting and responding to the changing global business environment. There are several factors that drive changes however, sustainability has emerged as an important aspect of a business as it gains excessive attention around business practitioners and scholars. It is important for firms to consider the social and environmental impacts along with the economic profits gained through business activities (Elkington, 2013). The sustainable business practices not only help firms to raise profitability but also plays a key role in gaining competitive advantage and sustaining in the business market. Therefore, firms are introducing automation in their business to achieve different dimensions of sustainability.

Automation has become a recent technological tendency of value addition and effective knowledge management practices (Imran, 2018). Automation has been considered as a technology initiative of strategic importance to the organization. The study conducted by The Economist Intelligence Unit (2019) found that, about 90 percent of organizations have been engaged with the automation business practices. The beginning of the 21st century has been fuelled by information technology, internet and digitalisation which eventually had changed the success pattern of businesses (Van et al., 2017). The central strategy in today's business organisation is finding ways to protect the business from its competitors and gain competitive advantage. Therefore, the organizations have been encouraged to adopt automation technologies for business growth as well as for encouragement of employees towards greater innovation, productivity, and creativity (Gheorghe, 2019). As science and technology go together, not only for organizations, but the latest innovations of automation have been used in tackling the global issues related to sustainable development (Wilkins, 2017).

In terms of value creation through collaboration, the trend of platform business is grabbing unprecedented attention (Choudhary, 2013). Platform business have been emerged successfully as a disruption to a different industry (Schulze et al., 2020). As the platform business greatly fits in today's digital age, the technology infrastructure regarding automation tool is increasingly supported, as Bhattacharyya (2021)

argues that today's platform business is a part of a digital industrial revolution. The platform business is growing rapidly and exponentially, creating great interest which has now captured the attention by governments as a top priority because of the high expectations that it holds for potential contribution of sustainable development (Fuster et al., 2020). Previous studies from Web of Science focused on the relationship between the platform business and sustainability where Boar et al. (2020) have concluded that, the sharing economy within a platform business leads to have an impact on the achievement of sustainability.

1.1 Defining the Problem

Various platforms have turned into the million-dollar business, yet they are considered to be small in terms of employment and revenues as compared to traditional business (Zarra et al., 2019). The platform business has already left a noticeable impact on various highly regulated sectors such as retail, transportation, accommodation, finance and logistics therefore, its economic and social importance is bound to increase. On the way to the successful operation, platform business is automating their operating activities to achieve sustainable performance. As platform represents quite a new phenomenon, research on them is has found to be scarce and very thin. Although the research has been done on the impact of automation for achieving sustainability, little concern has been given to how automation in platforms can contribute delivering sustainable performance in terms of economic, environmental, and social sustainability. Hence, this research has been conducted to find the role of automation plays in platform business in the achievement of sustainability.

1.2 Research Proposal

The main objective of this research is to investigate and understand how the sustainable performance can be achieved using automation in platform business. As the automation has a direct impact on sustainable performance in this research, automation in platform business has been taken into consideration because the research aims to investigate the benefits gained by the platform business itself and the customers engaged to the platform using automation. Sustainable performance is a combination of sustainability and

performance, the research aims to clarify how it can be understood and how the benefits achieved can be categorized within different sustainability approach. This research will contribute to the body of knowledge by providing information about the varieties of automation tools which have a significant role in the sustainable performance of the platform business. Hence, through qualitative findings, a diverse range of groups such as professionals working in the platform business and individuals associated with automation and social science like scholars and researchers, would benefit from in-depth understanding of the relationship between the automation and sustainable performance of platform business. Furthermore, this research aims to contribute by providing knowledge on what SDGs can be gained though automation use in platform business. As the research has been conducted using a case study method to examine how Project 44 has enhanced the sustainable performance towards its customers by using its automated technologies. This research is primarily focused on sustainable performance and how Project 44 can be viewed as an integrator as it provides automated services to its customer companies. To fulfil the research objectives, the research problem has been formulated as:

How does automation in platform business foster the sustainable performance?

1.3 Key terms and definitions

In this section, the definition of certain terms used in the research question will be clarified in order to avoid misunderstandings as these terms might be understood or defined in various ways.

- Automation: it is an approach for humans to develop the efficiency of their tools and machines (Nof, 2009, p. 14).

- Platform business: it has been defined as sites where goods and services are shared or traded between different users, on a temporary or permanent basis, for a price or free of charge (Zarra et al., 2019).

- Sustainable performance: it refers to the harmonisation of financial, social, and environmental purposes in the delivery of fundamental business actions to maximise the value (Sebhatu, 2008)

1.4 Structure of research

This research consists of six chapters. The relevant existing literatures have been reviewed in order to gain the deep understanding on the relationship between automation and sustainable performance in platform business as mentioned in the research question. Secondly, the methodology part has been introduced and discussed along with the methods used. Subsequently, the findings from this research have been presented after analyzing the information gathered in relation to the research question. Finally, discussions regarding the research question have been drawn with some limitations and future recommendations for further research. To facilitate the reading, the subsequent content has been outlined briefly in the beginning of each chapter.

Chapter 2: Literature Review

Recently digitalisation has heightened the importance of platform business. As the business is growing worldwide, they are facing intense competition as well. Therefore, to sustain themselves in the competitive environment they need to deliver sustainable performance. Since the aim of this research is to investigate the impacts of automation in platform business to gain sustainable performance, this section is focused on answering the research question based on prior research done in the field of platform business. To get the in-depth understanding of relationship between automation and sustainable performance in platform business, a brief description on automation and its use in the platform business has been presented. Then, the relationship has been outlined from two theoretical perspective followed by the current account of platform business on three dimensions of sustainability which can be achieved through varieties of automation.

2.1 Automation in Business Platform and Sustainable Performance

2.1.1 Automation

Automation can be defined as an umbrella term for many linked disciplines within the organisations (Imran, 2018) and considered as a solution to many organisational problems such as human errors, service delay, information asymmetry (Nof, 2009, p. 14). As defined by him, automation is a set of machines, tools devices, installation and systems that are all platforms refined to execute the given set of exercise without human participation to perform them. However, this was not the case in the past. Formerly, organisations were dependent on letters and mails for delivering and receiving information. Moreover, the manual bookkeeping and auditing in financial sector used to be time consuming, full of errors, also there used to be the chances of influencing those data for the personal benefits rather than the benefit of an organisation which would create trust issues within the different departments within the organization. In addition, even from personal aspects there were many challenges such as more waiting time in banks, cinema halls and supermarkets. With these problems in hand, several studies focused their efforts on a way that organisation could implement technologies that could help in decreasing cost and improving efficiency

across the world. With the time being, the study leads the efficiencies provided by the technology in the form of automation (Winata, 2011).

Automation involves a delivery of efficient and consistent performance to international businesses. Companies needs to be agile for operating business in the current global business environment. Stakeholders such as customers, partners and suppliers include within the realm of international business where the access to consistent applications and systems for communicating and sharing would be needed. Therefore, businesses need right technology for collecting, interpreting, understanding, and processing the information. In essence, the automation system would play a key role with an unprecedented scale of information (Stohr and Zhao, 1997). Recently, development in technologies and globalisation has introduced immense competition in each field including the platform business sector (Epicore Software Corporation, 2021).

An organisation which can capture and create opportunities, being versatile to transform them to the continual changes in the environment to deliver and accomplish better performance is considered to be a well performing organisation. The sole motive of any business organisation is to achieve its goal and perform better than its competitors. Organisations have managed to gain expected performance using steam engine and computerised innovation in the past. However, to sustain in the competitive environment, organisations need to have a progressive and strong strategic view of management that focuses on further business development. In order to achieve desired objectives of sustainability and expandable business in today's business environment, organisations are using sophisticated knowledge and automated technologies such as Big data, Business Process Automation (BPA), Resource Process Automation (RPA), Artificial Intelligence (AI), Internet of Things (IOT) which has a very important role in the production and service sectors (Imran, 2018) to distribute the work, increase and enhance productivity and collaboration data visibility (Epicore Software Corporation, 2021; Imran, 2018). Automation has a broad effect on organisation and does not only impact production and services but also have a significant impact on departments within the organisation, competitors, customers, suppliers, stake holders along with the

sustainable performance of the organisation. The research that has been done across all the industry domains on strategic agenda has pointed towards the continuous improvement and the increase of automation as top priorities in their business. It has been assured that the use of even the simplest but right technology leads to improving the efficiency and productivity of business.

The following figure explains the transformation of automation over the past centuries.
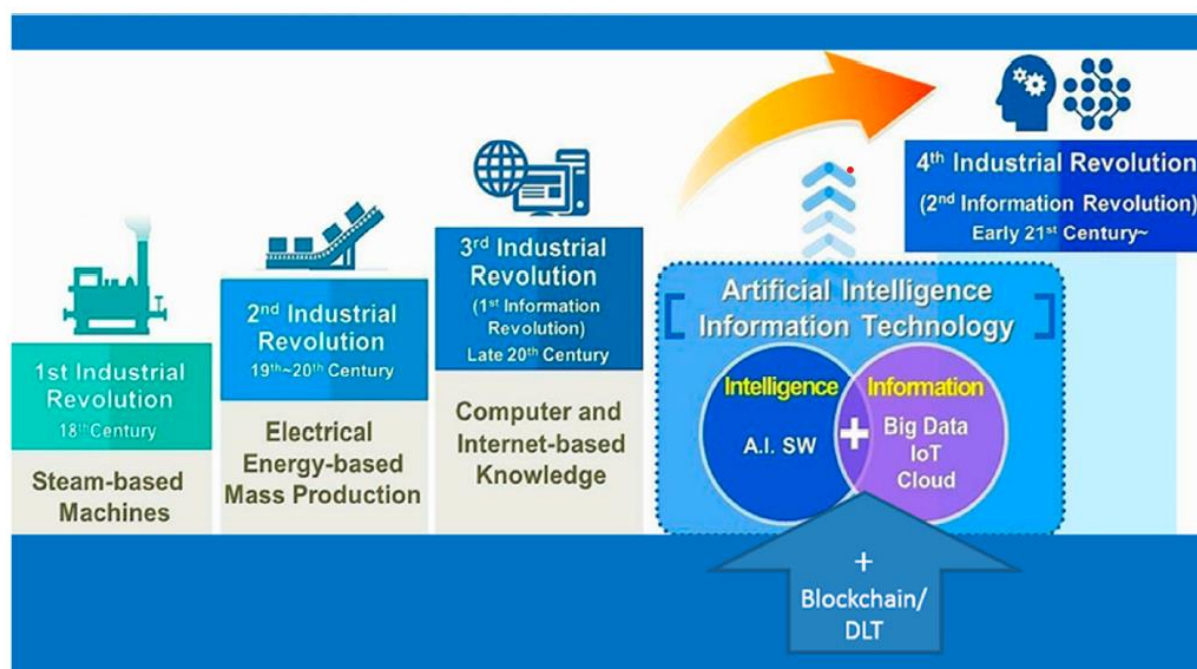
Figure 1: Automation Timeline. Source: (Imran, 2018)

As seen in the figure, regarding the context of fourth industrial revolution this research defines some of the factors and mechanisms of automation which have played a significant role in the sustainable performance of the platform business.

- **Robotics Process Automation (RPA):** It is an adaptable and measurable technology that can be easily implemented to automate across many departments and business process. It is a medium to create a virtual workforce that brings in improved capacity to business to gain a competitive advantage and customer satisfaction. In addition to this, RPA offers numerous benefits such as detecting fraud, monitor the inventory level and track shipment and communicate with customers and vendors. RPA has proved itself as a key solution in terms of accuracy, consistency, reliability, scalability, and cost reduction which eventually leads to

gaining speed and agility in business operations in this rapidly evolving ecosystem (Devarajan, 2018).

- **Business Process Automation (BPA):** It is a growing multibillion dollar industry that assures to erase routine tasks from workers palate by introducing autonomous agents and making the workers have a leisure time and free mind to indulge in creative work Rizk et al., (2020).

- **Industry 4.0:** It refers to a recent concept that focuses heavily on interconnectivity, machine learning, and real-time data. It incorporates technologies like IOT, Big Data, cloud computing with physical production and operations to create a more holistic and better-connected ecosystem for companies that focus on manufacturing and supply chain management (Epicore, 2019).

- **Artificial Intelligence (AI)**: It is just a broader term that describes applications or services mimicking cognitive functions such as 'learning' and 'problem-solving' associated with one to other human minds (Oppermann, 2019). In other words, artificial intelligence can be understood as the area of science with the hope of providing machine with the capacity of performing human functions such as logic, reasoning, planning, learning and predictability (Brady, 1984). Many scholars have pointed out the potential benefits of AI. For instance, cost reduction (Choi et al., 2017; Aalst et al., 2018), increase in output (Rizk et al., 2020) as well as productivity (Aguirre et al., 2017). The report from World Future Energy Summit reported "*artificial intelligence will be a major enabling technology in achieving renewable energy and sustainability targets"* (Mulhern, 2021).

2.1.1.1 Automation from International Perspective

The company's performance from automation varies across developed and developing countries as these countries have differences in terms of economic and regulatory environments (Zhu et al. 2003; Jarvenpaa & Leidner, 1998). Prior research has shown that, the level of using Information Technology (IT) and the factors shaping them differs from developed to developing countries (Dewan & Kraemer, 2000). Due to the different environments across countries, the technology diffusion is occurred unequally as it depends

on important factors like political, social, economic, cultural norms, access to formal and informal communication networks, technology policies and so on (Rogers 1983; Tornatzky & Fleisher, 1990; Caselli & Coleman, 2001). Zhu and Kraemer (2005) have concluded that, digital transformation is more advanced in developed countries than in developing countries therefore, the capabilities they have achieved in connection to internet and IT is not at the same level. In addition, they have emphasized to pay special attention to economic and regulatory factors that affects in technology diffusion when it comes to cross-country. The conclusion can be applied to comprehend as the technology used in relation to automation and its performance differs from country to country.

2.1.2 Platform Business

As discussed by Zarra et al., 2019 there is no single accepted definition that exists on a platform business. However, Kilhoffer et al. (2017), has defined the platform business as "*sites on which goods and services are shared or traded between users, on a temporary or permanent basis, for a price or free of charge.*" Regarding this definition, platform business includes ecommerce sites, sharing economy sites, social media websites, online job portals as well as online search engines. It encompasses labour platforms such as TaskRabbit or Rubber which offers services; online marketplaces such as Amazon or eBay where goods are traded. With the rise of technology and digitalisation, many other platforms such as Google, Alibaba, Amazon, Airbnb, Etsy, Facebook, LinkedIn, and Uber have been operating globally (Zarra et al., 2019).

Recently various other terms such as sharing economy, collaborative economy, on demand economy and gig economy are used to describe the proliferation of platforms. (Kilhoffer et al., 2017). Platform operates as two-sided markets which match distinct groups of users and enable to increase the scale and speed of transactions. Platform offers intermediation which may be business to business, business to consumers or individual to individual (Zarra et al., 2019) and are owned or managed by organisations that convey interactions between different parties (Schulze et al., 2020).

Platform values demand side economy more than supply side also known as network effects, which is the driving force behind todays internet-based economy. Network effects arises when users create value for

other users and are boosted by technologies that create efficiencies in social networking, by developing app and other network expanding activities. As users create users, value circulate upwards attracting more users. Alibaba which manages over 75% of Chinese ecommerce transaction, Google which accounts for 82% of mobile operating systems and 94% of free search and Facebook, the world's dominant social platform are some of the evident results of network business (Van et al, 2017). A platform is a business model that creates value by facilitating exchanges between two or more interdependent groups, usually consumers and producers. Platform harnesses and creates large scalable networks of users and resources that can be accessed on demand which creates communities and markets with network effects allowing users to interact and transact (Van et al, 2017).

Platform has been categorized into four different types by John Hagel (2015).

- Aggregation Platform: It is a platform that brings users together and facilitates to connect them with appropriate resources such as goods, services, and information. As these platforms are transaction or task-focused, the revenue is generated from user transactions' fees or charges while having access to the platform. Examples of this type of platforms are eBay and Etsy.

- Social Platform: it is a platform that is mainly focused on social networking but not purely for the goal of transaction. It facilitates in engaging interaction and fostering long-term relationships to users by providing unique value. The revenue is generated via advertising and examples for this platform are Facebook, YouTube and so on.

- Mobilization Platform: it is a platform that goes beyond conversations and interests, encouraging users to collaborate for larger gains than what an individual could gain alone. It is ideal form business to business context where the collaborations take place among business partners, employees or even customers to solve the challenge. It prioritizes long term relationship over short-term transactions. Netflix can be an example for this type of platform.

