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LEVERAGING ARTIFICIAL INTELLIGENCE IN B2B MARKETS

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Abstract

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Degree Programme in International Marketing Management

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International Business – Central European Business Realities

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Currently, artificial intelligence is commonly discussed topic and utilizing this technology in business is something different companies are seeking for. In this thesis, the applications and processes linked to artificial intelligence will be discussed along with enablers, barriers and motivational factors behind utilization of AI. In addition, the thesis will discuss the importance of data and different models of handling it. The empirical section was conducted by interviewing six experts from four different companies on similar industries on B2B-sector. The objectives of the interviews were to compare the applications of AI and to create understanding about the prerequisites of utilization of AI, the net benefits of utilization and the factors, which are enabling or hindering behind the deployment of this tool. By conducting this study, it was found, what companies need to consider, when starting to implement AI, what types of resources company should have and what could be the possible value outcomes.

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Tekoälyn hyödyntämisestä keskustellaan paljon yleisellä tasolla ja liiketoiminnassa. Tämä työ käsittelee tekoälyyn liittyviä käyttötapauksia sekä teknologian käytön mahdollistavia seikkoja, esteitä ja motivaatiotekijöitä. Lisäksi käsitellään datan merkitystä ja asemaa liiketoimintaprosessien parantamisessa tekoälyn avulla. Tutkimuksen empiirinen osuus toteutettiin haastattelemalla kuutta asiantuntijaa neljästä eri yrityksestä, jotka kaikki toimivat asiantuntijatehtävissä B2B-markkinassa. Haastattelujen tavoitteena oli analysoida käyttötapauksia ja luoda ymmärrystä tekoälyn hyödyistä sekä niistä seikoista, jotka mahdollistavat tai estävät tämän tekniikan käyttöönoton. Tutkimuksessa todettiin, mitä yritysten on otettava huomioon, kun tavoitteena on hyödyntää tekoälyä liiketoiminnassa. Lisäksi tutkimus käsittelee sitä, millaiset resurssit yritys vaatii, jotta tekoälyä voitaisiin potentiaalisesti hyödyntää ja millaista lisäarvoa tekoäly pystyy mahdollisesti yritykselle tuottamaan.

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The last couple of years have been eventful, especially year of 2020. Despite everything that has happened in my personal life in addition to the global context - the finish line is looming and one goal for me is achieved. I have had a lot of support to reach this point in my life.

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My colleagues, family and dear friends - the journey has been a long one, the final meters were definitely vivid and tricky - you know it all, but the commitment and support from all of you has enabled me to reach this point, we accomplished my goal together.

Oulu 28.12.2020
Kairit Kristina Tahvola

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1. Introduction

In many different organisations it is a reality nowadays that humans are working side-by-side with AI. This study takes upon a closer examination the different practices, when leveraging artificial intelligence (AI) -technology in business processes operating in B2B –industry. A short overview of the topic is being given including the recent and relevant literature along with the explanation about importance of the topic. The topic of this study was chosen as AI has been a trend for several years and there is more data now than ever. In addition, as this thesis is written by a student with strong interest towards data and business processes, the study aims to identify the business opportunities related to AI as the study does not handle the topic from the view of programming.

Primarily, the insights of this study aim to be beneficial for other companies operating in B2B –sector with the willingness to utilize AI. Secondly it will contribute towards creating an understanding through qualitative interviews, how companies can start leveraging AI in the suitable business processes. However, the ethics and the privacy factors need to be taken into consideration when developing and extending the utilisation of AI regarding the legal matters.

1.1.Background

Currently AI is being discussed in public, yet not a wide audience is familiar on, how to deploy the popular term as a tool in creating value for the business (Allen, 2019). As AI is in the minds of many people today, which predicts a huge leap in technology as AI can probably be the next digitalisation and change business processes in an unimaginable way. Despite the general enthusiasm towards the topic of AI the ways of implementing it successfully in B2B –industry's business processes remain relatively low, while opportunities for its leveraging exist in different industries and sectors (McKinsey&Company, 2019). AI has been studied in the public sector, while not a lot is known about, how technology can be deployed for the best possible outcome (Bhatia, 2018). Hence, AI-activities in companies differ also due to the different nature of the goals and goal setting (Liozu and Ulaga, 2018). Wide range of companies most likely possess a lot of collected data without the knowledge, how to leverage the gathered data into a full potential and which insights could be locked with the help of AI (Deloitte, 2019).

For many companies in the enterprise context applying the AI can be intimidating as a clear knowledge is lacking, where to start with it (Accenture, 2017). For different data collection a goal must be set on, what is needed to achieve with the utilization of AI, and it needs defined processes on, how to process and analyse the data acquired to act towards to that goal (Strydom et al., 2019). In the field of AI, technology giants Google and Facebook have been leading the way (Siukonen&Neittaanmäki, 2019), using algorithms and developing their own libraries, such as TensorFlow and Keras (Slavio, 2017).

In e-mail software AI is also used to classify certain emails as spam, categorising images in a person's mobile devices and cloud services, automation in credit decisions and self-driving vehicles. AI (AI) holds a great potential across multiple industries according to case studies published by McKinsey Global Institute (Bughin et al., 2017) and it can be seen already being utilised in industries such as healthcare, education and banking among few others. In addition, several other studies and articles state that AI has enormous potential in B2B-sector, while studies also show that companies are not capable to use the AI-tool either due lack of technology or knowledge in the various business processes (Ransbotham et al., 2017).

1.2.Research objectives and questions

One issue of AI is the lack of understanding the technology especially in the terms of, how to apply it as a part of the business, which has a beneficial outcome to a company. This can be partly addressed as a reason, why AI is not being deployed in companies. The incapability to understand the tool can be derived from the skillset of the company and for some companies the business value within is difficult to grasp meaning the deployment of the tool by a company is not being strived for. (McKinsey, 2018) Hence, most businesses are experimenting with AI, while struggling to deliver real value (Fountaine et al., 2019) and there seems to be a need for more cases, which demonstrate the business value driven from the utilisation of AI. AI has already gained an ability to impact different parts of a business such as the supply chain, manufacturing and operations (Chui, Henke & Miremadi, 2019). A report by Salesforce (2018) mentions AI to be perceived by the customers as an emerging technology and revolutionary to businesses of a different kind. As several companies are not utilising AI in the B2B-sector to its full potential and the utilisation is even smaller on this industry compared to the B2C -sector (Bughin et. al 2017) making B2B-industry the main subject of the study.

Several studies highlight the topic to be an emerging technology, a tool different companies should grasp, but not all the studied cases, especially if they are conducted on large companies or tech giants, cannot be applicable for the companies, who have less resources for grasping new business opportunities or exploiting new tools without a clear knowledge about the value outcomes. Moreover, by analysing current processes within the companies exploiting AI, both internal and external, the key enablers and barriers that drive or hinder the utilisation of the tool can be analysed and defined. Several studies and articles, which will be presented furthermore in chapter 3, state that AI has enormous potential in the B2B-marketplace. However, based on these studies companies seem to struggle with the AI-tool either due lack of capacity or knowledge in the various business processes. (Ransbotham et al., 2017)

Through research and evaluation of previous studies, the research gap has been identified; existing literature on utilisation of AI is not handling the topic in B2B markets to a great extent, but instead highlights the possibilities and mostly has been targeted into niche markets or B2C -markets. A strong consensus about AI is not present among the top experts in the field and the most common applications of AI seem to solve only a predefined, single problem given by a human. Based on the mentioned studies, which have been published recently an identifiable gap seems to be between the preconditions, understanding the topic, readiness regarding AI and the utilisation of the AI within companies.

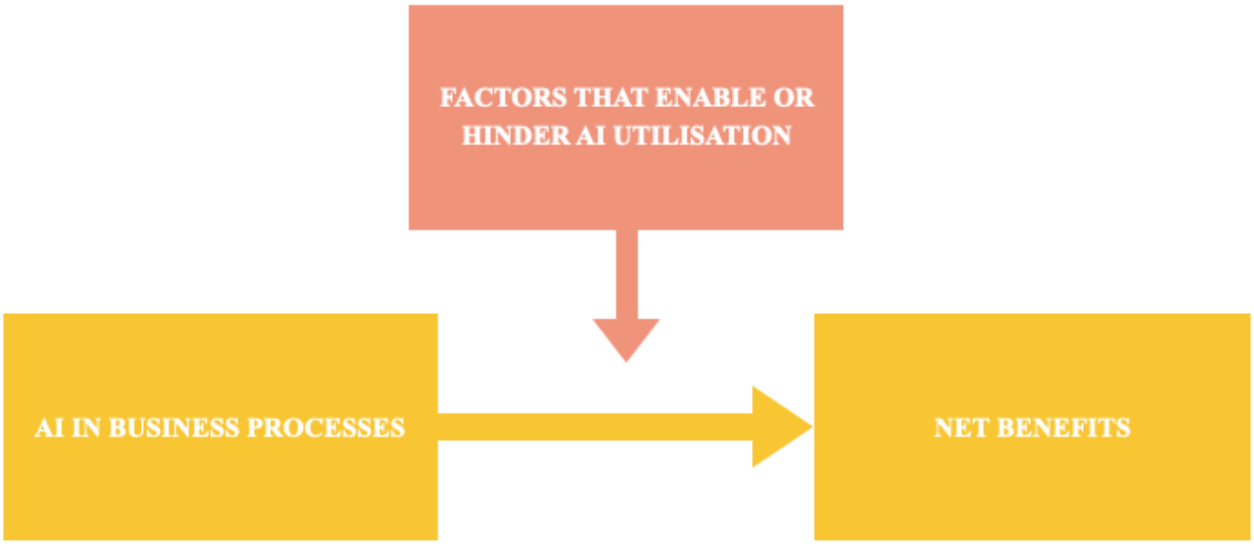

Figure 1. Tentative framework of net benefits to firms implementing AI in business processes.