- Learning platform: it is a platform that facilitates the knowledge transfer and sharing of insights together among users with multisided networks. In this platform, the users can build deep and trust-

based relationships realizing them their teamwork power. An example can be learning management systems which allows employees to share their skills and knowledge with each other.

2.1.3 Sustainable Performance

Before defining sustainable performance, it is necessary to understand the notion 'performance 'and 'sustainability.' Since the researchers have understood the sustainable performance as a combination of these two terms, the researchers believe that it is important to understand them separately.

- **Performance:** It can be understood as a process or the action that are carried out in order to accomplish the certain task or function. It can also denote towards how well or badly something works as described by the Oxford English Dictionary. The different definitions of performance that existed in literature were incorporated and found to have one common characteristic which was related to two terms: efficiency and effectiveness (Samsonowa, 2011). Considering these two terms, the performance can be defined as "*the goal achievement of an organization rather than individuals, with minimum resources consumed to reach the goal*" (Ghalem et al., 2016).

- **Sustainability**: It is a complex and multi-faceted term which covers a broad scope of topics from environment conservation to energy consumption and stake holder satisfaction including financial results. The authentic meaning of the term is proportionate to permanence and implies notion of durability, stability, and eternalness (Cheney et al., 2004). Many people understand sustainability as being environmentally friendly however, it is broader than that which represents much more than reducing energy and waste, protecting ecology and recycling. Hence, in the sustainability research literature, the sustainable performance of a company should take economic, environmental, and social aspects into account which is also referred as triple bottom line (Sebhatu, 2008).

According to Kamble et al. (2020), the balanced focus on triple bottom line enhances the achievement of sustainable performance hence, it can be defined as the performance of the company in all three dimensions of sustainability. More regulations have been formulated with the aim of gaining sustainability through sustainable performance. For instance, the International Organization for Standardization (ISO) was launched as ISO 26000 in 2010 with the aim of providing guidelines for organizations and companies for them to operate in an environmental and humane manner (Lu et al., 2013). Special strategies have been developed for European countries in terms of promoting environmental and social responsibility known as the Renewed 2011-2014 European Strategy for CSR. According to (Crane et al., 2013; Lu et al., 2013), the strategy developed attempts for integrating social and environmental considerations into the company's core business strategy as well as daily operations. It is also seen in a global context that, popular guidelines for sustainable operations to shape companies which includes THE United Nations Guiding Principles on Business and Human Rights, the International Labour Organization's Declaration of Principles Concerning Multinational Enterprises on Social Policy, the United Nations Global Compact, and the Organization for Economic Co-operation and Development (OECD) Guidelines for Multinational Enterprises (Chen, 2015). With these improvements on regulations imposed on businesses, they are to follow practices of doing business which eventually leads them to maximize positive effects and minimize the negative impacts in business operations.

2.1.4 Relationship between automation and sustainable performance

As indicated by Imran (2018), automation has a direct relationship with the sustainable performance of any business organisation. This argument was further supported by Haseeb et al., (2019) on his empirical research conducted on the small-medium enterprises SMEs of Thailand. As per the result derived from the study it was evident that performance of the enterprises increased after introducing automation in their organisation. Similarly, they were able to increase their annual revenue and business savings, improve their efficiency, invest more within business, and reduce the debt with automated technologies. Similarly, Brynjolfsson & Hitt (2000) conducted firm level research and validate that

automation has a noticeable effect on productivity growth, productivity levels, and stock market of the firms. For gaining the knowledge about the relationship between automation and sustainable performance, the researchers have focused on the impacts of automation towards achieving sustainable performance within three dimensions.

Automation tools such as artificial intelligence can be seen as an engine to productivity and economic growth (Szczepanski, 2019). One of the studies has found the contribution of AI to the global economy to be massively potential (Goled, 2020). Also, the reports by Accenture added that, the transformation of companies can boost the growth and profitability of industries with the use of AI as well as it helps the young and small companies on scaling up and heading for larger competition (Goled, 2020). Relating to decent work and economic growth, the use of AI helps in optimizing the use of inputs as the tools help to monitor precisely along with the control of production process which eventually leads to cost savings. This can be explained with an example in agriculture sector, the precision monitoring of inputs such as water and fertilizers would help to save the cost. Furthermore, the use of AI enhances to the greater output productivity with the given set of inputs for instance, operational efficiency is maximized on localized grid with the use of AI-enabled smart grids while it manages the distribution across multiple energy sources. In addition, the use of robotics in agricultural field results lower labor costs with efficiency in labor force, as the errors are reduced in manual and routine tasks. (Herweijer et al., 2018)

Similarly, the positive impacts for the environmental benefits can be gained with the use of automation tools. Besides the economic sustainability with higher productivity, the tools that are associated with AI has a potential to tackle with carbon emissions (Herweijer et al., 2018). The adoption of automation reduces the environmental impacts from operation systems of industries such as pollutions thus, its adoption occurs as an important development to overcome challenges created by environment (Bugmann et al., 2011). There are many global efforts that artificial intelligence has helped in protecting the environment such as reduction of carbon emissions, removal of carbon dioxide, monitoring deforestation and son on. Through intellectual grid systems, AI has the potential to drive higher efficiency as it would help in managing the demand and

supply of renewable energy solutions which would be clean, affordable, and reliable. The AI-powered robots help to monitor the condition of ocean with temperature, pollution levels and ph. The data can be gathered through AI to reach to the extinct species and habitats in order to protect them. For instance, a company named 'Blue River Technology' uses AI to discover the presence of invasive species and eliminated them using machine learning and computer vision (Mulhern, 2021).

Sustainable Development Goals	Targets inhibited by AI	Targets enabled by AI
Environment	30%	93%
Economy	33%	70%
Society	38%	82%

Table 1: Impact of AI on the achievement of each target from the SDGs. Source: (Nerini, 2020).

2.2 Impact of Automation in platform business from theoretical perspective

2.2.1 Transaction cost perspective

Every organization tend to minimize their cost to gain profitability and sustainability. The transaction cost theory is relevant in this research to understand how the platform business could reduce its cost and deliver sustainable performance.

Transaction cost theory explains that a firm can achieve organizational efficiency of the cost of exchange (Sellito & Luchese, 2018) either by producing internally or by acquiring the products externally (Rindfleisch & Heide, 1997). Le Roy et al., (2014) has defined transaction costs as the costs related to monitoring, controlling, and coordinating the transactions. The driving force behind the platform business is its network. Successful platforms seek to maximize their overall value in the whole system in a spiral, upward moving and feedback driven process (Van et al, 2017). Hence in such a platform business interactions and communications play a vital role. The growing need for such transactions increases the cost of the platform business which could be reduced using automation. For instance, shops were

substituted by websites, cloud substituted the data centres and now technologies such as AI and block chains are reducing cost in platform business through the elimination of unnecessary middleman and employees during those transaction (Schulze et al., 2020).

Literature in transaction cost theory suggests that information asymmetry between service providers and clients gives rise to opportunism, which is defined as a *violation over the course of a relationship* (Susarla et al., 2009). Rindfleisch & Heide (1997) also explained the sources of costs such as bounded rationality and opportunism. For instance, the opportunistic behaviour might be created due to incomplete agreement and information asymmetries between the actors of the platform business. Furthermore, it can also be created if one party hides or modifies the information and act opportunistically to defraud another party (Nagle et al., 2020). In the case of online platform, freelancers working for such platforms might misinterpret or over report their effort leaving the first party or employers unable to differentiate high quality contractors from low quality ones. Such information asymmetry can be mitigated by implementing automation that serves as a monitoring and controlling mechanism against the misinterpretation of either party (Nagle et al., 2020), as the people have limited cognitive processing power, they are unable to process all the information due to the complexity (Williamson, 1971).

The reduction of transaction costs in the economic system of the company will lead to effective and efficient operation (Ferreira et al., 2014). Today, the rise of information and technology and automation has reduced the cost by reducing the need of owning physical infrastructure and assets. To clarify, successful platforms such as Uber connects drivers and riders without any cars, Airbnb connects hosts and guests without owning a single room and Alibaba has grown more popular without owning any inventory at all (Nagle et al., 2020). Implementation of automation can be beneficial in reducing uncertainties during the transaction. Automation fosters digital transaction which differs from offline transactions. Cost occurred in offline process as monitoring, controlling, and protecting offline transactions need time, effort, money, and labour.

In platform business, transaction may involve not only transferring money from buyers to sellers but involves transfer of information to the parties. Hence, transactions accomplished digitally leave digital traces. For instance, data regarding the purchase price, method of payment, time and date of delivery could be recorded, stored and protected efficiently with implementing automation which can be useful to all the parties involved in the transaction (Nagle et al., 2020). Thus, automation reduces potential uncertainties as the actors can verify the transaction, update budget for the month and can make other plans for the organisation. In addition to this the data can provide useful information which could be beneficial in better decision-making and management (Herweijer et al., 2018).

2.2.2 Legitimacy theory perspective

Every organisation has the desire to be accepted and cherished within the environment they operate in. Organisation, which operates within some socially constructed systems, norms, and beliefs and which can help in the development of the society will have the benefit to run their business successfully. This is the reason we are incorporating legitimacy theory in this research to explore how automation in platform business is impacting it in the process of gaining social acceptance and legitimacy.

Suchman (1995, p. 574), defined legitimacy as the "*generalized perception or assumption that the actions of an entity are desirable, proper, or appropriate within some socially constructed system of norms, beliefs, and definitions*". As described by Van Alstyne et al., (2017) networks are the real assets of platform business, having valuable interactions are the main reason for all the players within the network to participate in the platform. Success of the platform is possible only if the organisation could gain trust among the players and share the value generated with all the participants. Combining correct resources are more important than controlling the resources, facilitating interactions, and managing relationships have a higher priority than internal optimization in the platform. To create and share the value fairly platform needs resources, and they need to attract committed software provider in the organisation Van Alstyne et al., (2017). For instance, use of block chain in the platform could help the organisation to operate without any risk of downtime, censorship, or fraud, when two parties begin an interaction, such as request for data

and financial exchange (Schulze et al., 2020). With the adoption of block chain, committing the successful fraud becomes almost impossible as it will automatically create a new transaction record composed of blocks of data, and are continuously validated. Records cannot be manipulated, because manipulating them would require coordinating many tools (Plansky et al. 2016).

Legitimacy links the organization and its environment and constrains organizational behaviour. A firm's legitimacy is judged on norms and values that are prevalent in a society (Dowling & Pfeffer,1975). There is an assumption that adoption of automated technology such as AI, Block chain, RPA, BPA would replace the physical and material functions with digital and virtual solutions and thus reduce the use of natural resources and reduce harmful environment impacts (Schulze et al., 2020). In addition to this, use of those technology enables a global outreach, which in turn can increase global logistics. For instance, online marketplaces are reaching and growing with global user populations. Firms face a threat to their survival when not regarded legitimate, because their actions are either inappropriate or undesirable (Lamin & Zaheer, 2012).

However, obtaining and defending legitimacy is not easy. To have a clear idea, there are some negative impacts of automation in the platform as well which are being barrier in gaining social acceptance and prestige. For instance, platforms operate in large volume of data centres and computer power which requires considerable amount of electricity and cooling. Similarly, various other devices such as smart phones, tablets, computers are necessary to be within the platform network which are increasing the demand for those devices for which resources are being used which might have a negative impact on environment. Therefore, it is important to obtain legitimacy because it enables the effective functioning of a firm (Lamin & Zaheer, 2012). The concept of circular economy and sharing economy highlights sustainable and responsible aspiration. To gain environmental sustainability and prestige in the surrounding, platform business can align with these concepts and implement in practice innovations that promote access instead of ownership. For instance, uber without owning a single

vehicle is operating successfully which reduces the number of vehicles thus, the energy used, and the pollution created by the vehicles are reduced.

2.3 Impact on Sustainability Pillars on Current Accounts

The United Nations (UN) 2030 Agenda for Sustainable Development has composed 17 sustainable development goals (SDGs) in addressing critical areas for humanity and the planet (Khamis et al., 2019). Rockström and Sukhdev (2016), has proposed the 17 sustainable development goals to be categorized into those three dimensions. The 2030 Agenda has committed the global community to "achieving sustainable development in its three dimensions namely, economic, social and environmental (biosphere) in a balanced and integrated manner" (Weinberger et al., 2015). The United Nations General Assembly has put these three dimensions to be integrated with balance in achieving the sustainable development. Hence, in explaining the impacts of automation on different sustainability pillars, the following figure helps to understand clearly in the achievement of sustainable performance through breakdown of sustainable development goals. The current account of impacts of automation on business platform have been explained based on the SDGs' division within three dimensions followed by brief description of each sustainability pillars.
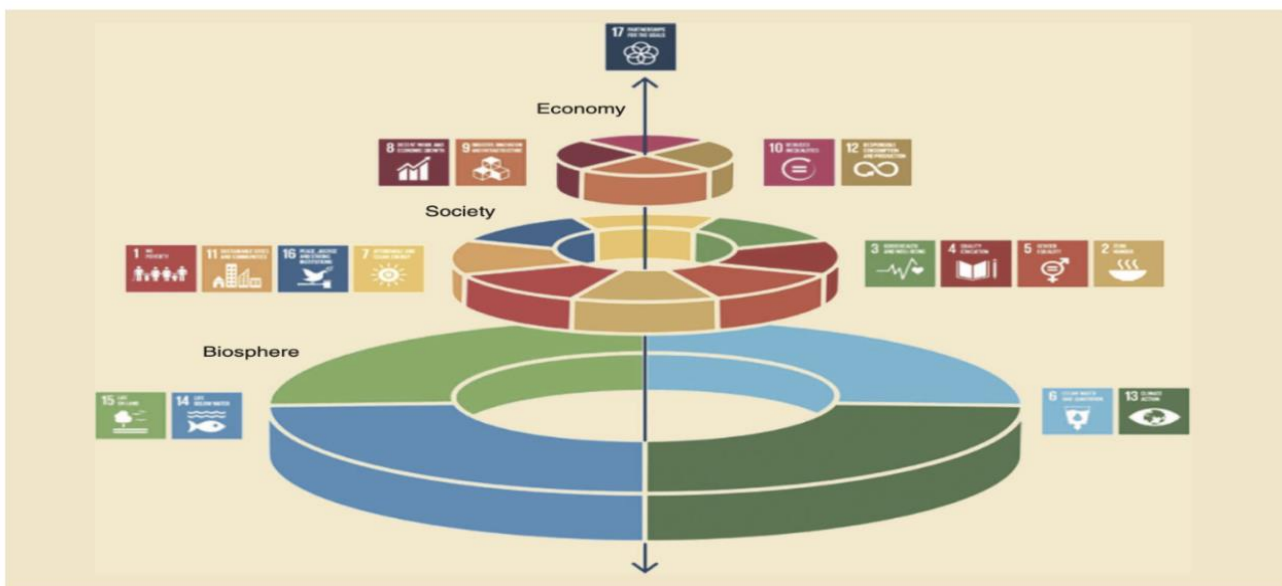

Figure 2: The UN's SDGs. (Source: Rockstrom & Sukhdev, 2016)

2.3.1 Economic Sustainability: Researchers (Sheth et al., 2011) have defined the meaning of economic dimension of sustainability from two distinct aspects: conventional financial performance (e.g., cost reductions), and the other relating to "*economic interests of external stakeholder such as broad-based improvement in economic well-being and standard of living.*" This dimension mainly targets to the following sustainable development goals:

·   SDG 8: Decent work and Economic Growth

·   SDG 9: Industry, Innovation and Infrastructure

·   SDG 10: Reduced Inequalities

·   SDG 12: Responsible Consumption and Production

·   SDG 17: Partnerships for The Goals

These have further been explained with current examples of platform business that uses automation to gain sustainable performance. As the use of automation central towards the productivity and efficiency throughout the economy, it clearly demonstrates how the automation helps in gaining the economic sustainability. Since automation tools like artificial intelligence has become a disruptive technology, it is believed that the removal of AI from business practices would hit the profitability of a company (Komarraju, 2021). For instance, Google's core is embedded with artificial intelligence. As a platform, it includes YouTube, google photos, Gmail, google maps and so on that are mostly used daily. On YouTube, the useful recommendations are made with the google services provided by deep learning within artificial intelligence. It would help the users to personalize their feeds to keep them addicted to YouTube where the company would be making money from the ads that appears while users use the app. Moreover, 95% of Google's revenue is contributed by Google's Rank Brain from the advertisements on its search engine, that is incorporated with AI.

Another example would be AI-powered dynamic pricing algorithm used by Amazon to gain the competitive edge by enabling the sales and revenues by decreasing the price of product for increasing sales when needed. Similarly, the use of mobile robots by Amazon in its warehouse has reduced the cost to be paid to labors (Rey, 2019). Other platform company such as Microsoft partnered with ICRISAT to AI to help

farmers with an increment of the crop yields by 10 to 30% where AI would help them in predicting the best date for sowing crops (Komarraju, 2021) that would lead to have good harvest despite irregular and insufficient rainfall as well as have better financial returns (ICRISAT, 2017). According to ICRISAT (2017), "the Sowing App sends farmers customized messages in terms of land preparation, seed treatment, application of nutrients, pest and disease management, water management and harvesting which helps in achieving optimal harvests."

2.3.2 Environmental Sustainability**:** It is the performance that leads to organization's carbon footprint reductions that would generate a better working environment with an improvement of air and water quality within the company's properties and the surrounding itself (Rezaee et al., 2019). Since 1980s, the increase of environmental issues has gained the attention as environmental sustainability is of highly important to the consumers (Choi & Ng, 2011). This dimension targets on SDGs like:

· SDG 6: Clean Water and Sanitation

· SDG 13: Climate Action

· SDG 14: Life Below Water

· SDG 15: Life on Land

In a platform business, the use of automation tools has been sharp to achieve sustainability. For instance, a machine has been developed that is equipped with AI technology which would identify the type of plastic bottles automatically. This AI-enabled recycling system named as "Waste-Free World" would use by platform company such as Alibaba Group with the aim of sorting plastic packaging and speeding high grade plastic for circular economy ("Unilever and Alibaba", 2021). As Komarraju (2021) has explained that the Microsoft's AI solutions helps the Maritime ships in determining the fuel efficiency as it produces 3% of the global carbon emissions. During the transportation of goods across seas, the use of AI has reduced the fuel charges leading to reduction of carbon emissions.

2.3.3 Social sustainability: It addresses to equity, equality, well-being, inclusion, health, identity, poverty, and similar issues. As it incorporates social development of a society, it is described as the 'people' pillar. In the context of business, social sustainability is connected to a company's clients and stakeholders as well as its workforce and suppliers (Zarra et al., 2019). This dimension includes the SDGs such as:

· SDG 1: No Poverty

· SDG 2: Zero Hunger

· SDG 3: Good Health and Well-Being

· SDG 4: Quality Education

· SDG 5: Gender Equality

· SDG 7: Affordable and Clean Energy

· SDG 11: Sustainable Cities and Communities

· SDG 16: Peace, Justice and Strong Institutions

The platform business is encouraging labor market participation and labor market transitions. Interconnected network and automation in platform give access to work from rural area as well as individuals can work from home from the interconnected networks such as AI and Industry 4.0 which gives opportunity to those who struggle to find job in other businesses such as single parents, retired people, people living in rural areas or individuals with disabilities (Zarra et al., 2019).

For instance, China's second largest e-commerce company, JD.com, hosts more than 170,000 online merchants, many of whom live in rural areas (World Bank, 2019). Though there are assumptions about automation diminishing labours, implementation of automation in platforms yet introduces new forms of employment. It can be explained with an implementation of block chains in online platform give rise to new forms of leadership, offering a type of faceless management which gives place for disable, elderly people. Moreover, it has also helped in achieving work life balance, supplementing stagnant wages, compensating for unemployment, and coping with just in time work (Schulze, 2020).

Although there is a widespread concern that, the artificial intelligence and other technologies associated will create irreversible damage to labor market as David (2015), argued that despite automation substituting the human labors in short term, it has led to the job creation in the long term. The new opportunities are offered mainly to the service sector with the progress in automation technology (Kohl et al., 2020). Machine learning helps in monitoring the infectious disease where the local specialists are not available. In case of responding to disasters, a big help is gained through big data and artificial intelligence (Scuratti, 2018). it can also help in reducing physical barriers and issues with accessibility in the workplace which leads towards equalizing the opportunities. Automation in the platform business such as Alibaba are better positioned to attract and retain new workers (Epicore Corporation 2019). Large online platforms and marketplaces employ many full-time workers (Kenny and Zysman, 2016). It was reported that in March 2018, the Alibaba Group, employed over 66,000 workers and are well paid along with social security and other benefits.

2.4 Conceptualisation

The overall goal of this research is to understand how the automation in platform business fosters the sustainable performance of a business therefore, the key themes for this research are 'automation in platform business' and 'sustainable performance'. As the world is now being attentive towards sustainability, the automation is going to the key aspect for long-term sustainability for the environment, society and government hence, it has become important to gain deep knowledge what it means and its impacts. This research is based on a case-study, so the researchers hope to bring more insights on the relation between platform business and sustainability. The existing literature mainly addresses the impact of automation in achieving sustainability through the various use of automated tools such as artificial intelligence, RPA, BPA and so on. Therefore, the researchers have focused on platform business in order to get the understanding of the role of automation on platform business that leads to sustainable performance.

In order to answer the research question, a conceptual framework has been developed as to acquire the better understanding of platform business leading towards sustainability. The automation has a direct

relation to sustainable performance which has been categorized into three dimensions as economic, social and environmental sustainability. With the use of automation in platform business, it can also lead to gaining sustainable performance. The transaction cost and the legitimacy theories has explained in understanding the impact of automation on platform business. With the literatures found, the framework below explains that with the automation in platform business has abled them to gain those three dimensions of sustainability.
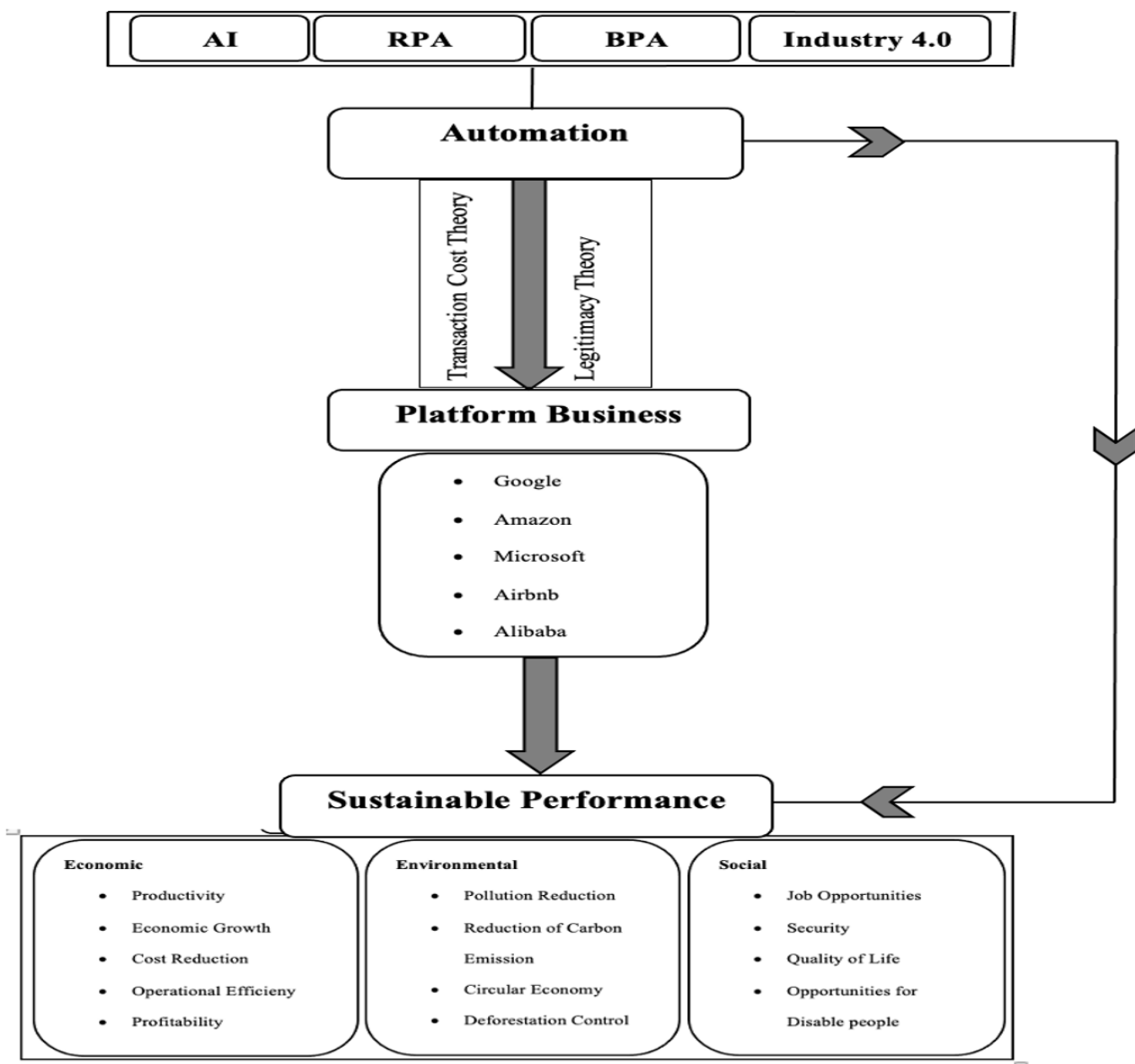

Figure 3: Conceptual Framework. Source: Own Composition

Chapter 3: Methodology

3.1 Philosophy of Science

According to Guba and Lincoln (1994, p. 105) a paradigm can be defined as "*the basic belief system or world view that guides the investigation*" The understanding of the research lies within the chosen research paradigm that is guided by the basic assumptions, beliefs, norms, and values. The research position needs to be considered as it enables researchers to underpin the research paradigm in exploring and shaping the nature of reality. The challenges and misunderstandings associated with this research can only be addressed with the clarity in the philosophical position this research holds. According to Harrison et al. (2017), there are primarily two fundamental philosophical orientations that influences case study research endeavors namely, positivism and non-positivism also known as constructivist and interpretivist paradigm.

3.2 Research Position

This research has been positioned based on Interpretivist Paradigm/ Constructivist Paradigm as the main purpose of this paradigm is searching for the reality that is socially constructed those deals with understanding the subjectivity of social phenomena. This goal of this research is to create knowledge about the phenomena with the subjective opinions and interpretations of respondents as the problem has been explained in contextual setting rather than measurement. Hence, the research assumes the respondent perception of actions and activities is a reality as the interpretivist/ constructivist paradigm investigates the beliefs of individual respondent instead of investigating an external reality (Hunt, 1991). Guba and Lincoln (1989) states that, the central act of this paradigm is to understand the subjective world of human experience. In this research, the researchers have tried to understand and interpret by getting into the subjects with the information gathered. The understanding of reality is determined by people rather than by objective and external factors (Bjerke & Arbnor, 2009). As each paradigm consists of four components: ontology, epistemology, methodology and methods (Scotland, 2012) the researchers believe that this research can be comprised of the two elements: ontological and epistemological position. Therefore, firstly

it is important to discuss what ontology and epistemology means in social science in order to get a good understanding.

3.2.1 Ontology and Epistemology

- **Ontology**

According to Scotland (2012), ontology is a branch of philosophy that is concerned with the assumptions made on what constitutes reality or the very nature of the social phenomenon therefore, the researchers believe that this element fits right perfectly in what context the research is focused. This element is essential to a paradigm because it seeks to determine and understand the real nature of the things as it is known in the world as the research is based on the real nature i.e., that would eventually lead to the real understanding of the nature. Furthermore, the other reason for applying this element is it also helps researchers in examining the nature of being, existence and reality in relation to the underlying belief system. To understand it simply, the general discussion of ontology is: What is reality? Relativism is the ontological position of interpretivism (Guba & Lincoln, 1994, p. 110). Since, the knowledge is socially constructed through the understanding of researcher from real life experience, it is undeniable that the knowledge or realities developed are different meaning that there are multiple realities due to the different understanding from person to person. Therefore, the realities depend upon the individuals which are influence by the context of the situation.

As mentioned before, the interpretive paradigm is based on the assumption that reality consists of an individual's mental constructions of the objects with which they engage, and that the engagement impacts on the observer and the situation being observed (Roberts, 1997). In this research, the conclusions generated are realities understood from a particular platform business company therefore, there could be variations in results from different platform business perspectives. Also, these realities can be reconstructed through human interactions between the research participants and the subject of the research (Chalmers, Manley & Wasserman, 2005). The goal of this research is to try to interpret the social phenomena through interactions with individuals and extract a reality as a knowledge gained.

- **Epistemology**

In research, epistemology is used in explaining how we know the truth or reality; or as Cooksey and McDonald, (2011) stated what is counted as knowledge in the world. It has been defined as the study of nature of knowledge and justification by Schwandt (1997). Guba and Lincoln (1994, p. 108) explains that epistemology concerns with questions like what is the nature of knowledge and the relationship between the knower and would-be known? Through this element, the researchers expect to acquire knowledge through empirical experience as this research follows the case study approach. The reason for choosing this element is that this research follows the subjectivism and the only way to understand a certain phenomenon is by being a part of the system.

In this research the realities developed can be referred to the epistemology of interpretivist paradigm is subjectivity as the information is gathered from participants by researchers based on real phenomena. Following the assumptions made in subjective epistemology, the researchers would be concluding based on their own thinking or cognitive processing of data gathered by the interactions with participants. The understanding of the researchers would construct knowledge socially as their own experience from real nature investigation (Punch, 2005).

3.3 Methods and Approach

According to Morgan and Smircich (1980), "*the actual suitability of a research method derives from the nature of the social phenomena to be explored.*" Due to the nature of the research question, the methodology behind this research is a qualitative method as it helps in exploring the complex phenomena. Qualitative research can be defined as "*any kind of research that produces findings not arrived by means of statistical procedures or other means of quantification"* (Strauss and Corbin, 1990, p. 17). Qualitative methods are standardized procedures in understanding and measuring social phenomena through in-depth understanding of words, experiences, and opinions rather than numbers. Therefore, this research aims at understanding and exploring a certain context through qualitative research method.

The theory of research reasoning is mainly distinguished between two approaches, namely inductive and deductive. The research reasoning, to a greater extent depends on the area and the type of research. However, as a general differentiation between these approaches is in the way of generating new knowledge and how reasoning is carried across the research.

In inductive approach, a new theory is based on empirical data that could be gathered from observations, interviews, creating a new independent theory of framework describing certain observed phenomenon or testing hypothesis. As it targets mainly on qualitative data, it typically refers to the less explored area without yet proven empirical and quantifiable data. Furthermore, Grix (2004, p. 108) argues that interpretivists prefer to use inductive approach because "*they tend to see theory as deriving from data collection and not as the driving force of research.*"

On the other hand, deductive research is characterized from the newly generated specific findings are concluded based on the currently available theories. In order to enhance the existing understanding of a certain phenomenon, deductive approach is basically used on the explored knowledge or combine the knowledge from different areas. In addition, deductive approach processes the unrefined general knowledge to more specific and refined hypotheses.

This research follows the inductive reasoning approach as the research question was formulated on an attempt to understand the nature of the research problem. Also, the other reason for this research to follow inductive reasoning is the conclusions are based on the researcher's observations and data collected. As the research does not follow any testing of hypotheses or theories, the conclusion is solely drawn from the data collection from real life, it can be argued that inductive reasoning is applicable for this research. The researchers have discovered the themes in the data collected that are incorporated under broad themes after doing coding. Through the formulated themes, the researchers have explored the knowledge and eventually developed explanations general conclusion. Hence, the researchers have gathered primary as well as

secondary data in fulfilling the research objectives. Hence, the researchers have gathered primary as well as secondary data in fulfilling the research objectives.

3.4 Integrity of Research

3.4.1 Reliability

According to Silverman (2001), reliability refers to the question of whether a repetition by different researchers or by the same researcher at another time and place would come to the same result. In qualitative studies like this research, achieving reliability can be difficult. According to Taylor and Bogdan (1998, p. 9), *"it is not possible to achieve perfect reliability if we are to produce valid studies of the real world."* As this research is based on qualitative interview and web data collection, reliability often constitutes a challenge because "the data yielded are a reflection of the circumstances under which the interview is conducted" (Pole & Lampard, 2002, p.127). The change in context would reproduce different outcomes even though the same interview is done. However, it does not mean that qualitative researchers ignore reliability. In order to conduct a reliable qualitative research study, Silverman (2006) has proposed possible measures which has been followed by this research. As per his suggestion, the researchers have displayed the research process in a transparent way along with the choice of theory in relation to research question. Following Silverman, the research has been conducted through audio recording during interview, transcribing the interviews as well as direct quotes have been included in analyzing part of the research. In addition, the interview guide has been followed which enhances the reliability of the research being investigated.