Hence, due to mentioned facts the main research questions of this particular study are:

RQ1: How do firms are currently utilizing AI in their different business processes?

RQ2: What kind of value has the utilization of AI created for the firms?

RQ3: What factors facilitate/hinder the utilization of AI in different business processes?

This study aims to fill the gap through gaining insight on the utilisation of AI in current business processes as all of the research questions should be answered along with giving suggestions for managerial and theoretical implications for companies to start adopting AI.

1.3.Preliminary literature review

The literature review of this study will examine the existing literature on the subject of the study and the most related and relevant existing research, while the related scholars are being discussed. Aim is to first create a foundation and a brief understanding, what type of AI exists as a standalone and what is the definition of it in the purpose to this study by defining the key concepts linked to it. Second part of the literature review will focus on discussing the deployment on AI in different environment and what type of approaches companies can have and what benefits could be expected in the utilisation of AI.

Companies need to have an insight into where the value of AI lies, what are the net benefits for companies and the need is it understand, if it is worth to apply AI in the target process and is it always in the core business of the company. Utilising AI to generate added value should consist of the company's own values, what it is worth doing and what the company is striving for and what the company's values are. AI allows for agile data collection and reporting based on figures, from which conclusions can be drawn based on facts rather than intimacy. (Bughin et al., 2017)

1.4.Key concepts of the study

This section will present the key concepts used in this study and they are defined more thorough in the following chapters. To analyse the utilisation of AI in business processes of the B2B-industries and the added value in leveraging from AI in these processes of a target sector it is important firstly to define, what is the scope of this tool that is being used and the context for utilisation.

The key concepts of this research are in AI, machine learning and data-driven solutions. Concepts in this study define data in the context along with AI as a part of data science, its linkages to machine-learning and deep learning. As this study largely involves the concept of business value in affiliation to B2B-sector, which has an entire chapter of its own. To be able to understand and identify the deployment of AI on the chosen context, the underlying concepts need to be introduced. As there are several concepts and abbreviations used in this study, they are presented briefly in the following Table 1.

AI	Artificial intelligence
AGI	Artificial general intelligence
AR	Augmented reality
B2B	Business to business is sales between companies, differs from B2C sales
B2C	Business to consumer is sales between a consumer and a company
CX	Customer experience
GDPR	General Data Protection Regulation
KNN	A type of algorithm, the nearest algorithm k-NN
ML	Machine learning
NLP	Natural language Processing
PCA	Principal component analysis
PO	Purchase order
RPA	Robotic process automation
SAINT	Symbolic automatic integrator
VR	Virtual reality

Table 1. Abbreviations of the current study.

A lot of companies collect and process information electronically and therefore companies have a lot of data from single touchpoints. Many times, it is cited that data is a most valuable asset in the modern world. When discussing data or aiming to build data-driven models, there needs to be understanding, how data behaves, what it is and what is the purpose of data, which is being discussed furthermore later in this study. (Siukonen&Neittaanmäki, 2019).

The word data in data-driven in context needs to be regarded. Data has a significant role, when discussing AI and aiming to build new business models by the help of machine learning and taking it further by AI. Thus, the availability of data alone is not enough to drive towards the implementation of AI.

As data is insensitive it needs to be secured also in machine-readable form enabling large amounts of data to be processed systematically. Safeguarding data, especially the incentive one has to be kept in mind, when gathering, storing and sharing it. There are different types of data flows; two of which are primary and secondary flow. (Seppälä et al., 2019) Incoming data for a business from different data streams need to be prepared in order for it to be able to provide insight in a structured way. While defining a way of processing and collecting information, the information obtained from the data is better utilized by AI to improve a company's business processes and this is not dependent on the size of the company. Moreover, handling data loosely people feel discomfort, when their information is being shared and this can lead to crisis. To keep in mind improper handling of data can be in violation of legislative rules and lead to serious consequences for the parties involved. (Ollila, 2019)

Merilehto (2018) has stated about AI that large quantities of data can be processed by the machine in days, when it would take a human 3,000 years to process the same amount of data. The human brain is not capable of this kind of performance. AI (AI), machine learning (ML) and deep learning (DL) have similarities, but they are all different. To understand, how they are in the field we can look at the following Figure 2 before describing them in more detail.

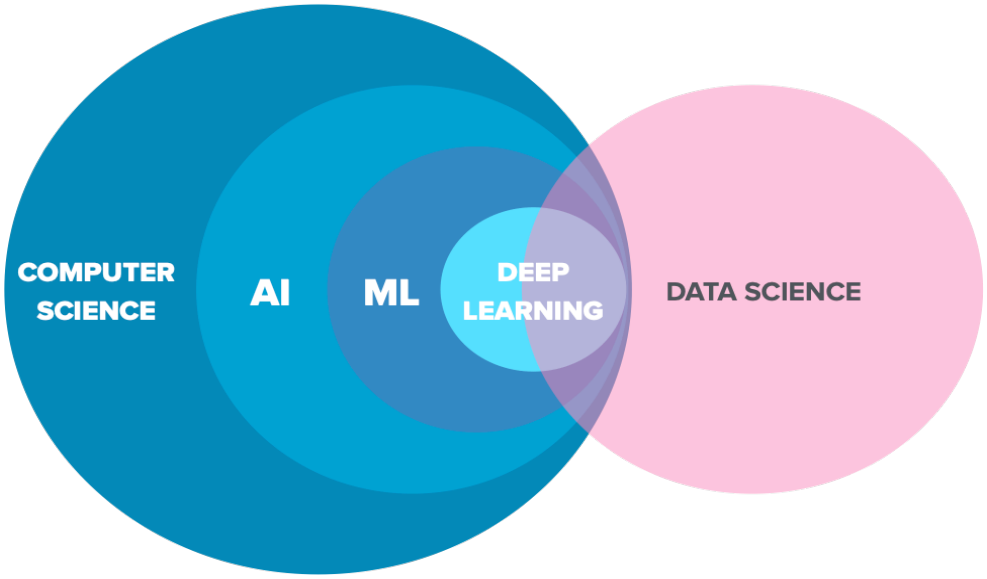

Figure 2. Relationships between related fields. (Elements of AI, 2020)

AI in is a field of science, what is often defined to have more or less intelligent properties and most often it is equated with machine learning algorithms, which is already used in many applications today and there are direct features of intelligence (Barrat, 2013). Machine learning, ML, is a subfield of AI (Husain, 2017), a technique learning from the environment without programming by the help of algorithms. The concept of machine learning is a system utilising data to learn, predict and draw conclusions. It builds mathematical models using the theory of statistics and leveraging samples to make inferences (Alpaydin, 2016). Duffey (2019) describes it as one technique of narrow AI. Valiant (1984) has defined ML as the use of algorithms, which task is to find patterns in data. The components of machine learning are algorithms, datasets and features, which are needed to train the machine (Husain, 2017).

Algorithms are a set of instructions, which are typically used to solve or perform a task (Sullivan, 2017). Common algorithms include linear and logistic regression, decision trees, k-NN, K-means, PCA and Naive Bayes (Bartoletti et al., 2020). Algorithms can be categorised based on the type of learning method as can be seen in Table 2. Other general techniques in AI include deep-learning, NLP, computer vision and machine reasoning (Husain, 2017). Other commonly applied types of ML besides supervised and unsupervised learning are semi-supervised learning, active learning and transfer learning (Duffey, 2019).

	Machine Learning Algorithms	
	Unsupervised	Supervised
Continuous	Clustering & Dimensionality Reduction	Regression
	SVD	*Linear Regression*
	PCA	*Polynomial*
	K-Means	Decision Trees
		Random Forests
Categorial	Association Analysis	Classification
	Apriori	*k-NN*
	FP-Growth	*Trees*
	Hidden Markov Model	*Logistic Regression*
		Naive-Bayes
		SVM

Table 2. Machine Learning Algorithms.

As machines have several models of handling data either to learn or to solve a problem and these models utilise different algorithms within the models. The models of machine learning, which use different types of algorithms are classification, clustering, regression, recommendation and anomaly detection. All of the mentioned models have a different purpose and different models of machine learning are to be utilized in several industries and for different types of tasks when a goal is defined for the algorithm. As algorithms learn from the collected data, they learn to respond to the defined goal more effectively. (Merilehto 2018, 34-35)

There are the different ways for machines to learn, most commonly cited are the supervised and unsupervised learning, where the difference between them is, how the input of data is being interpreted (Shi, 2011). Other general techniques in AI include deep-learning, NLP, computer vision and machine reasoning (Husain, 2017). The most commonly applied types of machine learning besides supervised and unsupervised learning are semi-supervised learning, active learning and transfer learning (Duffey, 2019).