3.4.2 Validity

Validity is another important concept for research in social science. The question of validity is the question of whether a study accurately measured what it intended to measure (Silverman 2006). In qualitative studies, and especially in research employing exploratory methods, the answer to this question is less

straight forward than in quantitative research in order to accurately measure the findings ample amount of time was spent finding the right participants, preparing the interview guides, and transcribing the collected data, that it is presumed to increase the validity. The description provided in this research are meaningful and context rich. As both the researchers are a non-Danish international student the interview was conducted in English language so any linguistic difficulties in interpreting, understanding and transcribing data were not felt which is why the analysis presented is true and make sense and convincing to the reader and findings are clear. To confirm and validate the collected data, the customer company was also interviewed, and negative evidence provided are incorporated without any biasness. Many qualitative researchers reject the concepts of validity and reliability to be relevant parameters for assessing a qualitative research design, where some suggest the terms trustworthiness and authenticity to be applied instead.

3.4.3 Transferability

Transferability refers to the degree to which the results of qualitative research can be generalized or transferred to other contexts or settings. (Torchim, 2021). Though the research context is clearly described the possibility of the transferability of this research in another context is very low. The context described here is a context from a first world country having a very strong institution and sophisticated technology so the findings obtained by the researchers might not be transferred to any other third world country context as there might not be the same circumstance.

3.5 Data Collection

3.5.1 Interview

The request was made for an interview to one of the employees within Project 44 at first. However, after handing out the topics of the interview, another employee with the background knowledge of International Business Economics named, Rasmus Holdt Wiedemann was provided to us. The topics for the interview included background information of the case company, the services they provide to its customer companies and plans to be carried out in the future. Some of the information was also collected based on international

perspective for reasons Project 44 being an international company and the researchers being from the International Business Economics background.

As for the customer company of Project 44, the agreement for the interview was done however, due to some reasons, Ramon Mula Lopez, manager of carrier management Europe couldn't attend a meeting therefore, the answers we got from him was in written form.

The interview was conducted in English and was restricted to be maximum of an hour. It was held digitally via Zoom. Since, the interview was conducted following the semi-structured interview online meant the ability to reflect and discussing the answers was challenging because it was the first time for researchers in conducting interview. As English not becoming the first language for the interviewers, the depth of the answers perceived may have been affected.

3.5.2 The Seven Phases of Interview Guide

The interview was planned and conducted with the interview guide from Steinar Kvale and Svend Brinkman from 2015. The used interview method has been described briefly under this section.

Phase 1- Thematizing

The objective for this interview was to gain in-depth knowledge and understanding about the role of automation in platform business such as Project 44 and how the platform business can foster the sustainable performance. As, the main themes were automation in platform business and sustainable performance for this research, the goal was also to identify what has been achieved by the customer companies so far from the platform business in terms of sustainability.

Phase 2- Design

The interview was prepared as semi-structure interview following the interview guide and the total of 13 questions and 10 questions were formulated to Project 44 and its customer company respectively. The open-ended questions were formulated targeting to ensure the right information was collected. The questions were not meant to be asked in a specific order as the research followed the semi-structured interviews.

Since, we had a single person from each company, the questions were formulated in a simple and easy way so that they would understand what the answers are we are looking for. Since, it was the first interview conducted by the researchers, it was difficult to estimate the length of the answers from an individual. However, we had to limit the topics and questions due to the time limitation.

Phase 3- The Interview

The interview guide that has been used can be found in the appendix.

Phase 4- Transcribing

The interview was recorded after getting approval from the interviewee as well as the additional notes were taken throughout.

Phase 5- Analysis

The answers the researchers have received have been used for the analysis purpose.

Phase 6- Verification

The validity of the interview is high, as the interviewed person is currently working in the company having the first-hand knowledge and day to day experience on working with technologies. Higher validity would have acquired if the researcher could get a chance to interview its customer company rather than getting the written answer to the interview question.

Generally, reliability in semi-structures interviews falls in the middle of spectrum because the structure follows the unplanned questions that can lead to new answers and information. The open questions were followed during the interview to go in-depth understanding of the research topic therefore, the reliability can be considered good in this interview.

Phase 7- Reporting

Information that has been collected from the interview has been referenced in this paper and the citations have been done as requested by the interviewee. The recorded interview has also been attached.

3.5.2 Web Collection

In understanding and answering the phenomena, the researchers have observed and gained insights through the company websites, press releases by company and the blogs posted by company. The observation has been done through non-verbal behavior that would help in getting deeper understanding to the questions and answers taken during the interview.

3.5.3 Case Study

Despite having defined case study in various ways, it is important to note that the most common feature of case study is to go into depth than the breadth of any phenomenon. Due to the nature of the research question, the researchers have chosen exploratory case study to be mostly suitable for this research as it concerns with exploring the reality of the phenomenon. Additionally, this research has implemented the single case study because this research is focused in generating the knowledge through a single case analysis. Although the evidence collected from multiple case studies can be strong and reliable than a single case study, the researchers were only able to retrieve a single company which is a platform business. Since, multiple case studies tend to be enormously expensive and time consuming to implement (Baxter & Jack, 2008), the researchers have chosen a single case study. According to Dyer and Wilkins (1991), a single case study is used in exploring the new theoretical relationships through which the understanding of the

subject gets deeper. Following this statement, the research follows to discover new theoretical insights hoping to produce extra and better theory or conclusions.

Therefore, the researchers find the definition put forward by Simons (2009) to be relative as she defines case study as "*an in-depth exploration from multiple perspectives of the complexity and uniqueness of a particular project, policy, institutions, programmed or system in a 'real life' context*." As argued by Bhatta (2018), in qualitative research, the case study research is considered to be more appropriate for understanding the complex issues. Furthermore, Harrison et al. (2017) adds that the case study helps in exploring the complex phenomenon base on the real context. Since, this research will be responding to the 'HOW' research question, the case study gives the most important strength (Baxter & Jack, 2008). Hence, the reason for choosing the case study is for conducting an intensive study for deeper understanding of theme, organization, event, and activity in the society by answering the 'HOW' research question (Simons, 2009).

3.5.3.1 Case Design

Robert K. Yin had defined four types of case designs which has been illustrated in figure (4) (Yin, 2014). Relating to the case design proposed by Yin, the researchers find this research to be an embedded single case, as it mainly focuses on one company, Project 44. It is embedded because the analysis consists of multiple individual analyses as the research focuses on the case company itself as well as the one of its customer company which has acted as subunit for our analysis. Thus, the research identifies the role of automation in platform business and secondly, how the companies related to the platform business has been benefitted in terms of gaining sustainability.
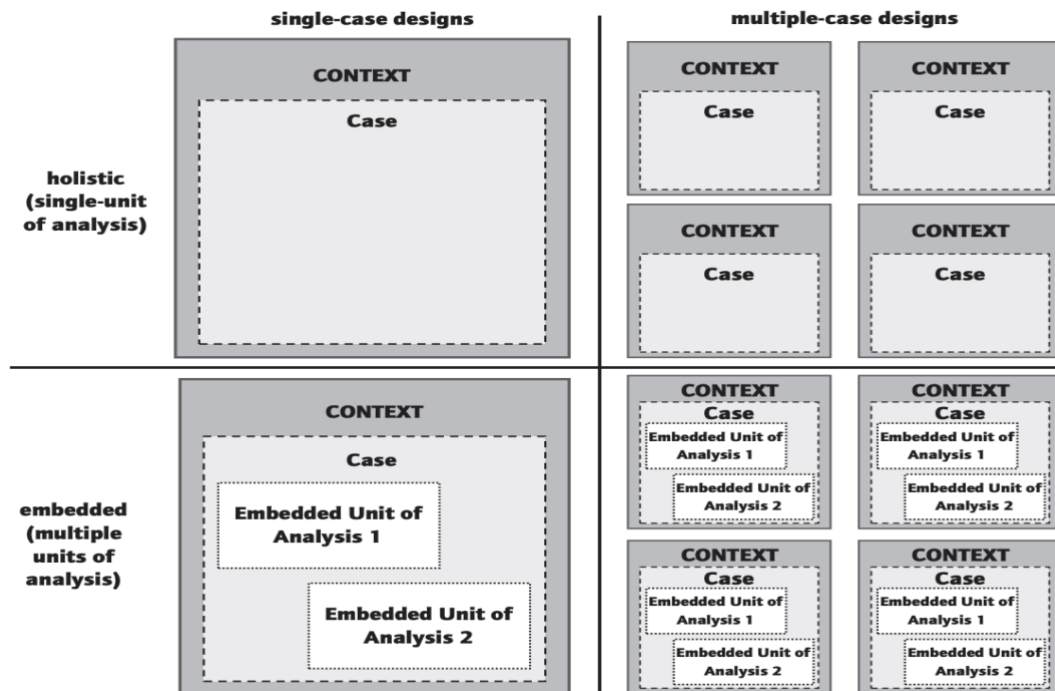
Figure (4) Basic Types of Design for Case Studies (Yin, 2014)

3.5.3.2 Misunderstandings About Case Study Research

Among the five misunderstandings that have been introduced about case study research, the researchers have concentrated on the second misunderstanding proposed by Flyvbjerg along with the correction related to this research.

Misunderstanding 2: "One cannot generalize based on an individual case; therefore, the case study cannot contribute to scientific development." (Flyvbjerg, 2006, p. 221)

Correction: "One can often generalize on the basis of a single case, and the case study may be central to scientific development via generalization as a supplement or alternative to other methods. But formal generalization is overvalued as a source of scientific development, whereas "the force of example" is underestimated." (Flyvbjerg, 2006, p. 228)

- This research has focused on the platform business i.e., Project 44 depending on the problem under study however, it can be used as an example or as a base for further research on sustainable platform business within Project 44 or other areas.

3.6 Case Company

3.6.1 Project44

Project 44, born in Chicago, the logistic capital of the world, is a tech and logistics service provider with the ambition of fixing the tech issues that plague the global supply chain. Though born in United States, the company is now operating successfully across Europe as well therefore, this research has been conducted based upon on one of its branches located in Denmark. The company serves as a world's leading visibility platform for shippers and logistics service providers. and has the largest global carrier network, which has grown by 112% over the last 12 months with over 212,000 active data sharing connections. It issues and API first approach to build network and carrier connectivity to provide a visibility platform that includes a large global, multimodal capacity provider, network; quote to invoice automation, and extensive data normalization, cleansing and stitching capabilities. It leverages an automated carrier onboarding application called Network Management Center (NMC) to rapidly grow its network and increase carrier compliances percentages for customers. The company provides real time information, ETAs, and predictive insights on vital transportation information across all modes and emphasize mainly on retailers, manufacturers, distributors, and logistic service providers (Gartner Report, 2020).

During the recent years, the company's onboarded various new enterprise as customers. Recently project 44s customer base includes dominant companies such as: the top 3 ranked companies on the Fortune 500 list; 2 of the top 3 largest retailers in the world; and 8 of the top 10 freight brokerages and in March 2021 it acquired Ocean insights, a leading visibility vendor. In addition to this, in March 2020 the company announced the industry's first career onboarding service level agreement to accelerate customer time to value. Furthermore, in December 2020, the company received $ 100M in new funding to invest in both technology innovation and further network expansion. With these track records and great performances Gartner a leading research and advisory company in its Magic Quadrant report for real time visibility platform declares P44 as a leader in their April 2021 report. In addition to this, the company has received 2020 SAP R Pinnacle award for cloud partner integration of the year.

Project 44 acts as an industry's connectivity layer to power the world's leading technology providers and drive frictionless global collaboration through strategic partnership. Its strategic partnership with SAP has

enable the company to deliver a holistic and native solution to drive intelligent insights across the supply chain. By integrating SAP and project 44; two industry leading solutions and team, joint customers could proactively manage expectations and make intelligent supply chain decisions. Moreover, the joint initiations have facilitated the customer by reducing the cost, improving order fulfillment and service level optimization.

With the motive of providing clients the same transportation visibility that the company offers across its mature market in North America and Europe, the company will expand its real time shipment tracking service in China. The expansion to Asian market by the company will help buyers of Asian goods increase the resiliency of their supply chain. In addition to this the company will extend visibility to domestic Asian Shippers and logistics service providers demanding the same real time transportation visibility enjoyed in western markets.

As this research focuses on the sustainable performance of the platform business, the researchers believe that studying one of the actors of the business would add value to the research as it would help in validating the data collected from the case company. Hence, the researchers have collected data from IFCO systems, one of the customers of Project 44.

3.6.1.1 IFCO Systems

IFCO was the first company to develop an outsourced Reusable Plastic Container (RPC) pooling system for fresh fruit and vegetables, back in 1992. Today, IFCO provide every aspect of RCP management from delivering clean containers to producers to collecting them from retailers to cleaning and sanitizing them again, ready to distribute again via our network of local offices and a team of over 1100 employees worldwide. The sustainable RPC solutions maximize efficiency and protect products to ensure the safe delivery of fresh food every day. IFCO contains three sustainable approaches in the name of 3Es (Environment, Employees and Engagement). IFCO has adopted a holistic view of the fresh supply chain to focus on sustainability reusable packaging solutions that are 100 percent recyclable.

3.7 Research Design

According to Creswell (2014), the research design helps in providing a precise explanation to researchers for their choice of design in the research. He further explains that the research design shows the overall plan which connects the empirical methods done in research with the research problem. In addition, the most appropriate research design to answer the research question has been based upon three components of research design. The three components are philosophical worldviews, the design and the research methodology which have been mainly targeted in detail. The framework of the research design for this research paper has been illustrated below:

- philosophical worldviews: a social constructivist/interpretivist worldview because the researcher relies on the participants' views being investigated. The knowledge is constructed and through the social interaction among individuals based on their experiences.

- the design: a qualitative design as the researchers aim to understand the subjective reality from participants' description on their experiences about a phenomenon.

- the research methodology: the data has been collected by conducting interview with open-ended questions and observation as this research was based on case-study. Later, the analysis has been done through interpretation of information with generated themes.
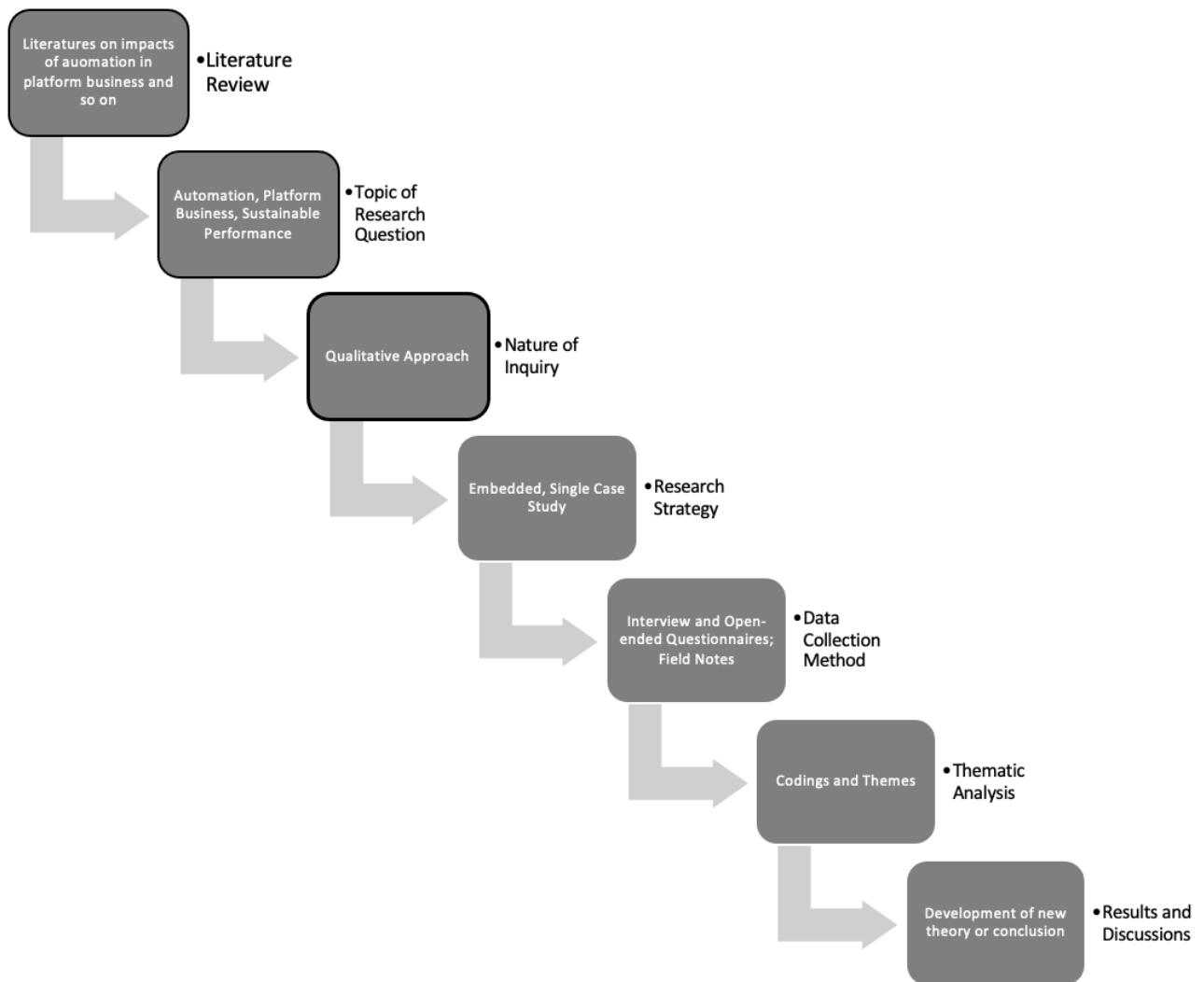
Figure 5: Research Design Framework (Source: Own Composition)

Chapter 4: Data Analysis

The following chapter applies the thematic analysis which has six phases to analysing data collected. The process has been explained under each phase in terms of coding and themes generated applicable to this research. After analysing the generated themes, the challenges that can be encountered by Project 44 has been briefly explained. Later, the analysis has also been carried out from two theoretical perspectives; transaction cost theory and legitimacy theory in explaining how these theories can be incorporated within the data relevant to this research.