Supervised learning includes algorithms such as Linear Regression, Decision Trees, KNN, Logistic Regression and Naive-Bayes. Linear Regression is an algorithm in supervised learning, where the motive for linear regression algorithm is to find the best values for a_0 and a_1 and the correlation between these two if the other one changes. One of the supervised machine learning algorithms is also known as decision tree, which is mostly used for classification problems. A decision tree visualises the data through classification according to a set of if-else conditions. (Sullivan, 2017)

When dealing with algorithms in the context of unsupervised learning, it does not require much human intervention because it works with parameters. Unsupervised learning includes common algorithms such as PCA, K-means and Hidden Markov Model. Unsupervised learning is used to find the structure of data, to group data based on patterns found, or anomalies in the data it processes. Unsupervised learning usually uses patterns to classify data into groups. (Sullivan, 2017) KNN is a method for classifying data, known as the K-Nearest Neighbour algorithm, which can be utilised in several contexts and it is efficient, when there is a lot of data to be handled. Logistic regression is a supervised learning classification algorithm used to predict the probability of a target variable. Classification aims to identify how the findings can be defined and it can also be used to find abnormalities in the data. (Sullivan, 2017)

Hidden Markov Model is a statistical model based on probabilities, as this model the parameters of the underlying process of it are not known (Alpaydin, 2016) and the model does not detect spaces nor transitions between them as it seeks for hidden latency probabilities based on observable outcomes, commonly model is being applied in the context of natural language processing. Naive-Bayes is a classification technique based on Bayes' Theorem, which seeks to describe the probabilities of independence among occurrences (Sullivan, 2017).

One of notable application in unsupervised learning is Self-Organising Map (SOM), a Finnish invention utilizing unsupervised learning in a neural network. The tool can be used to visualise, to categorize, to cluster and to analyse data laid out on "maps". SOM as it utilises unsupervised learning runs on algorithms. In a Self-Organizing Map the relations between neurons are commonly shown in a low-dimensional map and by using algorithms on a 'map' they can learn from a neighbouring neuron based on the input data it has been given from a data-base creating the new observations after it has found the best between an observation it considers to be new and the neuron already in the "map". After an algorithm has learned from data it keeps on making new observations and it repeats the process of seeking and learning until it stops after a defined rule for stopping the algorithm has been met. The layout of the outcome can be seen as a map with side-to-side clusters based on the data it has processed. The map itself with its outcomes can be visualised to have a better grasp of it and the common way to visualise it is through colouring to see the similarities and differences through different intensity of a colour, usually it is being visualised through U-matrix. **(**Villmann & Bauer, 1998)

As this research is focused on AI it is also worth mentioning that genetic algorithms (GA) are stochastic search algorithms which are often used in machine learning applications (Chambers, 2001). Genetic operators called as "cross-over" and "mutation" work in the context of genetic algorithms, where it is about optimisation with the means to seek a method for the best possible outcome by simulation of the natural selection. GA is survival of the fittest and the best adapted one "survives" and deploying good outcomes to find better outcomes trying to create the best optimal solution for the defined problem. In this method a random sample is being taken and tested through a fitness function, which seeks to determine, how good is one of the running functions and by moving the best function onward to generating a new population. Genetic Algorithms communicate via binary code’s 1 and 0 for the computer to be able to understand the algorithm and for the algorithms to run repeatedly. In genetic

operators, mutation is a random process, where a random mutation point is being selected and by changing a random character from it. As nature works through mutation, the mutated individual goes to the next round. Genetic Algorithm is applicable commonly in designing modules, codebreaking as decrypting a piece to a real-world language (NLP), routing, planning movements of robots to improve efficiency and productivity. (Bottaci, 2001 & Wroblewski, 2005)

When discussing algorithms in context of Google and Facebook, which are one of the tech giants of 2020 we can identify the usage of algorithms in context of these service providers. Google's algorithm goes through millions of signals every time someone searches Google for information. From this mass of data, the algorithm infers what the user is trying to find and generates a customized and personalized search results page for the user. The listed search results are sorted by relevance based on the probabilities the algorithm has calculated from the data. If the user performs the same search again later, the order has changed, and the results are likely to be different. (Google, 2020) Facebook's algorithm also goes through millions of signals every time a user opens their news feed. From this mass of data, the algorithm infers which content the user is likely to be interested in and forms a personalized news stream for the user. The emphasis is influenced by the most popular updates as well as who the user was last in contact with. As a result, it is not possible to track or see all the updates on their network. (Bucher, 2017) Reinforcement Learning, which learns how to target your ads on Google and Facebook to visitors interested in your products, is being taught by the conversion data collected from your online service. When conversion data is combined with digital adverts as feedback the machine-learning algorithm constantly receives examples of the users the ads are targeting. The longer the conversions and there more there is, the more feedback the algorithm gets and the better it learns. (Vijayaraghavan&Cooper, 2020)

Reinforcement Learning (RL) is a learning method through trial and error. This method is based on observation, where machine learning models are being trained to make a sequence of decisions on goal-orientation basis to be achieved through trial and error -method (Shi, 2011). Deep learning is one area of AI, which can be used to model cognitive functions, generally deep learning describes the process of learning utilising neural networks. The definitions of deep learning are similar among researchers (Husain, 2017).

In literature Calum Chace (2016) describes it to be a process, where predictions are based on the data sets given to a machine and it draws conclusions based on the input. In addition, author describes deep learning as a development of AI (Chace, 2018). Deep learning has enabled the AI economy to blossom and people across the globe have the desire to deploy AI with China subsidising the tech start-ups, it has declared its desires and wants to be a forerunner of the industry (Lee, 2018). The depth of learning is more complex compared to machine learning, when deep learning aims to learn from different levels of data and having the output with as minimal human effort as possible (Bartoletti et al., 2020). Deep learning is the most difficult, challenging and controversial aspect of machine learning. Scientific publications began to appear rarely from 2006 until the momentum accelerated after Hinton's appearance. Deep Learning method is named after the use of many hidden layers in neural networks, each with its own function; as if proceeding symbolically deep through the layers. (Husain, 2017)

Business Process consists of mechanisms, procedures and flow of activities by which the service/product is acquired and delivered. For business processes the Michael Porter's Value Chain model (Figure 3) has categorised processes as core processes and support processes. The core processes of a company have been identified to be the ones which create value of a company. Value creating factors are marketing and sales, logistics, operations and services. (Dumas et al., 2018)

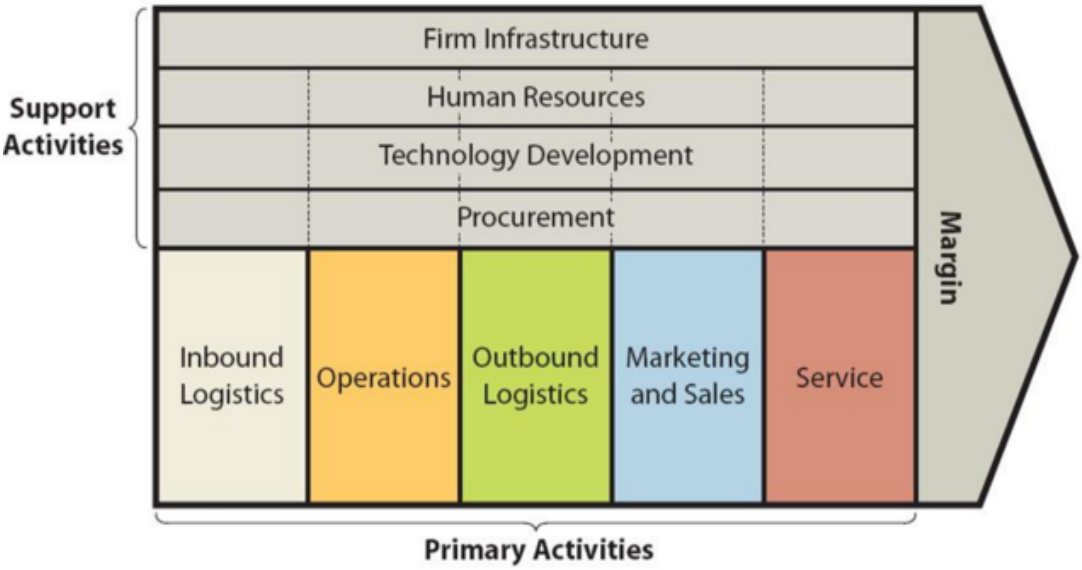

Figure 3. Porter's Value Chain (Porter 1985)

Marketing is one core process enabling your product to be known to the customers by creating, keeping and satisfying them. Kumar & Reinartz (2016) explain that in marketing one of the most important things is to develop and improve communication with customers in order to give them full satisfaction, loyalty and profitability. They also explain that customer perceived value should not be confused with other things, such as quality, perceived benefits and satisfaction. (Kumar&Reinartz, 2016) The management of business processes is vital to help to understand the possibilities, challenges and problems.

1.5.Research methodology

The research consists of interviews with representatives of companies deploying AI. The data collected from different published interviews and articles is used as secondary data for this research. Little has been written about factual implementation of AI in B2B –sector and its importance will only grow in the future making it pertinent for the companies to be able to utilise AI in creating value for their business. In this study, it is analysed, how AI can be utilised in the business process of B2B companies while seeking to provide guidelines, when leveraging AI in different business processes within the scope of this study.

This study is based on a qualitative research to find out, how companies are currently utilising AI in their business processes. The theory base was collected through literature and recent publicizations on the topic of AI along with the definition of concepts linked to the research questions. As the topic has been researched a lot the recent and relevant studies were significant to gain an overall understanding from different perspectives along with the insight on AI and its best practices. Theories and the previous knowledge of the research topic guided the data collection process and the empirical study conducted for this research consisted of a semi-structured interview for several professionals working in B2B-sector. These insights aim to contribute towards a better comprehension about, where one could utilize AI to improve a business process of a company, either part of it or to apply AI for an entire process. Together the different sources of data support each other and form a base for research findings and conclusions along.

1.6.Delimitations

The study also mentions machine learning and different areas concerning AI-technology, but this study does not go into the depths of different technologies bounded around AI such as robotics, VR, AR or IoT. The study explains machine learning and AI related to artificial technology to the extent that it is necessary from the study's main purpose when analysing the generated added value in different business processes by utilization of AI with the primary scope on narrow and general AI without going into the lengths of super-intelligence nor RPA unless mentioned otherwise. In addition, as algorithms have been mentioned, this research doesn't go into depths of algorithms neither as they have been briefly introduced under subsections of chapter 1. The research focuses specifically on the B2B-sector, as publications on the subject are thin, even though companies have the urge and willingness to utilise AI in business processes.

The society as a whole has to strive towards reliable AI. Therefore, the introduction of traditional AI into the private toolbox of companies operating in the EU needs to be done in perfect accordance with the current GDPR-regulations in the area of European Union and the European Economic Area without raising more concerns regarding privacy nor business ethics. However, this study is not investigating the privacy concerns in the world nor the advantages or possibilities of blockchain nor the implications of GDPR in the deployment and creating value with AI.

The current state of play regarding the leveraging of AI is unsatisfactory across industries. The adaption of AI in business processes as a value creation tool has not yet been implemented as a serious and viable option in several companies. There are benefits to the integration of AI to workflows, while acknowledging the risks of trade-off; such as reshaping manpower, has to be maximised towards the benefits. Ultimately, AI utilisation aligned with the valid and updated legislation could help close the productivity gap for large-scale low-value business processes if integrated into the business structure that creates incentives for its voluntary use.

2. Literature review

The concept of AI is complex to grasp, since lack of consensus is present among scholars and therefore the term for the purpose of this study has been structured into several chapters to have a better and throughout view of the phenomenon as a base of this study. This chapter describes the definition of AI and discusses the different levels of AI with a focus on the scope of the research. In addition, this describes the current AI-applications. The other relevant concepts are briefly mentioned to understand the linkages, such as machine learning, deep-learning, reinforced learning, data-driven solutions and business value without going into them in much further detail.

2.1.Defining AI

The definition of AI and its meaning has been explored by several researchers. AI, AI for short, was introduced as a term by John McCarthy in 1956 (Husain, 2017). It has been defined by several scholars and academics throughout the years. Yet, despite of the history to the term it is still lacking a clear consensus on the definition of AI. The development of AI today stimulates the solution of many information technology problems. Many books in literature focus on describing, what AI is, how it has formed and debating over the fact, will AI take over or not. AI can be broken down into two words, such as artificial and intelligence, which can be viewed separately to have a more in-depth analysis of the concept raising the questions about the nature of the mind and the limits of scientific arrogance. (Chirsley&Begeer, 2000)

Foremost, AI is a tool, which is collectively agreed upon. The field of AI began with the claim that human intellect can be so accurately described that it can be machine mimicked (Butz&Kutter, 2017). Machines can be seen as outperforming humans on different areas, especially in defined tasks like playing chess, and as an example of it is the Russian chess grandmaster Garry Kasparov, who has lost a chess battle against a computer in 1997. (Husain, 2017) According to Linda Gottfredson (1997), "intelligence is the ability, among other things, be able to reason, plan, solve problems, think conceptually, understand complex ideas, learn quickly, and learn from experience." AI can contain everything that Linda Gottfredson has defined, but AI is not thoughtful, and in its implementation, one has to plan what predefined problem AI solves (Russell and Norvig, 2020).

Approaching AI can be based on the assumption that human brain is the only conceivable object meaning the structure of the human brain should be mimicked to obtain AI. In order to model the structure of the human brain there has to be the usage of artificial neural networks and genetic algorithms to achieve it. The human intellect is distinguished from the intelligence of other primates by mechanisms that allow humans to understand, tell and invent stories; the so-called strong story hypothesis introduced by Winston (Abazorious, 2011). Humankind has consciousness, what machines cannot possess along with emotion, creativity, humour and also being aware of one's thoughts is consciousness. (Chace, 2018) Patrick Henry Winston, a researcher at the Massachusetts Institute of Technology (MIT), can be considered a researcher following this approach in belief that human brain needs to be imitated in order to unleash the power of AI (O'Connor, 2019).

The algorithms, which need to be developed for AI should be able to solve tasks, which require human thinking, intelligence and creativity (Siukonen&Neittaanmäki, 2019). Both Charniak (1985) and Pearl (1985) have researched AI from the perspective, where AI is combined with Bayesian theory. Bayes' central observation was that the affairs of mankind do not proceed systematically, schematically, or completely. It follows, according to heuristic thinking, that the user of an AI sometimes has to find the second-best solution when the best one is not available (Siukonen&Neittaanmäki 2019). The key point in Bayesian theory is that the affairs of mankind do not proceed perfectly or systematically, and it relies on the probability theory (Siukonen&Neittaanmäki 2019). AI as a whole has been defined by McDermott and Charniak (1985) to be the study of mental faculties by leveraging the computational models while Winston (1992) defines it as an instrument making it possible to perceive, reason and act with the help of computations.

Lee (2018) divides AI research as learning of the neural network, which is a learning system and a rule-based approach. Neural networks need a lot of information and in this field, whereas Hinton Geoffrey has contributed significantly by introducing millions of shapes, symbols and images to layers of networks for learning. (Siukonen&Neittaanmäki 2019) Nils J. Nilsson (2013) defines AI as an activity, which makes machines intelligent and intelligence is that quality enabling an entity to function accordingly and with foresight in its surroundings (Nilsson, 2013). For an example video recommendation, which suggests videos based on your past behaviour is one form of AI, when the system has learned from multiple users' behaviour (Merilehto, 2018).

AI can be also identified through heuristic programming, which has been studied by James Slagle (Russel and Norvig, 2020), who is also the pioneer of heuristic thinking. James Slagle (b. 1934) from the United States, published his 1961 dissertation called 'A heuristic program that solves symbolic integration problems in freshman calculus, symbolic automatic integration programming approach'. He named the automatic programming principle Saint. The pioneer of combining AI and the Bayes theorem is Eugene Charniak (b. 1946), a professor at Brown University in the United States. He has addressed the topic in Introduction to AI (1985) and AI programming (1980).

Alongside heuristics and Bayesian theorem, the concept of connectism emerged in the late 1930s, which understands and connects observed new events or levels of action in the information technology as a whole. Geoffrey Hinton (b. 1947), who had screened millions of images by 2012 and achieved more than ten percent better accuracy than other applications in the industry. His genius was to stack AI neural networks on top of each other and teach each level one area of expertise: one to learn about recognized shapes, another one about structures and so on. The method came to be called deep neural networks or deep learning. Relational inductive biases, deep learning, and graph networks explore the benefits of combining different relational databases and their architectures, rules, and applications. AI exhibits intelligent behaviour, analyses the surrounding environment and, to some extent, makes independent decisions in order to achieve certain goals assigned to it. (Allen & West, 2018)

AI is an advanced entity in technology, whose applications and related practices are still evolving. The computational theory of intelligence has not yet been fully developed, although applications of AI are ubiquitous. Bill Gates also welcomes the development of AI because he understands that technology basically produces good for humanity: work, safety, and economic well-being worldwide based on automation, robotics, and intelligent machine expertise. Gates' opinions (Husain, 2017) predict a bright and creative future. AI helps humanity to increase well-being in health care and, with the help of digital money, enable low-income people to manage their finances, save, borrow and transfer funds to better destinations than ever before. Chace (2018) believes that the future holds several interesting innovations in automotive industry it can be seen through development of self-driving cars and also in healthcare most common tasks in measuring patient's vitals might be given tasks for AI. In addition, Kurzweil

believes the age of AGI to be near (Husain, 2017) which refers to a hypothetical computer program that would be able to perform intellectual tasks as well as a human or even better. (Husain, 2017).