4.1 Thematic Analysis

The researchers have chosen thematic analysis to analyse the data. This method was first used in 1970s and one can find various versions of it. As there are different ways for analysing data, this research has been done considering literatures as a base. According to Barun and Clarke (2006), this is a flexible and accessible method of data analysis. Furthermore, it has been explained by Barun and Clarke (2006) the thematic analysis consists of six phases. This research has followed the six phases to draw the analysis which is explained below.

Phase 1: Familiarization with the data

> According to Barun and Clarke (2006), the researcher should immerse themselves in the data to the extent that they are familiar with the depth and breadth of the content. Taking this statement into consideration, collected data through interview and web search have been read repeatedly and actively so that the meaning and patterns of the data could be viewed. Initial brainstorming was done during this phase for coding that is dealt in the subsequent phases. The data collected through interviews, television programmes or political speeches needs to be transcribed into written form retaining the information from the verbal account to conduct a thematic analysis. This phase has been considered as a key phase of data analysis within interpretive qualitative methodology (Bird, 2005: 227). Since we have interviewed Project 44, the interview has been transcribed via Otter AI (a verbal data transcription site) without changing the meaning of the interview.

Phase 2: Generating Initial Codes

After reading and familiarizing with the data and generating initial list of ideas about the interesting or important things from the data, the phase of generating initial codes begin. This phase involves the generation of initial codes. The researchers have generated the initial codes using NVivo, a data analytics software. The researchers have tried to code all data as far as it is found relevant to the research. Some statements or paragraphs were repeatedly coded as it was felt meaningful in various codes. The initial codes generated in this research has been presented below.

Initial Codes	
Better Communication	Better Decision Making
CO2 emission	Cost Reduction
Data Security and Privacy	Decrease in Workload
Employees Satisfaction	Expansion and Growth
Increase in Efficiency	Job Satisfaction
Maintain Product Qualities	Manage Uncertainties
Meet Regulation	Paperless Environment
Reduce in the use of Energy	Reliable Information

Table 2: Initial Codes generated From NVivo. (Source: Own Composition)

Phase 3: Searching for Themes

This phase begins after collecting and coding all data. As there can be a long list of different codes across the data set, this phase refocuses the analysis at the broader level of themes rather than codes. This involves sorting the different codes into potential themes and incorporating all the relevant coded data within the extracted themes. As this is a literature driven analysis, the initial codes have been categorized into three sustainability pillars for generating themes later.

Three Sustainability Pillars	Codes
Economic Sustainability	increase in efficiency, manage uncertainties. better decision making, cost reduction, reliable information.
Social Sustainability	Job satisfaction, Customers Satisfaction, Employee's satisfaction, better communication, Reliable Information
Environmental Sustainability	CO2 Emission, Paperless Environment, Reduce in the use of efficiency.

Table 3: Classification of Codes to the sustainability pillars (Source: Own Composition)

Phase 4: Themes and Sub Themes Reviewing

This phase involves two levels of reviewing and refining the themes. Level 1 involves reviewing at the level of the coded data extracts. All the collated extracts from each theme were looked through, in order to justify whether they appear to form a coherent pattern or not. Since the coded data were found to be coherent and satisfying, two key themes have been formulated for each sustainability pillars that would help in answering how Project 44 has gained sustainability as a platform business.

Sustainability Pillars	Central Themes
Economical Sustainability	Operating efficiently and reducing cost Expanding and growing the business
Social Sustainability	Building networks and satisfying customers Creating a favourable working environment
Environmental Sustainability	Protecting environment Using energy efficiently

Table 4: Central Themes according to the Sustainability Pillars (Source: Own Composition)

Phase 5: Defining and Naming Themes

The central themes which the researchers have presented for analysis are defined and refined in this phase. As described by Barun and Clarke (2006), defining and refining is identifying the essence of what each theme is about? The meaning of the themes in terms of the nature of the coding has been incorporated for each theme as presented in the table below.

Central Themes	Meaning
Operating efficiently and reducing cost	Cost reduction and smooth operation is one of the major motive of organizations. Automation has a positive impact on efficient operation. Moreover, automation fosters cost reduction in various sectors of the platform business.
Expanding and growing the business	Growth and expansion are very important for business organizations. Adopting automated technologies within the platform business fosters the expansion of their business by providing required information for the growth and expansion.
Building networks and satisfying customers	Platform is all about its network and customers. Platform business moves in a spiral upward position of its network so maintaining a relationship with each actor within the business is very crucial.

	Automation has a significant effect in establishing a healthy relationship with its network and providing desired satisfaction to its customers.
Creating a favorable working environment	Automation creates a sound working environment to employees of platform business by decreasing the workload and providing them leisure time for their personal life and giving opportunities to be creative and innovative for the organizational sake.
Protecting environment	Automation in the platform business digitalize the manual paperwork which creates a paperless environment which directly or indirectly protects the environment.
Using energy efficiently	Many resources available naturally are decreasing day by day due to the excessive use. Automation helps in reducing the use of resources and fosters energy efficiency.

Table 5: Central Themes and Their Meanings (Source: Own Composition)

Phase 6: Report Generation

The final phase of the thematic analysis is generating the report. In this phase, the central themes generated, relating to the sustainability pillars have been explained one by one.

i. Operating efficiently and reducing cost

This theme is the mostly appeared theme during the data collection process and explains economic sustainability of the platform business. Automation helps in increasing efficiency and cost reduction in various ways. Getting real time information on the movement of cargos in and out of the ports through real time tracking system, the shippers can plan their shipment schedules more effectively. In addition to this, automation has helped the customer companies to manage pre transit and in transit exceptions earlier in the shipment lifecycle. With the facilities like custom dashboard and reports, supply chain actors can now strengthen planning, reduce dwell times, and eliminate fines by proactively managing lanes, in-transit shipments and events with custom dashboards and reports.

Project 44 has helped its customers in increasing their efficiency by reducing the number of manual work as they could now track the rates, schedule pickups, and track the shipment in less time than usual, enabling them to focus on improving their business and serve their customers. Project 44's full Less than Truck Load (LTL) product suite has helped many of its customer to create a more streamlined approach. Because post shipment documentation was putting a major strain on resources, LTL product suite has enabled digital documentation process which is creating more transparent access. Moreover, it has facilitated customers to easily guarantee, the quoted rates with the final invoice. Automating invoice retrieval is proving to be beneficial as they are saving resources, significantly shortening the cash cycle, and eventually increasing the efficiency of the team. Automation is not only shortening the cash cycle rather it is proving to be beneficial in the time of uncertainties as well.

In current situation, as the world is tackling with Covid-19, the business around the globe is facing a major hinderance in smooth operations. When handling disruptions due to COVID-19, the companies need to track shipments more effectively from their suppliers all the way to their end customers. For instance, the customer companies of Project 44 are using high-fidelity tracking data to plan their upstream processes. With thousands of orders per day, they need to know when the order will hit a certain distribution centre so that they can eliminate the waiting time. By using Estimated Time of Arrivals (ETAs) of Project 44, the customer companies know exactly when the inventory is arriving, allowing them to fulfil the order without

holding inventory at rest, creating unparalleled efficiency when time is critical. One of the customer companies of Project 44, IFCO Systems answered how the technology of Project 44 helped them during pandemic.

"During the pandemic, the grocery supply chains gained importance.
On and just in time deliveries became essential for food suppliers in order to cope with the
increasing demand. Tracking the trucks via the P44 platform enabled
our customers to plan their resources in a more efficient way." (IFCO Systems, 2021)

With this statement, it can be understood how the automation used in platform business has helped companies in performing their operations efficiently. Moreover, with advanced analytics and AI, supply chains can significantly reduce the amount of time it takes to mitigate disruptions. Companies can review what they did the last time a similar situation occurred and evaluate the outcomes, which enables them in taking better decisions according to the situations. Moreover, with the digitalized data the companies could visualize everything at a glance, from inventory management to rates dispatches which eventually help them in decision making.

Furthermore, companies using Project 44 as a platform are successfully reducing the cost through ETA and Application Programming Interface (API). These systems have enabled its customer companies to reduce rejected deliveries and handle issues before they occur which reduces the waste in perishable items. Reduction of the waste in the perishable items were fruitful in reducing the cost and maintaining the margin. With automating the workflow using the project 44's platform, the logistics companies also reduce the truckload cost with more efficient experience. Moreover, with real time tracking system the companies were able to reduce the lengthy paperwork and reduce the shipments eventually saving cost at the end.

Though automation has enabled the firm to increase the efficiency and reduce the cost adopting it into the organisation brings some challenges as well. Project 44 is company who provides tech services to logistics companies and digitalisation is still new to many of Project 44's customers. Moreover, if the company is

small and middle sized whether could not afford it or still lack the knowledge about operating the technologies. So, the main challenges to increase efficiency and reduce the cost via automation are the companies must spend a lot of time on setting up carriers, training customers and carriers and educating them on utilizing the adopted technology.

ii. Expanding and Growing the Business

With services like ETA, API and real time tracking system, Project 44 has managed to expand its business internationally. Recently, Project 44 has been recognized as one of the most innovative companies in freight alongside Amazon. The services provided by them as a big visibility platform has helped them in gaining customers within America and Europe. As for Europe, during the interview, Rasmus Holdt Weidemann mentions that "*[...] they purchased Gatehouse logistics in Denmark, and kind of gained a foothold in Europe, really strong foothold in Europe with a big customer base already built up [...]" (interview 1).* It entails that, in terms of growing its business, Project 44's core technology helped them in collaboration as the service provided by Project 44 comes handy to the logistics companies like Gatehouse.

After successfully operating in these regions the company is planning to have its footprint in Asia through China which is one of the most developed nation in Asia. It entails that the automated technologies provided by the company to its customer companies has become the one of many reasons for their growth of business in the world as Project 44 knows what their customer companies want from them. With the information, it is easier for them to target similar markets and establish their operation within that region which help them in growing their business nationally and internationally. Project 44 has collaborated with SAP to deliver a holistic and native solution to drive intelligent insights across the supply chain. This has helped them to grow from the business side as they could gain more customers through the collaboration. The following statement given by Rasmus Holdt Weidemann during an interview shows that the collaboration with SAP has been beneficial to Project 44 as SAP is one of the successful technology providers for the supply chain.

"[...] by having an agreement with SAP basically, we can already now

know in advance what kind of data we need to send to SAP, and the customer can basically within the SAP system just view the

periphery for data right away

. . . .

And, from our point of view, obviously, we are looking into a very, very big pool of companies that could potentially be

customers of ours because they are using SAP

. . . . . .

And we want that data to be fit into SAP. And that obviously is a huge benefit for us that we can partner with companies like

that as we can use each other basically because we can also have customers who are on one type of MRP system [...]"

(Interview 1)

According to Weidemann (2021), there are challenges when it comes to the growth and expansion of the company Project 44. There needs be a good communication between both parties in order to maintain a producer and consumer relationship. Language barrier has been one of the major challenges to tackle with when communicating with the customers and carriers. With misinterpretations, the customers are not able to acquire knowledge that producers want to deliver. Another challenge encountered by Project 44 is that being a global player, it's hard to make an entry into a new market as there are local visibility providers. Mostly, consumers prioritize local products and services in comparison to foreign's products and services. Even if they make it to the new market, Project 44 finds difficulties in replicating the well-functioning processes. Because enterprise companies follow multi-vendor strategy, even when the contract has been signed and won, they would still be sharing and competing against each other in the market.

iii. Building Network and satisfying customers

As mentioned above in the literature review, network plays a vital role in the platform business. So, this theme emerges keeping the statement into consideration. Automation has a significant effect in building a strong relationship between the actors of the platform business which was agreed by the interviewed person as well. Information sharing is very important in platform business as correct, timely and reliable

information not only reduces the cost of operation but also helps in strengthening the relationship. Automation enables reliable and correct information at a glance.

Platform business operates within a spiral upward motion with its actors so communication between those actors is very important to be sustainable in this competitive business environment. Another customer of Project 44 named, 'Eddie Stobart', realized that communication with customers needed to be improved and automated. Aside from the resources and time needed to manually track down the shipments, the company noticed that the customers were expecting more real time visibility into their shipment, so the customers did not have to reach out every time they needed a shipment update. Automating the shipment process enable the customer to see where their shipment vehicle is. This information helps the customer to prepare to unload the truck by making the warehouse ready for the products to be stored and the company can gather the workforce required to unload the vehicle. Ramus Holdt Weidemann mentions the following statement during the interview.

"[...]" they could so quickly see- okay, my truck is now late, I can notify the customer, or I can see that trucks are now coming into my warehouse. I need to have these people ready now at the dock to unload the truck as quickly as possible. As previously, they might have had saying, we expect the truck to arrive at one o'clock, then at one o'clock we had five people just standing at the ramp at the dock waiting for the truck to arrive. But he was actually 45 minutes late, so we have four or five people just standing around and waiting until the truck arrived. They could have done some work if they want to work in a warehouse or at their huge supermarket in a Walmart or Tesco or wherever it could be" (Interview 1)

Information security is a subject of concern for all organizations, including those that outsource key business operations to third-party vendors. Mishandled data, especially by application and network security providers can leave business accessible to attacks, such as data theft, extortion. Project 44 is able to manage complex data sharing relationships with thousands of carriers across the globe, all while promoting trust between parties via the only   General Data Protection Regulation (GDPR) compliant platform. In addition to this, adoption of correct technologies and providing efficient technologies such as ETA, API fosters Project 44 to obtained SOC 2 certificate which is global certificate and provided only

after having capacity of securely handling data. That has helped them to gain trust of customers in terms of sharing and exchanging data. Moreover, they have built a platform named network management centre which is a platform which integrates telematics connection, which enables their customer to share their fleet with the company and one of the main benefits is that the carrier is in full control of which company they would like to share their data to. Regarding this matter, Rasmus Holdt Weidemann mentions:

"[...] we obviously have a mutual NDA (Non-Disclosure Agreement), which is signed so both parties are aware how you're handling the data. But the carriers also, whenever they sign up to our platform, they're informed how we're handling of data and what can you expect us to use out of your data. And I think one of the main benefits is that the carrier is in full control of which company they would like to share their data to. We have this platform called the 'network management centre', which is basically a platform where the carriers are signing up and agreeing to the terms of use of this platform. They integrate a telematics connection, so they share the fleet with Project 44. But then, they themselves decide which customer do I want to share my data to [...]" (Interview 1)

Customers are valued most important in almost all the business and their need and expectations should be taken good care of. The satisfaction of the customers can lead the business to its desired achievement. Like many businesses, customers are the main actors in platform business as well. Being a real time visibility platform, project 44 is able to provide satisfaction to their customers. Integrating real time visibility into their supply chai improves the experience for their customers. Customers can have an accurate view when their shipment left through real-time pick-up status. From the point of departure customer can track where their shipment is throughout the transit process. Automating the full lifecycle of the shipment is as important as tracking LTL. With providing LTL automation service, Project 44 help customers increase efficiency, gain more accurate transit times and provide customers with a better experience as it allows the customers to reduce invoice errors leading to faster settlement and build safer work environments.