AGI has not yet evolved, although Google DeepMind, like others, are making significant efforts to this end. (Hodson, 2019) Thus, automation as such should not threaten the humankind, but instead strive for incremental innovations. In general, after the adaption phase machinery can make a nation wealthier by the help of automation. (Chace, 2018) Hence, the workflows and processes will need to reshape due to automation releasing people for repetitive tasks (Duffey 2019).

In conclusion, the common features of the various definitions are stating that AI is the concept of intelligence being used in information technologies, used to describe intelligent systems and in general it can be defined as the study of the computations making it possible to perceive, reason and act. Some researchers of AI claim that capabilities for learning, intelligence, memory and computation does not necessarily need human. As the opinions of AI differ among scholars and business influencers, several institutions have published studies and reports by including different scholars about future of work, which predict AI to reshape the nature of workflows as some tasks of certain processes can be automated, while it cannot entirely substitute all the tasks included (Evans-Greenwood, Lewis&Guszcza, 2019). Across literature it is noticeable that humans are intimidated by AI due to the fact that it is being perceived as a tool replacing the jobs of humankind, when in fact it should be seen as something enabling humans to move onto more complex tasks instead of doing repetitive tasks on a continuous basis. (Duffey, 2019)

There are different views and approaches in the literature and among researchers on AI, its definitions and dimensions along with future developments, which makes it challenging to create an exhaustive definition that satisfies all parties. Unanimously, several authors see the emerge of AI to unleash new opportunities. Moreover, researchers do agree upon some of the benefits if AI, such as speed, accuracy and productivity. In its core AI in general can be considered the development and theory of computational systems enabling them to perform tasks without human intelligence. (Lawal, 2019) In many cases AI has been used as a synonym for machine learning, which is incorrect. Typically, AI uses more advanced techniques such as deep learning and neural networks compared to machine learning (Husain, 2017). Machine learning on its own is not AI, but machine learning can be part of AI (Chace, 2018).

2.2.Current applications of AI

Having obtained a basic overview of AI, the next preliminary point regards the context of the current approaches and techniques, which are being discussed in the following paragraphs.

The field of AI can be divided into two subsections and often is classified into types such as narrow (weak AI) and general (strong AI). Narrow AI is designed to perform some narrowly defined tasks, and broad AI refers to an application that is capable of solving any human task. In more detail, narrow AI includes applications that can perform a specific task in the same way as humans. (Lawal, 2019) A typical example of narrow AI in practice is a chatbot handling a large part of the customer service functions and addressing the simpler customer problems. (Duffey 2019) In addition chatbots can also have provide service for internal audience of a business (Figure 4). AI applications usually solve a specific, predefined, individual problem. The result may be worse than in humans, but if it can do so much more efficiently, then in combination with the additional human role, the efficiency of the processes can be significantly increased. (Kantraci, 2021)

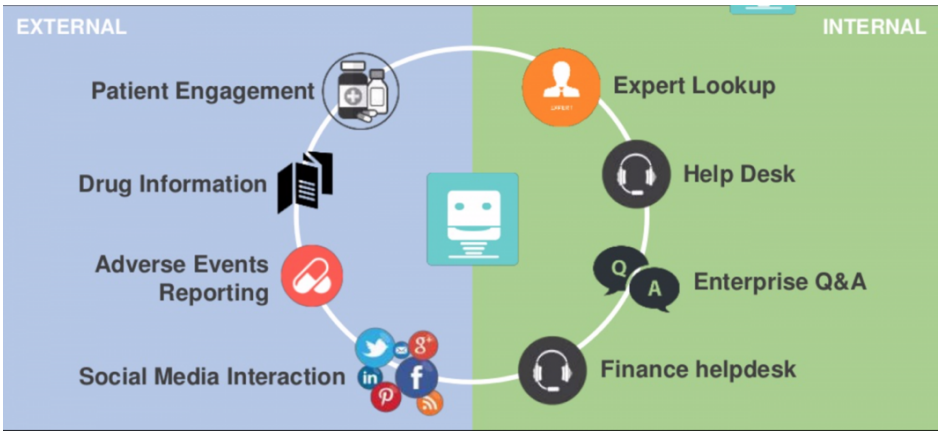

Figure 4. Chatbots adding value for business processes. (Kantraci, 2021)

Chatbots are commonly utilised in eCommerce to deal with the number of customers. In addition, an eCommerce platform itself constantly gathers data and aims to draw conclusions of it, meaning it can be an empowering tool to drive better business performance if done properly. When understanding the chatbot in the context of eCommerce it enables to have a better understanding on, how automation can improve a customer's journey and be beneficial for a company. Datapoints on customer's journey help to observe and gain insight as the collected data is being analysed in order aim to understand it by seeking patterns in different behaviours in order to draw conclusions.

From the marketing perspective eCommerce benefits a lot, when data is being brought into the mix to have stronger data-driven business, since by analysing marketing activities, there is no doubt about it that data and analytics are closely linked together. This can be built further on AI, when the primary data has been collected, processed, analysed to have better predictions and more intelligent behaviour, when it is connected to a customer journey. By analysing the customer journey, it can be identified also, where are the weak spots of the process and how it could be optimised better. An individual consumer constantly comes across chatbots (Duffey, 2019) which can interpret the text entered by the user and thus solve customer problems in dialogue with the user. The popularity of chat robots stems from the ability to make labour-intensive work processes, especially those related to customer service, more efficient by resolving some customer inquiries automatically. In addition to B2C -sector, chatbots can be seen also at service in B2B-industries. However, their prevalence is not yet widespread, due in part to the fact that this technology is still in its infancy and there are no easy-to-deploy solutions. On the other hand, there seems to be a lack of awareness of deployment opportunities. (Bartoletti, Chishti, Leslie & Millie, 2020)

AI has enabled several applications such as speech recognition, machine translation from one language to another, image recognition, home robots, uncontrolled vehicles and even expert systems that advise specialists in certain fields. (Nilsson, 2013) Speech processing allows a computer to understand a given text and human speech. Speech-based software can use commands to perform tasks assigned to them, to communicate with people, and to turn a person-delivered speech into text that can be used, for example, to compile reports for doctors. Voice processing is used in voice-assisted virtual assistants, identity fraud prevention, and chat robots. (Husain, 2017) Artificial vision applications are used, for example, in sensors in self-propelled cars, in detecting people from images and videos, and in medical image diagnostics. Artificial vision provides the ability to understand and process visual data in many forms (image, video, external surroundings) (Duffey, 2019). First practises of AI are present in daily life by assisting in decision making, creation of applications and modelling of practical processes or even composing emails. There are innumerable business processes where AI is or could be utilized meaning also it can be utilised for optimisation of data-driven processes in B2B -sector. (Davenport&Bean, 2018a, 2018b) According to Lee (2018) having a good AI product it is beneficial to control as many aspects of a service as possible to have more input of data, which could be worked with. Furthermore, in terms of this study the consumer-based solutions are being excluded unless there is a direct link or position in the B2B-industry.

3. Benefits and challenges of AI

This section introduces studies from the field of AI, the benefits of utilisation as commonly cited in literature and the facilitators along with hindering obstacles. As AI is discussed as a tool enabling great opportunities and overseeing this can be a major shortcoming in the rapidly developing world, where individual's own imagination is the limit in inventing applications. Different types of machine learning, and automations are present in several business processes across industries, such as automating customer communication or in different sub-sectors of financial processes. (Duffey, 2019) In all places with software, machine learning and AI are part of everyday life and little by little AI has some applications to some extent. (Duffey, 2019) In B2B-market utilising data through AI can have enormous potential in workflows, reshaping processes, creating new ecosystems, managing of content and customers as for some examples (Duffey, 2019).

Many industries, from healthcare to construction, already deploy the possibilities of AI in different areas of a firm (PwC, 2017). In a study published in 2017 in the field of AI based on 3073 respondents, the McKinsey consulting firm researched the state of the various firms in their readiness for deployment over the next 3 years (see figure 4). In a more recent study conducted by McKinsey (2019) it was evidential there is an increasing deployment of AI among respondents. However, adopting the technology in different firms is still at its early stages. (McKinsey, 2019)

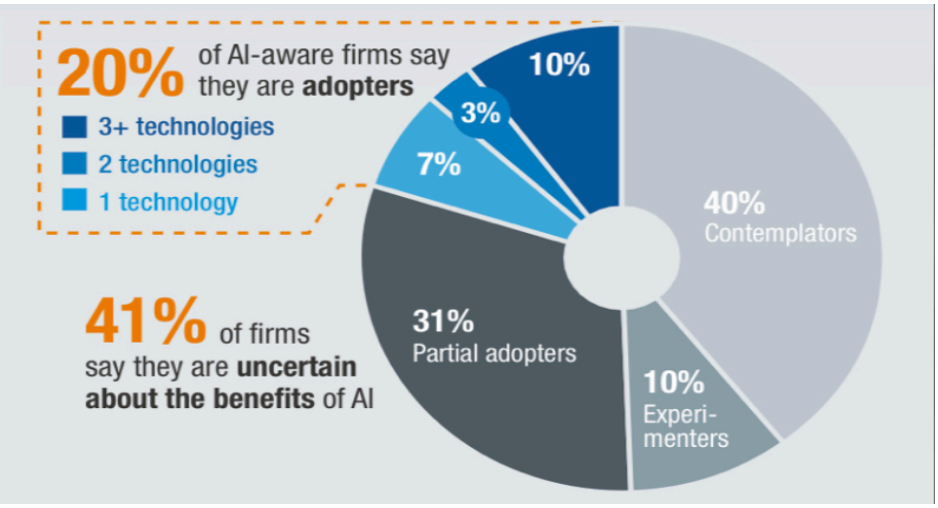

Figure 5. Adoption of firms in 2017. (McKinsey, 2017)

From looking into the existing literature and the set of components studied, benefits of AI (value proposition, customer value proposition, value constellation, value capture, etc.) are emphasized in multiple studies. Table 1 presents studies, which are considered to have an overview of the topic and through these studies substantial value of harnessing AI is furthermore evidential.