As network plays very important role in the platform business and being a supply chain visibility platform Project 44 still finds it difficult to balance reality and expectation along with this ensuring if all customers are getting the

required value from the tech services they are providing to their customers. Regarding this matter, Weidemann (2021), *"Supply chain visibility is still an immature industry and is very customer driven in terms of product capabilities. Important to find the right balance to ensure all customers get value from the solution. Reality vs expectations can be difficult to set."* In addition to this as the technologies keep changing and updated version and contemporary brands come into play sometimes it is difficult for the actors within the network to adopt the latest development.

iv. Creating a favourable working environment

Providing facilities like tracking the shipment and ETA, Project 44 is successful in decreasing the workload of their customers. Instead of calling the carriers every time about their location and arrival time, customer can now have an interface where they can simply view where the driver is. Customers do not have to maintain the logbook recording each and   every activity of their carriers which eventually decrease the workload of the customer. In addition to this, automation in a single view gives all the information which reduces the workload of the customer care agents as they do not have to spend time in giving follow up calls. While having an interview, Rasmus Holdt Weidemann mentioned that:

"[...] and I don't have the numbers for the EU. But I know in the US, we've seen for several customers that this check calls have been reduced by up to 80%. For some customers, where they simply don't have to sit and call the carriers all the time to follow up the carrier. Because they just have the information in one Pacific view [...]" (Interview 1)

Most shippers require carriers to provide real-time data about their shipments through a visibility platform as visibility is the new norm in supply chain. In addition to delivering this requirement to their top customers, Project 44's advanced visibility simplifies internal processes by eliminating manual load updates. These were done daily through a manual process taking more extra time to the employees but, other innovative and productive works could have been done during the time. It has been supported by

IFCO Systems company too as they mentioned, "*Project 44 have helped the company to reduce highly manual and untransparent tracking process which have reduced the workload of IFCO employees*." Working within the whole automated technology not only creates value for the customer rather it creates value for the employees as well. In terms of employees' satisfaction, Rasmus Holdt Weidemann added the following statement to his own experience.

"[...] If I think this can be perhaps interpreted in different ways. And for me, I would say that, as an employee I'm working with this whole automation technology, it's what I can see that creates value for the customers obviously creates value for me

. . . .

And being part of that is obviously, extremely giving and obviously makes you extremely happy and proud to be part of this type of company [...]" (Interview 1)

In addition to this automation can help create a safer work environment as social distancing has become the new standard for people around the world, and this has caused business to rethink traditional practices. As in the carrier business, the drivers need to manage the Bill of Landing (BOL) which includes a detail about the shipment and the goods being carried and requires various information from the shipper and signatures along the way. Thus, BOL is a key document in the transportation process which could be contagious due to physical hand offs and exchanging of signatures. The drivers need to be in close contact with the dock workers. An automated technology Electronic Bill of Landing (eBOl) is considered as the solution to this problem. As automation is an integral part of advanced visibility, Project 44 has created an API connection between the shipper and the carrier, which enables the carrier to maintain a required distance once the driver reaches the shipment's destination. They can send the eBOL to the receiver via email or QR code, allowing them to provide an electronic signature, automating the proof of delivery process. While safety is top of mind due to the current global pandemic, it's always important to ensure the safety of drivers and employees at work. Thus, it can help in overall performance of the employees that leads to accuracy and efficiency.

As mentioned by Weidemann (2021), being a hyper growth company like Project 44 puts pressure on employees as they have to meet the high expectation from every level in and outside the organisation. As described earlier in this theme automation creates a favourable working environment and make the work faster and effective however sometimes it is difficult to make sure that the voices of all departments are heard in a fact paced and automated working environment.

v. Protecting Environment

Project 44's API connection does not only ensure the safety of the employees, but it is also creating a paper free documentation process which is indirectly protecting the environment. One paper-centric area that is frequently a pain point for shippers and carriers is the BOL. Substituting BOL with EBOL not only ensures the safety of the employee it also decreases the use of paper. Project 44 has worked with shippers, third party logistics (3PLs), and carriers over the last several years to elevate the LTL shipment lifecycle with paperless documents.

Carbon emission is a very hot topic these days so being a visibility provider and a data analytics company Project 44 pulls all the data together to see how their customers are working with the CO_2 emissions. With the help of systems like ETA and API the company can measure the travel kilometres spent by each carrier and more importantly they are measuring the dwell time. With measuring the dwell time, the actors within the supply chain can track the actual time spent by the carrier and see which carrier is free and plan their shipment according to the information. This enables them to reduce the time spent by the carriers which will eventually lead them to foster the CO_2 emission.

[...]" so far, we are obviously looking into all this how can we get perhaps trucks off the road at least unnecessary trucks off the road. And we have hard features where we measure directly how many kilometres have you travelled, or we measure how much CO_2 has been emitted from a particular shipment [...]" (Interview 1)

Project 44 is forwarding with the planning to reduce carbon emission by 14.5 million tons by 2023 however, Weidemann (2021) states that, "*long implementation time leads to delay in full rollout of the product and impacts 2023 strategy.*" Furthermore, lots of travelling is required when making a deal with customers and international colleagues which they find to be challenging in terms of protecting environment.

vi.   Using Energy Efficiently

Project 44's real time visibility platform is helping its enterprise customers eliminate carbon emissions each year with the possibility to save more energy as the number of deliveries increases. Route optimization reduces miles driven annually, reducing the amount of carbon dioxide emissions per year. Reducing the carbon footprint impacts a business's journey to becoming a more sustainable enterprise.

"[...] it could be out of Copenhagen, for example. And then we kind of building product saying, okay, we know one customer is now having a traffic going in, this truck is not booked for at least the next 24 hours. So, it actually has free capacity for 24 hours, then that information can be shared out to other customers who can then reach out to the carrier and use them on the spot market and basically say, I actually have something I need to move now. Instead of me booking another carrier who then has to drive to this location and drive out again, could I just book you then *and actually do that transit for me on your pathway to the next destination. So, in that way, we kind of use less carriers [...]" (Interview 1)*

With real time tracking, ETA and API Project 44 is helping the customers to find out the free shipment vehicles ensuring less time by the truck which is eventually saving the fuel and helping to protect the pollution.

4.2 Theoretical Perspectives

As this is a literature driven analysis, the researchers have tried to analyse the six themes according to two theories i.e., are transaction cost and legitimacy theory which have been described in literature part of this

research. The researchers believe that the themes that are generated have helped the case company to gain different dimensions of sustainability pillars.

4.2.1 Transaction Cost Theory

As argued by Ferreira et al., (2014), transaction cost theory is an essential modelling for examining relational changes and internationalisation along with the reduction of transaction costs in the economic system of the company that leads to effective and efficient operation. This theory seems to be applicable to Project 44's customer companies as automated technologies such as ETA, API and real time tracking systems have helped them in reducing the cost of transactions. Rindfleisch and Heide (1997), further explains the sources of costs arise from environmental uncertainties and bounded rationality, opportunism, and risk, and specific assets. Regarding this research, the risk has been identified here in the present scenario where the world is suffering from a global pandemic, Project 44 was able to increase its profitability by more than 100% as all the transports and logistics companies would want to track their shipment accordingly. During the interview Rasmus Holdt Weidemann mentioned that:

"[...] We had a growth of more than 100% in 2020, simply because

all these big companies just need to know where their transports are because

you had borders that were closing So, we saw so many customers

saying, okay, we need to have efficient as possible logistics operations

and supply chain operations, because we need to reduce our costs.

So, companies saying we need to reduce our costs, because we need

to save money due to this pandemic, we're in. And by doing that they're

invested in a real time tracking solution as that would just officiate

so many processes and automate the workflows [...]" (Interview 1)

Not only Project 44 but its customer companies were also able to reduce the cost of transactions. At the time of global tensions and economic crisis, supply chains need to prepare for uncertainties and work carefully to minimise the cost and its impact of uncertainties to their customers and communities (Project 44). Hence, the ETAs and APIs of Project 44 has helped its customer to prepare for the unknown happenings and remain volatile to decide best for the employees, customers community and the business.

As suggested by Sellito and Luchese (2018), transaction cost theory explains that a firm can achieve organizational efficiency of the cost of exchange either by producing internally or by acquiring the products externally. So, through automation Project 44 itself and its customer companies are able to increase their efficiency in various ways such as by reducing the workload and creating a favourable working environment, building a strong network and so on.

4.2.2 Legitimacy Theory

Liability of newness is considered one common source of uncertainties among entrepreneurs, digital or otherwise as the author mentioned, "*this lack of legitimacy reveals itself in an entrepreneur's inability to rally resources in the form of financial, human, and social capital* (Suchman, 1995). Platforms are considered to be successful if they have gained legitimacy even when they lack in other things like profitability. Initial legitimacy leads to user adoption, the success of the business model and, ultimately, financial, and social rewards for the entrepreneurs involved (Drori et al 2009). As described by Weber (1978), legitimacy arrive from the conformity with both social norms and specific laws produced by hierarchical bureaucracies governed by human agents. This statement can be linked with one of the unique finding of the analysis which describes that the implementation of automation has helped the companies to meet the regulations and standards set by the authority. Project 44's API has the ability to continuously track the condition temperature of the shipment ensuring regulatory compliance and preventive costly spoilage and delays.

Better communication and trust are important for a platform's legitimacy and subsequent adoption (Ingram et al., 2019). Networks plays a vital role in the operation of platform business. Project 44, through its ETA,

API and real time tracking system enables its customer company to share shipment details internally and externally. Moreover, companies could arrange alert notifications via email or push notifications to ensure all stakeholders and actors within the networks are notified about the changes, developments or any important information that are shared within a glance. In addition, automation has helped the platform business to improve communication and transparency with the customers through automatic updates.

In order to be legitimate in the society, the company needs to be environmentally friendly. Green innovation and green management are the new norms of the business around the world. Adopting automation in the platform could help the business to become environmentally friendly and gain legitimacy. By converting BOL into EBOL, Project 44 has offered its customer to convert the traditional paper contracts into smart digital contracts. Those systems have eliminated the need to fill in numerous documents and logs and create safer and environment friendly operations. Important information about the shipment could be shared among all the actors of the network which could help protect the environment by sending data to relevant stakeholders in real time thus, providing information regarding the availability and free capacity of the shipment vehicles eventually reduces the use of energy and also reduces the carbon footprints.

Theories	Key Benefits	Key Challenges
Transaction Cost Theory	1. Operating efficiently and reducing the cost	1. A lot of time is needed in setting up the technology along with training required for the customers and carriers on utilizing the technology, building interfaces to GPS providers, etc.

Legitimacy	1. Expanding and growing the business	1. Language barrier, entry to new market, local visibility providers, competition among the contracted partnerships.
	2. Protecting environment	2. Impacts on 2023 strategy of reduction in CO_2 emissions, lots of travelling required.
	3. Using energy efficiently	3. -
Both	1. Building network and satisfying customers	1. Difficult to adopt the new trend and, setting up the reality vs expectation.
	2. Creating a favourable environment	2. Pressure on employees, making sure all the voices of departments are heard.

Table 6 Summary of Analysis Source. (Own Composition)

Chapter 5: Discussion

This research has been conducted in order to find out the impacts of automation on platform business to gain sustainable performance. After collecting and analysing the data, the researchers could state that automation has a positive impact on platform business in delivering sustainable performance. Implementing automation could have a significant effect on platform business in achieving the three pillars of the sustainability.

The case company analysed in this research falls under the aggregated platform described in the literature review as it provides services to its customers by connecting them with their end customers and generate money from the fees from the service provided. As mentioned before in this paper, network has a very important role in platform business. With this regard the findings suggests that automation plays a vital role in platform business to maintain a healthy relationship between the actors within the networks. The case company Project 44 and its customer companies have accepted that technologies like API, ETA and real time tracking system have helped them to sustain the relationship and to provide optimum satisfaction to its customer. Real time tracking is considered as the solution to many of the problems within the logistic and supply chain industries as the information about the pre-shipment and post-shipment of the goods are vital in making decision regarding the workforce, managing schedules, reducing dwell times, and also preparing the warehouses for storages. Project 44 by automating all the key activities within the organisation has helped the customers get rid of this problem and gaining economic sustainability.

In addition to this, providing satisfaction to both employees and customers who are the actors within the platform can achieve social sustainability by reducing the manual workload, automation has provided satisfaction to the employees within the organisation. For instance, one of the customers of Project 44 in USA could reduce the check calls required with in the shipment process about the expected deliveries, payment and also to fulfil other requirements (Weidemann, 2021). Not only employees but the company was able to provide satisfaction to its customers. Project 44 has different types of customers from logistic to food and beverage industry. In case of food and beverage industry, the temperature tracking system

provided by Project 44 is the best solution for maintaining the product qualities of the perishable goods. Implementing this system within the business, the customers of Project 44 have managed to deliver quality products which has enabled them in providing satisfaction to their customers.

Moreover, implementing automation in the platform business has a significant effect in gaining environmental sustainability as well. As suggested by literature and the data gathered, automating the work within the platform reduces the use of paper and helps to create a paperless working environment. The ETA, API and other tracking system provided by the company has substituted the need of manual paperwork for maintaining the records. The EBOL system of the company has even substituted the manual signatures with the digital ones which have not only reduces the use of papers but also have helped in maintaining a social distance which is considered as the new norms of the society. Furthermore, the ETA of Project 44 has enabled the companies to track the location of the vehicle and also the availability of the vehicle within the shipment process. With this information in hand, the companies can reuse the vacant vehicles by reducing the carbon foot prints which enables the companies in reducing the carbon footprints. The data gathered contributes to providing ample of illustration to demonstrate that adopting automation in the platform business could reduce the cost of transaction as well as foster the organisation to be legitimate.

As argued by Nagle et al. (2020), the nature of the transactions has implications for the organisation of economic activity and the boundary of the firm. Transactions are the fundamental building block of the transaction cost theories. Nevertheless, automation foster digitalising the transactions of platform business and decreases the transaction cost. For instance, by using the API and ETAs of Project 44 its customer companies are able to manage the transaction occurred during pre-shipment and post-shipment activities. Furthermore, automation has fostered the companies to eliminate repetitive task, manual workload as well as manage the time as the tracking system could give all the information to plan the day accordingly.

Another theory described in literature review and analysis section is legitimacy theory. Legitimacy shapes the survival or the organisation. Organizations who are legitimate normally has a low failure rate or fixed failure in the beginning. Legitimacy is a valuable strategic resource for the organisations (Hitt et al., 2004). This theory has a significant impact on this research. Project 44 by providing best of services within the

USA and Europe has proved itself as a global leader of real time visibility platform. Not only the company itself rather its customer companies are establishing their business as socially accepted and environmentally friendly organisation. From providing satisfaction to customers and employees to building a strong network and obtaining trust and understanding between the actors of the platform, automation has fostered the business to be socially accepted.

From environment view, creating paper less organisation to tracking and eliminating the carbon footprints by providing information about the shipment and status and the free capacity of the vehicle which enables in decreasing the carbon footprint demonstrates the company as environmentally friendly. Moreover, by tracking the temperature of the shipping items, automation enables the companies to deliver the quality product to their customers which eventually enables them to meet the standard and regulations provided by the authority and gives them legitimacy. However, it is worth noting that, Project 44 wants to be recognized as a platform with the source of sustainability, but the company has not been able to deliver the sustainability report. Thus, the researchers view this as a weakness of Project 44 which could be an area for improvement where the company can prepare sustainability report meeting the international standard helping them further to gain legitimacy. While conducting this research, the results generated demonstrates a lot of commonalities with the literature reviews described. However, the findings from this research entails the positive impacts on the platform business from two theoretical perspectives which can be considered as a contribution of this research in understanding the in-depth knowledge about the automation in platform business in gaining sustainability.

Chapter 6: Conclusion

The final chapter of this research has been presented with a result of the investigation followed by the limitations and further recommendations regarding this research topic.