Publisher & Year	**Title**	**Purpose of the study**	**Findings**
McKinsey&Company, 2019	Driving impact at scale from automation and AI	The importance of AI and its functional matters.	AI has to be an interest for the company and the potential of AI can be in reducing costs in logistics, its techniques can create value in certain contexts. Regulatory issues are highlighted as a barrier for deployment.
Accenture, 2017	How AI Boosts industry profits and innovation	The study presents strategies to grasp the opportunities in AI with a prediction of growth in profitability by 38% by 2035.	Intelligent automation, labor and capital augmentation, and innovation diffusion are seen as benefits of AI, which can be achieved through deployment of the technology. However AI needs to have a strategy and an AI roadmap.
Brightedge Research, 2018	Future of Marketing and AI -survey	Brands' implementation of AI in delivering more personalized customer experience.	Marketers can understand the customer better with the help of AI to target the audience with better personalised content, which evidentially can lead to improved performance.
Microsoft, 2018	Accelerating Competitive Advantage with AI	To understand the utilization of AI in the organisations within UK.	Evidential findings about improved performance through utilisation of AI, e.g. maximising performance in Renault F1. AI needs to have a deployment plan, strategy and company has to create a culture of participation to have the AI as a part of the company – a culture of learning and companies have to shift to implementation of AI to unlock its benefits.
Adobe, 2018 Author: Vatash, Prateh	2018 Digital Trends	AI in helping, while marketers report having lack of knowledge on how to use AI or a lack of resources to address it.	A marketer should focus on deployment of AI as with the help of AI marketing can be more efficient, customer experience can be enhanced and knowing customers is in the core of delighting the customer. In addition, company needs to provide the tools and the culture, where AI can be deployed.
Salesforce, 2018	State of the Connected Customer	Discussion of adoption of AI in sales technologies.	Safeguarding the data along with providing a great customer journey are elements of gaining loyal customers to a company and study shows that 4th industrial revolution is on-going.
The CMO Survey, 2019	Leverage of AI and implementation of AI and machine learning in marketing.	Aiming to predict the future of market by collection of the opinions of top marketers (2575) in U.S.	The utilisation of AI in marketing for 2019 has seen a growth of 27% when comparing to the earlier year 2018. AI has been utilised for customer insight's analysis, personalised content and decision-making process in targeting. The utilisation of AI is considered to be growing in the upcoming 3 years of the survey. In addition, education, transportation and technology are implementing AI and ML in marketing at its most.

Table 3. Authors & year, purpose of the study.

Brightedge survey (2018) points towards the obstacles for marketers in AI, where one third admitted being confused over AI and what it really is. Microsoft's report (2018) finds that half of the companies in UK have no strategy regarding AI while based on the McKinsey's report (2017) companies should spur themselves to leverage AI on its early stage since later it can be a struggle to catch up with other companies. AI has been utilized to a limited extent since one obstacle for the full utilisation is the lack of computing power as it prevents the utilization of artificial intelligence because the technology needs efficiency to be able to perform many and multiple calculations in a short time (Marr, 2017). The benefits for AI can be adapted through automation of basic activities (KPMG, 2019) and opportunities associated with AI are in automation what means that the jobs of people need to be transformed in order for the AI and humans to work in collaboration. For example, in teaching grading is a repetitive task, which could be automated enabling teachers to focus more on interaction with students. (Teachthought, 2018)

Study (2019) by McKinsey&Company illustrates, how respondents of organisations currently leverage AI in their business processes and it shows the best adoption of AI in Telecom's service operations. The same survey states that respondents consider the most significant value derived in manufacturing industry (over 50% of respondents). The organisations' utilization of AI also enables to point out, where further improvements of the processes could be made. In addition, Microsoft's (2018) key findings of AI are based in improved performance with companies utilising AI perform 11.5% better on average in comparison to companies, which are not utilising the tool.

"More data beats clever algorithms, but better data beats more data." -Norvig, Peter (2020)

Most firms might be always looking for ways to have cost reductions and this is one of the reasons for firms implementing AI. By utilization of AI the work of 2 humans can be replaced as it can work fast, efficiently and around the clock. (McKinsey, 2019) However this does not mean that humans would be eliminated from the job, instead AI would be augmenting the humans and giving organizations more capacity to be innovative as repetitive tasks are being performed by AI (Salesforce, 2018) along with possible economic benefits brought through labour cost (McKinsey, 2019), which in some cases still may be unclear.

Another benefit of AI can be found in the improvement of quality in service (Adobe, 2018) as it provides a deeper understanding of the customer based on the captured data helping to meet the demands of the customer better than before. (Salesforce, 2018) The value for businesses can be harnessed from the abilities to adapt the techniques of AI. By incorporating AI, it provides the possibilities to stay ahead of the competition. The cases in the study (2019) by McKinsey conclude AI to be providing most value in areas of marketing and sales along with supply-chain management (SCM) and manufacturing. (McKinsey 2019)

Indicators and productivity

In a survey (2018) conducted by Brightedge Research companies are seeing that AI would help to understand the customer better and thus have an input, when aiming to personalise the consumer experience. Based on the same study 27.39% of the respondents consider it to increase productivity and save time while only 8.07% saw increased ROI as a success story with AI. However, the data gathered by AI needs to be stored and processed, which has cost implications and professionals of the area see this as the most time-consuming part of creating the value through data. (Duffey, 2019)

As productivity in its simplest definition is a ratio between output and input, still there are businesses, who are not optimising its processes nor production itself. Digitalisation has been prior to AI, on the discussions of many and also highly hyped in the past as it can make productivity higher (working from home, less time spent on commute). Numbers usually should present the situation of a business and when there are peaks in the stream of numbers, e.g. a controller seems major income peaks or low-points (costs are higher than they should), there needs to be the ability to analyse behind the numbers to have insight and understanding, what causes the peaks of data one way or the other. (Merilehto, 2018)

Better analysis of the business based on the numbers enable to replicate activities that generate more revenue and maximize profits - positive correlations in data and revenue streams can be quantified and therefore might set a base for new status quo. Business in its core, regardless of the market or the industry, needs to understand productivity and performance within the company and the factors affecting it. A company's productivity can be measured through different indicators, known as the KPI's of a company and the KPI's need to be defined by the company. (Marr, 2012)

Different indicators in productivity can be found for example in waiting times, waste, spill-over of production, customer complaints, warehouse, delays in shipments – and when the indicators are clear the enhancement of processes can be done with the help of automation, redefining the process, optimising production. Productivity should be measured in order it could be enhanced. In service industry the same ideology applies, where also an individual's or a team's productivity can be measured (and also should be measured) through different indicators in order to determine if there is room for enhancing the process. In logistics, productivity can be enhanced by route optimisation through calculating the shortest possible route available in kilometres, which would save gasoline, tyres, overall variable costs like in wages (Min, 2010, 20-23).

In some cases, outsourcing of certain business activities might benefit the productivity and by the help of digitalisation such as giving the option for the employees to work from home in some cases can also be one way to improve efficiency. Although, with outsourcing option it always needs to be the part of the industry/business, which is not a core business or a core competency. Outsourcing is related to a company's make-or-buy decisions and nowadays many companies outsource financial activities such as billing, payrolls, accounting, rarely the activities linked to the core business and the profit. (Currie, 2003)

To sum it up shortly, indicators set by a company or the top management are important for determining the productivity of a business unit or a segment, but the indicators need to relevant and valid in order the information for them could be utilised in enhancement of a process.

Top benefits of AI

In order to shape the momentum for the deployment of AI, it is necessary to look at the obstacles that companies face in implementing new solutions or developing existing ones using AI. The greatest added value of AI is speed, cost savings and more quality, that is, the number of errors is lower compared to humans as machine learning models make better decisions (McAfee and Brynjolfsson, 2017). According to Deloitte's study (2018) the top benefits considered in AI as visible in Figure 6 are in enhancement of current products, optimization of internal and external operations.