6.1 Results

As the use of automation is powering the businesses in current world, it is important to understand how it has impacted on platform business whether it be gaining competitive advantages or fostering sustainable performance. Taking a case study into account, this research has helped in exploring the effects of using automation in platform business in terms of sustainability. Thus, the current research investigates and justifies the importance of automation for achieving sustainability in and within a platform business. This research has presented the impact of automation in platform business to be beneficial when it comes to attaining sustainability, through the literature review collection and the empirical analysis done by the researchers. Not only it benefits in terms of transaction cost but, it also helps in gaining legitimacy in the platform business as this research has also focused on two key theories in explaining the advantages gained.

This research has found that, all those three dimensions of sustainability pillars have been impacted with the use of automation in platform business. Through the analysis, it can be concluded that automation practices in platform business have led to efficient operation and cost reduction as well as growth and expansion of the business which comes under economical sustainability. Taking Project 44 as a platform business, providing the real time information to its customer companies to track each movement of the shipments has been considered as a major reason for the success in boosting performance. This information helps in lifting the efficiency of working environment as the time waste on monitoring the arrival of shipments is cut down. Here, it has only been possible by automating the activities within platform business by the service provided by Project 44 such as ETA, API and real time tracking system solutions. Similarly, the use of automation in platform business also enhances towards healthy and greener environment. Since, the automation process comes with digitalization, a focus on paper-free environment is what a platform business has in mind as to procure the environmental sustainability. In addition, automation in platform

business also accompanies to the reduction of carbon by delivering the real time visibility information in terms of route optimization. Network being a core part for platform business, automation escalates in building strong network and strengthening relationship between different actors within platform business. Occasionally, matters regarding reliable information needs to be communicated and shared; and it can occur only in the presence of strong and close relationship. Therefore, automation has a role on creating that trust a platform business strives for because the security of information is extremely important. In overall, the companies that share a network within platform business needs to be satisfied with the services provided and again the use of automation explains that these are the benefits captured by platform business when it comes to social sustainability. In this manner, the use of automation in platform business has fostered the sustainable performance.

6.2 Limitations

As can be found in any research paper, there are several limitations to be taken into account. The focus of the research question is on the use of automation in platform business in gaining the sustainability. Despite the broad range of contributions in the use of automation relating to achievement of sustainability, the literature particularly on automation in platform business for gaining sustainability was found to be lacking. It has been found through websites about the automation in platform business only as the current examples such as Google, Microsoft and so on touching upon what automation tool they are using however, getting a clear overview of impacts of automation in platform business was not to be found in literatures. Additionally, online workshop was available regarding Project 44, but the researchers could not sign up for the participation because it was solely for the employees of Project 44 but not outsiders. Another important limitation is that the interview was solely done between one of the employees of Project 44 and the researchers and the interview with one of the customer company of Project 44 couldn't take place, but the answers available were only in direct written form. This limited to the extent of the information collection in terms of Project 44's provided services to its customer companies due to the absence of open-ended questions. Similarly, this research was done using a single case study however the result would be different

if multiple case study was chosen. Moreover, the result would have been different if the researchers could study the platform of various country context instead of focusing one only one country context.

6.3 Further Research

This research investigated on how the platform business uses automation in achieving sustainability however, it has also been some areas that can be developed for future research. Since, this research has been conducted focusing on a platform business, additional point of future research could be about focusing on business model of platform instead of just as a platform business in relation to use of automation and achieving sustainability. The findings are based on a single case study platform business nonetheless, a research targeting multiple case studies can be considered for future research and compare the results obtained. Although the conducted research is more from the owner perspective of platform business which is Project 44 in this case. For future, research can be undertaken from a customer company's perspective in identifying if they are actually getting what is being provided by the platform business. A point of weakness that was found through interactions with Project 44 is, it wants to be recognized as a source of sustainability platform however, it was reported that the company does not have any sustainability report for the company. Therefore, once the company initiates with publishing the sustainability report, the future research can also be done based on its aim to be and achievements it had so far. Moreover, the theoretical base of this research has been built on two main theories namely, transaction cost theory and legitimacy theory but, more theories can be applied in order to extend the research's view. Another focus could be the drivers and barriers for successful platform business in relation to automation and sustainability. As this research is done in the company born in the USA and operating within USA and Europe both the first world context, future researchers can conduct a research on third world country context and see whether the impact of automation on platform business has the same essence as in the first world context. As mentioned, related works of literatures are lacking in automation in platform business henceforth, it is strongly recommended to carry out more research on automation in platform business in order to contribute deeper understanding and knowledge in this context.

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Appendix

Interview Guide

Introduction
1. Can you start telling us more about 'Project44' and about your role in the company?

About Project44
2. How is P44 helping its customers in terms of efficient operation? Can you elaborate with few automated technologies that P44 provides to its customers?
3. What automation technology of P44 helps in reducing carbon emissions of its customer company and how?
4. How the employees within P44 are benefitted with the use of automation technology in terms of quality of life?
5. How can P44 itself gain sustainability rather than being focused on its customers?

Goals and Services of Project44
6. Does P44 include sustainability report in the annual report? If yes, can you maybe elaborate how P44 follow up sustainability?
7. Other than CO_2 emission, how has service provided by P44 helped in environmental protection?
8. How can customers trust P44 in terms of privacy and data security?
9. Does P44 consider start-up companies as customers?
10. How does P44's service help its customers to handle uncertainties such as Covid-19 or Suez Canal incident?

International Perspective

11. Can you explain how P44 is growing or expanding its services internationally?
12. How have you been able to tackle the problems issued when working with the cross country?
13. How the challenges have been tackled by P44 in terms of working with international company as a customer?

Interview Table

Date	Name	Job Position	Interview #
May 17th, 2021	Rasmus Holdt Weidemann	Customer Success Manager of Project 44 situated in Aalborg, Denmark	#1

QnAs to IFCO Systems

1. Can you start telling us more about 'IFCO' and about your role in the company?

⇒ IFCO was the first company to develop an outsourced Reusable Plastic Container (RPC) pooling system for fresh fruit and vegetables, back in 1992. Today, we provide unrivalled levels of customer support via our network of local offices and a team of over 1100 employees worldwide. Our sustainable RPC solutions maximize efficiency and protect products to ensure the safe delivery of fresh food every day. Our services cover every aspect of RPC management, from delivering clean containers to producers to collecting them from retailers, to cleaning and sanitizing them again, ready for redistribution. With customers in over 50 countries and with more RPCs in circulation worldwide than any other supplier, IFCO can supply whatever your business demands.

2. How long has IFCO been a customer of P44? Any specific reason for choosing P44?

⇒ ~1 Y

3. What automation technology is IFCO using from P44?

⇒ Real time tracking System

4. How the employees within IFCO are benefitted with the use of services of P44?

⇒ Reduction of a highly manual and untransparent tracking process

5. How has P44 helped IFCO in terms of efficient operation? Has it helped in reducing carbon emissions of IFCO?

⇒ Self-user interface and visibility of shipment status via MyIFCO.Information's/ Status of shipments available 24/7/365. No contacting IFCO.Reduction of workload for IFCO employees and customers

and increase customers satisfaction. Since the usage have not led to reduction of KMs there is no effect in carbon emissions

6. How has services provided by P44 helped IFCO in environmental sustainability?

⇒ See above

7. To what extent, the services from P44 are helpful in coping with uncertainties? (Covid-19)

⇒ During the pandemic the grocery supply chains gained importance. On and just in time deliveries became essential for food suppliers in order to cope with the increasing demand. Tracking the trucks via the P44 platform enabled our customers to plan their resources in a more efficient way

8. What has driven IFCO to trust P44 in terms of privacy and data security?

⇒ P44 data privacy policy covered all needed legal points

9. How the disputes with P44, if occurred can be tackled?

⇒ Not really understand the question

10. How satisfied are you as a customer to work with P44? Any comments or suggestions?

⇒ We are very satisfied and see in general a positive development of the partnership. We would recommend an improvement in service offers or combined offers like time slot management systems. Further we would recommend an improved solutions for third party provider and spot market carriers in order to cover lower vertical levels of transport cooperation's

Transcribed Interview

Rheenzin 0:01

Hi

Rasmusv0:03

Hello, good morning.

Rheenzin and Puja 0:05

Good morning.

Rheenzin 0:14

Okay. I guess we can start off then. First of all, good morning from us. And we are here the two of us, I'm Rheenzin and she is Puja. And we're going to confirm that we are recording and one of us will be taking notes in the meantime. I would like to ask how you'd like us for citing the information. Should we cite anonymously, or we can cite you with your name and job position or just job position?

Rasmus 0:46

You can use name and position that is completely fine.

Rheenzin 0:50

Yeah. Okay. Before we start, we would also like to let you know that this is our first time conducting this sort of interviews and we hope that you will consider if there happens to be any inappropriate way of asking questions.

Rasmus 1:05

That's completely fine. I've read the question you send them; I will answer them to the best of my knowledge. And then I think we should just take it as if it comes. If you have any questions, like sub

questions during we have conversation ongoing, you just ask them and then we take it from there. I think that's probably the best approach.

Rheenzin 1:28

Okay, so I'll be taking the first half questions and the rest would be taken by Puja. Okay. So, I guess we can start off if you could tell us what's your main work function at Project 44?

Rasmus 1:43

Yeah, so I'm hired as a customer success manager at Project 44, which basically means that I'm sitting in our customer operations team where I'm responsible for making sure that our larger and more strategic customers get full value out of Project 44 solution. Making sure that they know how to use the product, how they can get the best value out of the contract that they've purchased already and obviously, I'm also responsible for making sure that the usage of the solution with our customers are increasing. So, it's fine that, I am just sitting speaking with some project stakeholders but honestly, we want to make sure that the dispatches the logistics operators, who are the main end users of our solution, they use it in their daily tasks and make sure that the solution the Project44 offers make their daily life much easier when they sit and work and do the normal work. And then, we are responsible for at least identifying and sourcing out new upsell opportunities with our customers so we could have customers tracking out of one specific mode. And along the course of them using the product, they say- "okay, we'd like to extend to different roads as well." So, there's a role to kind of making sure that the customer is getting the full value out of the solution. That's also a way to internally making sure that the customer is profitable for Project 44 so we can continue to get more and more business, build a better relationship with these customers. So, to perhaps sum it up, the main role is based to the primary contact person for the customers of Project 44. Once they have signed the contract and they've passed implementation phase, and going into a business, as you just said, I bet I'm the primary contact for the for the customer making sure they know how to use the product.

Rheenzin 3:52

Okay, following up what just you've mentioned, you mentioned the tracking system. So what kind of technologies either it is automated or whatever is used within the project 44. And also, we would also like to know that how Project 44 is helping its customers in terms of efficient operation, if there is any.

Rasmus 4:14

Yeah. So basically, the tracking solution is that we build integrations to our customers carriers which basically means that we aggregate and unify the data streams from each logistics service provider carrier that our customer uses. And we share that information to our customers in one data feed. That obviously, minimises the development costs for our customers because we could have customers that are tracking with several hundreds, perhaps even 1000s of carriers, depending on the business they have. Instead of them going out and need to build integrations to each carrier, we do that entire work for them. So, they can just have all the tracking data related into one single data feed. And on top of that, you could say a lot of people can build a platform where there's a map and you can start to show dots on a map. We try to be a bit more advanced and trying to automate all the processes that is around a shipment lifecycle. And that goes from everything from building integrations to the carriers to building an interface where carriers can give rates to their customers and the customer can select the carrier who has the cheapest rate. We can also take the one who had the lowest transit time for delivering the shipments. And so kind of instead of the dispatches from the customers having to call and write emails to the carriers getting all those patches back, we basically have an interface where the carriers can just send in those information that's already built. So, each customer basically has the carrier pool, carriers can send in the rates and information the customer can select the one and kind of do that interaction between the two of them and get that confirmation back. The second step is obviously then the tracking. And, giving the ETA is the milestone events happening along the lifetime of the shipments which is one of the biggest benefits from the logistics industry which has for, you could say for a very long time been steady and not really taking into the digitalization of things. They've kind of now instead of having to call the carrier all the time asking where are you, when can we expect it to arrive, any upcoming things happening. They now have an interface where they can simply just see where the driver is, they don't have to call it and have to write that, obviously minimises the extra workload and officiates the processes for the customer. It also does show for the carrier because the carriers, the driver, he doesn't have to take his phone while he's driving, which obviously he's not allowed to even, but we could imagine that some of them might do. And the carriers, operation centres don't have to follow up on the calls, don't have to have Customer Care agents sit and do all that work of following up. You basically have everything automated in one single view and if there's any deviations, any exceptions having up, our tool is actually built so that we can automatically notify. Or you could say our customer can set up notification frameworks, they can proactively notify if you see any exceptions. So, if our ETA for example, we build and calculate a placement, everything we can foresee that a shipment is now expected to be 60 minutes late to the delivery point. And the customers have various ways of actually notifying the carrier or the end customer that way. If it's a downstream, it's an OEM who is delivering to one of the downstream customers, they can actually set up notifications, "Okay, let me send out an email to this person who is the one I know I'm having to deal with saying; the shipment is late here." By the way it also links so you can actually follow the shipments. And you can have a chat function within the shipment to kind of communicate back and forth saying okay, "what do we do if it's late? What kind of ways do we have? Do we have spoken with the carriers? What's

the situation so on?" So all that information flow is being automated and obviously it increases efficiency dramatically. And I don't have the numbers for the EU actually, but I know in the US, we've seen for several customers that this check calls have been reduced by up to 80%. For some customers, where they simply don't have to sit and call the carriers all the time to follow up and where's the carrier? Because they just have the information in one Pacific view.

Rheenzin 9:06

So, relating to what you just said, can we relate it to the reduction of carbon emissions to its customers?

Rasmus 9:14

Yes, sure it can because you can obviously see, the carbon emission is a very big topic, obviously, you have in today's world. Talking about how the climate is and what can we do to reduce the co2 emissions and we are also part of that, obviously, as a visibility provider, and a data analytics software company, we want to pull all the data together that we have. And so we can measure in two ways. We can measure it like internally, we, pulling all the data together and then we can kind of see our customer base how are they working with the co2 emissions, the travel kilometres and so on. And our leadership proposed now that we will be looking into 2023 reduce carbon emissions by 14.5 tonne of emissions, we want to have our clients using our products reduce that much co2 emissions. So, that's obviously a target that we want to basically build products that gives the customers and carriers that are utilising our platform, the opportunity to reduce the carbon emission. And customers can kind of use our platform to measure different things we have. We have some co2 emission calculations to pay saying for the shipments we're tracking how much co2 are being created. That can still be refined or not because we need to have so much information: what kind of tractor is it? Is it the gasoline, is it a diesel? What's the weight on the vehicle and so on. So these things will come later on. But right now, we had changed things of averages and kind of saying, "Okay, what can we actually measure?" then we're measuring the travel kilometres, so that the customer can also see how many kilometres have travelled. And I think one of the more important thing is that we're missing the dwell time. So we're actually measuring how long is the truck spending at each location, per se by reducing that time. Again, the trucks faster out, we can perhaps reduce the number of shipments going on because we can pack them more efficiently. Or the customers can practice the tracks more efficiently and reduce the number of hours that we actually have trucks on the roads.

Rheenzin 11:40

We got the answers for what Project 44 has done to its customers. Now, if we look for Project 44 itself, then are there any benefits that has helped to its customers within Project 44? Like, are there any employees' benefits? Have the employees been able to get any benefit in terms of quality of life within Project 44?

Rasmus 12:11

I mean, sure. I think this can be perhaps interpreted in a lot different ways. And for me, I would say that as an employee, I'm working with this whole automation technology, it's what I can see that creates value for the customers obviously creates value for me. Because you can see how are you actually helping this work disrupting and changing basically an entire industry. You're kind of changing the way businesses has gone on for logistics in centuries. Because the logistics industry has just been get much stuff from HB, I don't really care how you do it. And the more complex it gets, the more difficult is for the logistics ownership to call. And that's the logistic providers, the one who are buying transports to actually have that information of where things going. And so, for me sitting in a position, where I can kind of go out and help companies to have these automated ways and see how they can gain big benefits that obviously gives me some kind of great satisfaction. Because I know I'm really helping this specific company, then obviously, we are doing all of these initiatives that we can pull together and create this ecosystem of logistics and data visibility. And using the real time visibility as kind of a new standard within logistics and being part of that is obviously, extremely giving and it obviously makes you extremely happy and proud to be part of this type of company.

Rheenzin 14:03

I think that's it for my part, now Puja can take over.

Puja 14:07

Yeah. Okay. Since our research is mainly focused on sustainability of platform business, the questions which I'm going to ask is based on some sustainability thing. Now, while we are writing the literature review of this research, we came to know that many international organisations have now set the standard for sustainability. And many organisations and company has to file the sustainability report. So, do Project 44 have any sustainability report in their annual report?