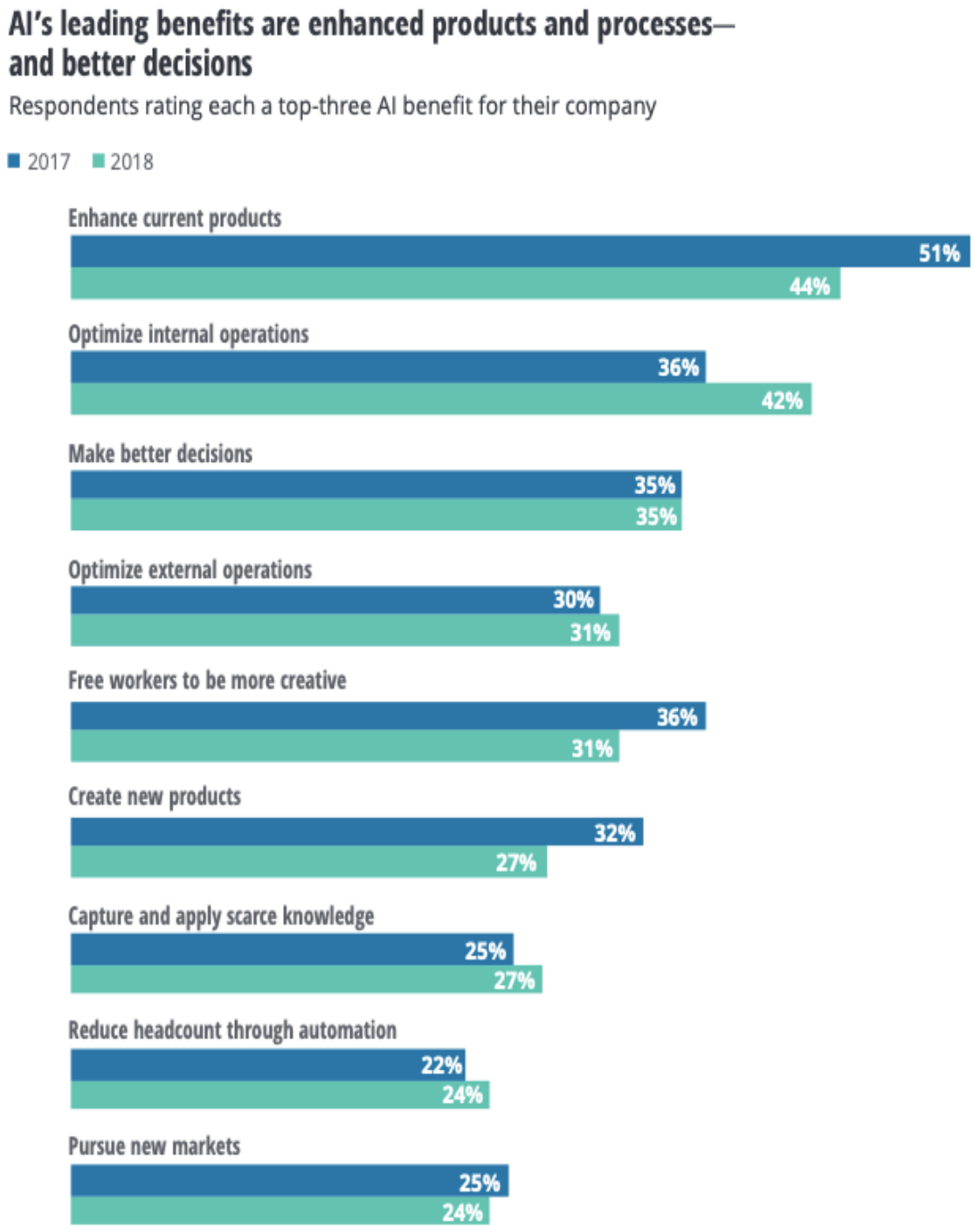

Figure 6. AI's leading benefits (Deloitte, 2018)

McKinsey's report (2018) names a challenge for broader AI -deployment in technological limitations, such as acquiring large pools of data, having labelled data for training procedures, generalizing models and outcomes as well as explaining the results. Besides the challenges caused by technological limitations or adoption of techniques due to skillset or capabilities or a company law and ethics have a major role as respecting privacy matters can be a barrier of improving business processes. Several studies also consider that there are gaps within the utilization of AI, when discussing it in the context of smaller companies as opposed to leading technology companies such as Google, Facebook and IBM. A potential threat in utilisation of AI is also widening the existing gaps between companies as there are still companies, who have not even partly digitalised their processes and are still handling a lot of forms, paper while in many cases also lacking an online presence. AI can be beneficial, but the positive outcomes might only have an impact for few. (McKinsey, 2019)

One of the commonly cited benefits of AI across studies and literature is the possibility to handle large amounts of data at a vast speed striving towards increased performance through labour productivity when utilizing AI in the workflows. AI could potentially predict business development, which could generate interesting data that a human would be able to observe and draw conclusions based on this data. (Duffey, 2019) For an individual company, the internal use of AI in many cases facilitates practical matters, such as the basic process of seeking specific expertise to find the right expertise within the company. As businesses are still building capabilities with some companies realising that there is a problem that should be solved, and they might be aware that a problem is possible to solve it in a data-driven way by utilising AI. Most time in data-driven modelling is spent on data processing, especially if pursuing to utilise AI without a proper plan. (Duffey, 2019)

In creation of data, a significant impact is on the size and quality of the data used, depending on the complexity of the problem, thousands of data points may be needed. It is also a prerequisite for machine learning that training records are not for certain decisions biased, contain high quality, complete data and are labelled accordingly depending on the problem to be solved. Development is often hampered by a lack of data, which can be addressed, for example, by creating synthetic data. Synthetic data is generated from the original data, repeating the patterns and similarities identified at baseline, but significantly increasing the amount of data used for training. Access to large datasets gives impetus to the sub-branch of machine learning - the development of deep-learning, which allows for the analysis of significantly

larger datasets and solving more complex problems than for conventional machine learning, but also requires more difficult and long-term training. To capture insights of the streams in order to regenerate value inflows of data must be processed, while the streams of data are not identical in means of being structured and unstructured. (Duffey, 2019)

Some data may also have gaps, or some data may not be linked to one another due to law or ethics and some data may be outdated. Duffey (2019) provides a simple definition of unsupervised data stating that always, when data is not classified it is unstructured. When handling data, it needs to be pre-processed, cleaned, normalized and transformed. Biggest challenges are connecting data from different data structures to leverage it in order for it to enhance performance.

Data strategy, either defensive or offensive, needs to be defined for it to be beneficial. Without the usual way of processing and collecting data, the information obtained from the data is not useful. Every company collects and processes data electronically. Defensive strategies are ones for business objectives dealing with regulatory requirements and mitigating risks in business for example. To improve revenue an offensive data strategy should is in place. Incremental product improvements increase revenue streams. In addition to the data strategy, along with the collection process, the gathered data has cost implications via computing power combined with vital infrastructure in processes of the data storing, which are beyond the scope of this study. It is not efficient to give captured raw information as such in the use of AI as it has little to none benefits for the bottom line of companies. (Duffey, 2019)

The competitive advantage can be created through the defined data strategy, e.g Paypal's fraud system making the company one of the most trusted instances for handling money. (Duffey, 2019) Through improving its fraud detection through leveraging machine learning -methods, Paypal is reinforcing its brand by making customers happy with their customer-first approach. (Duffey, 2019) Duffey (2019) highlights that data should be driven by the strategy while businesses allowing data to drive the strategy would struggle. Commonly businesses are limiting their own growth due to their business models. To understand the phases of the topic preparing data includes cleaning, formatting, indexing, which are some of the several phases in data handling for it to be useful for AI's purpose - bearing in mind that the raw information captured cannot be harvested into beneficial usage, it is not efficient as the key message of this paragraph (Duffey, 2019).

AI is first and foremost a tool and by using the right tool a specific problem can be solved. Moreover, AI along with machine learning might potentially change the workforce, change the way of internet marketing, the way data in being analysed and draw conclusions on the matter. (Bartoletti et al., 2020) Some of the changes are already visible in the present, but there are many more to come according to several reports. The advantage of AI and ML compared to a human is its ability to process data faster and smarter with little mistakes if any. (Husain, 2017)

Value creation

The concept of value creation refers in this context to the value that companies can create for themselves or for their customers in the use of AI in B2B markets. Definitions on value depend on different perspectives and research. However, according to Kähkönen et al. (2018) all companies should pursue in creating value for the customer, which can be described as a process by which benefits and satisfaction for customers is being delivered. Smith et al. (2007) argue that functional, experiential, symbolic and costly value can be identified as four common types of value. Examples of value include specific cost savings or measurable brand value. AI can be also measured numerically as it should to understand the benefits for improvement. For example, as a practical application, it can be measured whether utilisation of AI saves hours on a weekly and / or monthly basis. The added value of AI can be measured less than one would like to measure. Organisations need to change so that they are more data driven and should use the data to test the intuition of "we are doing well". (KPMG, 2015)

4. Research design & methods

This chapter describes the research design, the data collection along with introduction of the interviewed experts. Preparation of interviews is critical for the reliability (Hirsjärvi & Hurme 2001, 185) of the study and it was conducted carefully. Qualitative research seeks to understand the meanings and purposes of the phenomenon under study holistically (Sarajärvi & Tuomi 2009, 28-33). From all of the interviews, only two were conducted personally and four of the total six interviews were conducted over online platforms Skype and MS Teams due to the global pandemic's situation of 2020. All of the interviews, which were audio-recorded had the permission of the interviewees. The interviews were transcribed and after transcription thematic analysis was applied to the interviews. In the collection of data, the different options to conduct the interviews are a survey, an interview, an observation or information based on various documents. Thematic interview, in-depth interview and questionnaire are different forms of interviews with different relationship to the theory of the phenomenon, which is being researched (Sarajärvi & Tuomi 2009, 71). Qualitative research has been chosen because the researcher felt it was important to obtain the highest possible quality of experiential information from those working with artificial intelligence. The gathered experience through personal interviews was seen to give most in-depth view of the expert's experience and views of the topic.