Rasmus 14:45

To my knowledge, I don't think we have so far. And I think, there's a lot of various reasons for that. I think the company's still very, very young. We celebrated seven years anniversary recently. And so, kind of having all that, so many things that you want to do, and I think that having the sustainability report is just not been part of the reporting so far. And as just mentioned before, we leadership has now set this target that we want to enable our customers by using our products, we set a target of reducing 14.5 mega tonne CO_2 emissions. And I think those targets obviously, you need to build out some reporting. And to my knowledge, we don't do it now, but I would obviously expect us to have this kind of information going forward because we want to be used as the platform as a sustainability source as well. And by that, we obviously need to have an indication of how well are we reaching our own targets and how well can our customers rely on us being a sustainability partner for them.

Puja 16:10

Okay, previously, you have mentioned that Project 44 is targeting to reduce carbon emission by 40.5 tonne or something. So, other than that, do you have any service that is helping in environmental protection?

Rasmus 16:30

So far, we are obviously looking into all this how can we get perhaps trucks off the road, at least unnecessary trucks off the road. And we have the hard ones you can see features where we measure directly how many kilometres have you travelled, or we measure how much CO_2 has been emitted from a particular shipment. And on top of that, we are obviously looking a lot into building what kind of products can our customers utilise to gain these sustainable benefits. And we're not a load matching platform but we are looking into how we can basically use our network to inform our customers about where is their free capacity? And if you couldn't have a set of different customers, but have a very, very big customers using big networks of carriers, they all work out of the same area. It could be out of Copenhagen, for example. And then we kind of building product saying, "okay, we know one customer is now having a traffic going in, this truck is not booked for at least the next 24 hours. So, it actually has free capacity for 24 hours", then that information can be shared out to other customers who can then reach out to the carrier and use them on the spot market and basically say, "I actually have something I need to move now. Instead of me booking another carrier who then has to drive to this location and drive out again, could I just book you then and actually do that transit for me on your pathway to the next destination." So, in that way, we kind of use less carriers. Let's come back to creating this kind of ecosystem where you're using the intelligent products and you're using the data you have available to actually create solutions for the customers, where they can utilise their free capacity. So that is kind of the way that you could say our products are perhaps directly impacting the environmental protection. And on the other hand, Project 44 does not have a so far defined CSR strategy.

Some initiative that we are doing though is that, for the Christmas, instead of handing out Christmas presents to all these employees, every employee was actually allowed to donate $100 to a charity organisation out of their own choice. And that went from everything from UNICEF to protecting the forests in the Amazon as cleaning our wastewater, everything like that. So, the company is trying to take like an active approach in this whole environmental discussion and have like a presence for that. So, and again, company is still very, very young so if you compare ourselves to a lot of these other big platforms as Google, Facebook, and so on obviously, they have hit start-ups, they have been doing this for so much longer. But we're definitely trying to catch up and doing our best work to actually have this environmental protection mindset. So, we're not only looking at capitalism and do more business, but we also look interested in sustainability in various level, obviously, environmental being one of them.

Puja 20:09

And you have mentioned that you gather information from various customers. So why do they trust you in terms of their data security or privacy?

Rasmus 20:23

Umm we have spent a lot of time trying to speak with customers and especially with carriers, perhaps they are most concerned about their privacy since they are the ones in the end actually managing the transport. So, you could say, customers are starting to, at least our customers trying to be more and more focused on this thing. How are you actually handling the data? And the first step is that we've had a SOC 2 certificate which is an information security certificate on how you handle and process data. That's a global certificate that we have which basically is an audit saying that we know how to manage different kinds of data around everything from tracking a truck to tracking a person, what you can actually drive it into, and how can we share that information, and what cannot be shared? If we receive personal related data such as drivers name, and so on, how do we handle that? And then we've built out various data service agreements, data processing agreements, that is basically free to anyone who wants any insights into it. Obviously, you need to agree to our terms of use whenever you sign up whether it's your customer. We obviously have a mutual NDA (Non-Disclosure Agreement), which is signed so both parties are aware how you're handling the data. But the carriers also, whenever they sign up to our platform, they're informed how we're handling of data and what can you expect us to use out of your data. And I think one of the main benefits is that the carrier is in full control of which company they would like to share their data to. We have this platform called the 'network management centre', which is basically a platform where the carriers are signing up and agreeing to the terms of use of this platform. They integrate a telematics connection, so they share the fleet with Project 44. But then, they themselves decide which customer do I want to share my data to? And it's not like we're

saying, "Well, now you're part of the network, now we decide whoever we want". We just share the data to whoever you want to share it to, or whoever we think that you should share to. And so, we obviously use that as kind of a good leverage that carries out in full control. And we always take the stance of being the neutral parts, so we are not in any way promoting a specific telematics provider. We're not promoting specific carriers towards themselves and we're not taking the stance saying the customer is here so now you have to share with them. We're saying "customers! you need to obviously engage with your carrier network to make sure that they want to share the data to you" and then we're happy to inform how are we actually managing all the data and how are we making sure that specific carriers' data is not being shared to a customer which they would not like their data to be shared to.

Puja 23:33

Okay, as we all know that we are recently facing a global pandemic, which have affected many businesses around the globe. So, in this kind of situation, how Project 44 is operating the business and how the services provided by the company is helping its customers to survive in such kind of pandemic.

Rasmus 23:55

Yeah, it's actually a bit, the funniest is the wrong word to say. But when the COVID-19 kind of hit, every business has just stopped working, factories closed down, shops closed down, and everything, our business just skyrocket. We had a growth of more than 100% in 2020, simply because all these big companies just need to know where their transports are because you had borders that were closing. You couldn't drive from one country to the other, obviously, because it didn't. Countries didn't want to let anyone in who was not really a citizen because they don't know where they've been had. They've been in China, they've been in Italy, where we had the big outbreak in Europe. So, we saw so many customers saying, okay, we need to have efficient as possible logistics operations and supply chain operations actually, because we need to reduce our costs. So, companies saying we need to reduce our costs, because we need to save money due to this pandemic, we're in. And by doing that they're invested in a real time tracking solution as that would just officiate so many processes and automate the workflows. They could so quickly see- okay, my truck is now late, I can notify the customer, or I can see that trucks are now coming into my warehouse. I need to have these people ready now at the dock to unload the truck as quickly as possible. As previously, they might have had saying, we expect the truck to arrive at one o'clock, then at one o'clock we had five people just standing at the ramp at the dock waiting for the truck to arrive. But he was actually 45 minutes late, so we have four or five people just standing around and waiting until the truck arrived. They could have done some work if they want to work in a warehouse or at their huge supermarket in a Walmart or Tesco or wherever it could be. And instead of just waiting for having to do nothing, they could actually be in the

store and utilise the predictive ETAs to actually see- okay, he's 45 minutes late, let's go in and work, then we come out 45 minutes after. So, that whole awareness just made a huge impact on the ability to have that information made our solution so variable for so many companies. And we obviously marketed extremely well and also kind of tried to get out to the magazine "Hey, if you struggle with your supply chain operations, and you've struggled with not having real visibility and you want to automate processes and increase efficiencies, then let's have a talk. Let's try and see what we can do, how can we help you with that?" And there was really many companies who reached out to us and wanted to hear more about what kind of trips do we have and ended up actually buying our service as well. So, you could say for the Project 44 itself, the pandemic gave us a great business advantage. But obviously, it helped the customers of Project 44 to basically have this automation and extreme insight into when are the transport arriving? Where are they using analytics to kind of see which carriers are performing the best way. And say "okay, we are in a situation where we need to reduce as much cost as possible, we move goods and transport transactions away from all the bad performing carriers and give more business to the best performing carriers." So that way, the customers gained kind of insights into how the business run at work and we also have increased the on-time delivery and then we have our efficiencies process improved.

Puja 28:15

And since you mentioned that project 44 is just seven years old. So, do you prefer any start-up companies as your customer also or do you only target the renowned and well-established companies?

Rasmus 28:32

We target every kind of company. So, there's not that, you have to have a certain amount of years within a certain industry. We already now have several customers who are start-ups especially within logistics, freight forwarders. These kinds of platforms where they offer the smarts and logistics tools, and what part of that is obviously also tracking. So, we consider all types of companies as our customer base, and we don't really differentiate between what type of company they are.

Puja 29:31

Okay, we would like to know a little about your expanding strategies and also know we were searching on websites and all we came to know that Project 44 is born in Chicago and till now, it is operating only in America and Europe. So, I have seen somewhere that Project 44 is targeting to expand its business in China to capture Asian market as well. So how the project 44 is growing internationally, like what kind of services are you targeting to provide internationally?

Rasmus 30:10

Amm basically we want to offer, the big dream is to offer end to end visibility across all modes across all regions. And that's where we want to go right now, then it's true that the America and in Europe has been the main starting points, as you mentioned, Project 44 is established in Chicago. And they then purchased Gatehouse logistics in Denmark, and kind of gained a foothold in Europe, really, really strong foothold in Europe with a big customer base already build up. And then that customer base has already tracking operations in other regions and other parts. So, we are already now tracking in the Middle East and we already now tracking in some parts of Asia. But to kind of get to that dream goal of being in two ends globally, we obviously need to expand the search to China as well. So, we are rolling out the solutions in China and we will most likely do the same for Africa, for the Oceania part of the world as well. And it will be the same, we will offer the same thing we have in Europe and in US as well in those regions. And then you can see when you start to move into a new region, you also kind of learn how does that model operates. We can already see now that the differences between how the US markets logistics industry operates, compared to the European one which is very, very different. There are some different synergies in these two industries that you can't just replicate what you're doing US direct to Europe, that will most likely be the same when we kind of really roll out in intra China and kind of build that network and a customer base in China. So, from a business perspective, we want to include our data, our current products and modes into China and other regions as well. But I assume I'm speaking on behalf of the company saying we probably also know that will require changes or adjustments to the existing products and develop new features to accommodate the needs and demands of operating within China as an example now.

Puja 32:59

And also, Project 44 is running across Europe and America mainly but how do you tackle the problems when working with different countries customers? Because in terms of laws and institutions, countries are different. So, is there any problem or how do you solve the problem?

Rasmus 33:20

We rarely have problems. You could say obviously in US, it's more or less the same in Europe, where you have a lot of different countries. And it's usually not an issue to work together and collaborate with customers depending on which region they are from and is obviously a negotiation part. So, we basically make sure to tackle all these parts in the contract negotiation steps so you're sure that everything that is legally up to debate is being handled in that process. So, the customer will have some kind of procurement

instance, who is taking part in making sure that the contract that is made for the customer is what they want. And then we have our legal team who's making sure that we don't commit, or we ensure that whatever business rules and laws the customer wants to implement in the contract, we can say, "we can allow that, or we can say we cannot allow that". Then there's obviously negotiation paths, some negotiations are long as they can take several months to conclude, depending on the size of the customer, and some contract negotiations are much shorter because there is a mutual understanding of what does it mean to operate internationally. It also depends on the kind of customer that is, as mentioned, if you have a customer, like huge manufacturers who operate globally, they will probably say, "Okay, let's start out with having a contract for Europe, then we work on the EU law, and we work under the specific regional laws out of those areas." But it's not going to be a major issue to find an agreement, except GDPR laws are more or less the same. There are some deviations to different countries, and so on how you can store the data and so on. But all knowledge, it's under the same bracket, you could say that, that when you sign these agreements, so working with international customers, it's not a such epic hurdle. At least especially in the role that I'm sitting in, because I'm coming into, you know, what, when basically everything of that legal thing is taken care of. So as soon as the customer and the contracts are signed, we go into operations, but then we start to work with the customer in the regions and the knowledge that's part of that negotiated contract. So, it's not a problem to kind of work with international customers, not in Europe and not in cross continents either.

Puja 36:15

We have seen that project 44 has collaborated with companies like SAP, so how has the collaborations helped Project 44 and your customers in terms of their growth and services?

Rasmus 36:32

It's true, we have a partnership with SAP and that obviously benefits us immensely. SAP is probably the world's largest or second largest management, computer management's system. And a lot of our customers obviously are using SAP in one way or the other. And so having this partnership with them basically enables us to offer our customers an easier time of integration because the data that they get from us, the integration that we will build would most likely come directly into their SAP, TMS or MRP system. By having an agreement with SAP basically, we can already now know in advance what kind of data we need to send to SAP. And the customer can basically within the SAP system just view the periphery for data right away. So, it helps us from the business side that customers would say, "okay, Project 44 partners with SAP, that makes it very, very easy for us to integrate." And, from our point of view, obviously, we are looking into a very, very big pool of companies that could potentially be customers of ours because they are using SAP

and they say, "we want to have a real time tracking solution for our logistic operations." And we want that data to be fit into SAP and that obviously is a huge benefit for us that we can partner with companies like that. As we can use each other basically because we can also have customers who are on one type of MRP system. If they want to move to SAP, they say, "okay, we have different IT vendors, who are they working with." All that working with companies like SAP will say "okay, it's easier for us to move to SAP because they already integrated with all of our IT vendors anyway." And so, in that way, that also benefits us a lot that we can utilise a logo and a brand like SAP in our discussions with our customers.

Puja 38:46

With that question, I think we are at the end. Rheenzin, do you have anything?

Rheenzin   38:52

Ahh. The answers were very insightful and very clear. Thanks for that. I guess that's it for the interview then. And we also like to thank you for sharing your time and your comments were really insightful like I already mentioned and if there is anything like, you know, the second comment that you'd like to make, we can send an email or something. And, if there is anything we might need to look into for further information, then we will reach out to you if that's okay with you.

Rasmus 39:29

That is completely fine. I spoke quickly with my Mai-Britt, and I learned you're from International Business Economics masters and I am a graduate from International Business Economics myself out of Aalborg University. So, I know the feeling that you're in right now and you sometimes just need some kind of specific information to make your points clear. So, if there's any type of specific information or you need some way to go to kind of read some information that you would like to use for teachers and you can't find it then yeah, you can reach out to me by email and I'm happy to answer your questions or share like an article. Whatever it may be, obviously, I don't know how much you're using our own website to gain to gather information, but there's a lot of different blog posts by ourselves and from other contributors that can be useful. So, I would advise you to if you haven't already, take a look into the different blog posts to see what kind of information is there. I know there's definitely a lot about automation and workflows and, and so on, and also about how COVID and Suez Canal have impact logistics and how we see it and what we can gain out of our information. So, there might be something very useful from you there if you haven't already found it. But if there is anything coming up, then yeah, let me know. Feel free to reach out and I am happy to help you answer your questions.

Rheenzin 41:11

Thank you.

Rasmus 41:12

Thank you and good luck.

Puja 41:13

Thank you. Have a nice day.

Rasmus 41:15

No problem and you too. Bye.

Rheenzin and Puja 41:18

Bye .

Challenges of Project 44 relating to generated themes

Operating efficiently and reducing Cost

- Digitalization in logistics is still very new and small/medium-sized carriers are not tech savvy and know how to use the technology available (some carriers haven't purchased Transport Management System (TMS) or have GPS installed, as it hasn't been a requirement from their customers). This leads to a lot of time spend on setting up carriers, training customers and carriers on how to utilize technology, building interfaces to GPS providers, etc. When processes for sharing data is more automated, this will increase efficiency and reduce the costs.

Expanding and growing the business

- Language barrier when communicating with customers and carriers.
- Not always possible to replicate well-functioning processes from one market to a new market.
- Few global players, meaning local visibility providers exists in new markets
- Enterprise companies run multi-vendor strategy, meaning visibility providers can share and compete even after contract is won.

Building Network and satisfying customers

- Adapt to latest trends
- Develop multiple methods to connect with carriers, due to carrier demands on how data is shared
- Increase the value for carriers to maintain account inside project44 platform.
- Supply chain visibility is still an immature industry and is very customer driven in terms of product capabilities. Important to find the right balance to ensure all customers get value from the solution. Reality vs expectations can be difficult to set.

Creating a favorable working Environment

- Being a hyper growth company puts pressure on employees to meet the expectations from every level in and outside the organization.
- Make sure the voice of all departments is heard. This can be a challenge in a fast-paced working environment.

Protecting Environment

- Long implementation time leads to delay in full rollout of the product. Impacts 2023 strategy of reducing Co2 emissions by 14,5 million ton.
- Need to meet customers and international colleagues face-to-face requires a lot of travelling.

Using energy efficiently

- Prioritization of tasks

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List of codes From NVivo

Players and their roles in platform business

Players and their roles in platform business