4.1. Research context

Six case interviews were conducted in the form of semi-structured interviews and all of them have been anonymized in order the interviewee had the full openness and freedom to discuss the matter of AI without disclosing any secured information. In addition, through anonymity it reduces the collection of personal data. The sampling strategy for this research used was systematic sampling. The interviews included four different companies in total. The experts were all working during the interviews in the position of implementing the tool in business processes, either externally or internally. As the basis for this study has been on, how to utilise AI and how to implement the tool smoothly as part of the business the chosen experts have a strong knowledge about business environments. The qualitative input was collected through the semi-structured interviews to experts, who work within the topic of AI with a lot of experience on the field and have been working in the field of data science for several years.

All of the interviews discussed different aspects of these implementations along with barriers, enablers and value outcomes. This enable to have detailed discussion on the matter with a lot of insight on the topic as was available at that point. The questions were all linked and based upon the research questions as well as having a strong ground on the theoretical background of this study. The example of the interview questions is listed in Appendix 1. General aim for all the interviews was to have an in-depth and comprehensive understanding about the topic without going into details about programming, but rather staying on the business management and development of business -areas.

Interviews with experts from different companies				
Case Company	Company's nature	Industry	Interviews	Aim
Company A	Development of software (web and mobile)	Software design and manufacturing	2	The interviews provided insight of utilisation of AI in internal processes of the company, the approach of the company to AI, process of creating AI solutions and type of problems company has addressed in addition to barriers of AI deployment.
Company B	Customer-oriented operations, facility	Service business	1	The interview provided models, how AI has been utilised in the service business along with new opportunities on the horizon. The interviewee highlighted the barriers company has faced and emphasised beneficial outcomes.
Company C	Development of digital services	Software design and manufacturing	1	The interview provided insight on the importance of data and how it can improve customer insight and customer experience. In addition, the conversation included a large extent utilisation of AI in processes, the future of data and the barriers and challenges in deployment of data and utilisation of AI.
Company D	Providing information technology, consulting and outsourcing services	Software design and manufacturing	2	The interviews dealt with the examples of utilisation of AI. Moreover from the ML point. In addition the ethical issues were discussed in the context of ML and recognizing data along with classification process. One of the mentioned challenge with AI is the time consumption when handling and defining data for business purposes.

Table 4. Interviews summarized.

4.2.Experts in case companies

Experts were chosen from similar companies, but all of the experts had different backgrounds, demographics and titles. The experts included managers, head of divisions and an analyst in order to have a diverse outlook regarding the topic within the chosen context. Interviewees were chosen from similar industries in order to analyse the results from the perspective, how AI can possibly have a different approach in a similar industry. The experts were chosen since they were seen to have a lot of in-depth knowledge about the field of this study and the companies involved in this study have proven track-record of utilisation of different sub-sections of AI. The interviewed people's backgrounds are summarized along with the interviews in the Table 5 below.

Expert	Background	Central themes of the interview
Expert A	• Working with employee-related issues in HR • Dealing with people-related data (absences, skills) in the HR-system where all the projects and skills are listed	Applications of AI in HR Data generation of employees Employee engagement Evaluating AI Future of AI in business processes
Expert B	• Working with strategy in business • Developing processes in business	Development of processes with AI Motivation for utilising AI Barriers and enables of AI Experiments with data strategies
Expert C	• Consulting the management and customers • Leading digitalisation through data and recognising AI skilfulness with the focus on creating AI-business	Business processes, which utilise AI Motivation for utilising AI AI in customer projects Privacy matters in AI Added value of AI
Expert D	• Working with digital innovations to customers • Development of efficient functions with the help of ML	Prediction models of AI Barriers of utilisation of AI Applications and drivers of AI Automation processes
Expert E	• Leading a team, who provide intelligent solutions • Automations and AI-applications	Utilisation of AI in business processes Automation processes and planning Business opportunities of AI Enhancing user experience
Expert F	• Working with development of software • Machine learning solutions and intelligent automations	Development of data-driven processes Applications of AI Classifications of data Barriers and benefits of AI

Table 5. Expert's backgrounds and main discussion points.

4.3.Data collection and analysis

In this study all of the interviews were semi-structured as the aim was to gain in-depth knowledge of the topic. For the interviews a set of research questions were prepared, but not all of them were asked in all of the interviews, depending on the course of the interview. As the aim was to identify patterns and themes from data the thematic analysis method (Saunders et al., 2016, 580) was seen to be the most suitable for this research. The semi-structured method in the data collection phases means this so-called an intermediate form of unstructured and form interview, but a precise definition for it difficult to find. However, a common feature of semi-structured interviews is that some perspectives have been locked, but not all. This can mean, for example, the same questions for everyone, but not necessarily in the same order although questions are within one topic area, e.g., the themes discussed, is the same for everyone, but the exact form of the questions differs. (Smith, 1995) Thus, the key questions were also adapted to suit the situation with the interviewee better and there was also the hindering aim to have people speak as freely as they need. The flow of the conversation determined the order in which the questions were presented. The structure of the research questions was firstly the background of the person and the company followed by general ideas and thoughts about AI. The last section included the more in-depth utilisation of AI and especially the application of AI within the context of the target company.

The interviews, which were recorded had the permission of the interviewees – two of the interviews were not recorded but written in hand as detailed as possible. The interviews were all held in Finnish and they lasted from an hour to almost two hours. Each interview started with defining the concept of AI for the purposes of this study and to narrow down the segment for discussion to avoid misunderstandings.

Prior to interviews the theory background was conducted, which was also reshaped and edited along with new information gained from the interviews as not all of the mentioned issues nor points were not considered before the interviews. For analysing the information gathered from the interviews a thematic analysis method has been applied. The questions were left open-ended and with a small sample it can be considered that with repetition of the interview for a larger sample could have more diverse answers or even more patterns can be identified to improve the validity and reliability of the outcome (Boyce & Neale, 2006, 3).

The author conducting the research did not have any previous linkage to the interviewees meaning the relationship established beforehand did not affect the outcome of the interviews as the relationship just formed throughout the interview. To have even more insight for the analysis more interviews from case companies could have been executed, but the time frame and the complexity of the topic along with the pandemics in 2020 had its own limitations to pursue on this matter along with the time limitation for this study.

5. Results

This chapter presents the results of the interviews along with a throughout findings of the interviews. As the conducted interviews had same questions and they were from similar industries the findings are gathered to tables and figures. As the level of automation is constantly rising as the willingness to complete the same things as before, but faster, cheaper and with better quality and by having amounts of data it can be achieved. Companies are seeking for added value outcomes in addition to new business opportunities. As stated in chapter 1, there is an identifiable gap in existing literature on, how a company operating in B2B-sector should begin the process of utilising AI in business processes through concrete steps.

Interviewees acknowledged that one driver for utilisation of AI is the identified and repetitive processes. The common processes and applications, which were mentioned in the course of the interviews are summarized in the table 6 below. Financial department was mentioned several times as purchase invoices can be pre-defined to follow a specific route along with a specific cost centre the invoice belongs to. The benefits come in time-savings and cost-savings as it reduces the need of manual labour, which means less full-time employees working with the specific process of handling invoices to circulation of an accounting software. Thus, if the invoice is not in a predefined format it needs human interference to be identified and assigned to the person, who is in charge of approval of that certain invoice.

Function	**Process**	**Benefits**	**Application**
Financial Management	Invoicing Payment collections Accounting	Time-savings Reduced manual labour Reduced number of errors	Automated billing system
Administration	Procurement	Time-savings	Automated PO System
Administration	Providing customer service	Reduced manual labour	Chatbot
eCommerce	Customer journey	Improved CX Better customer engagement	Product recommendations
Human Resources	Recruitment	Reduced time and costs for recruitment processes Unbiased decisions	AI-based solution/software

Table 6. Identified processes along with benefits of utilisation technology.

The motivational factors for utilisation of AI were discussed with all the experts. There are several motivational factors for the introduction of artificial intelligence, but in several cases, the interviewees stated that the process is identified or that there is a desire to try out how a process can be developed using automation. One expert said that the utilisation of AI usually flourishes from a certain issue and there is a view or a vision that it can be solved with the help of data. Expert D mentioned a concrete example about a machine vision model, which would identify different materials from different surfaces as machine learning is capable to identify shapes, symbols and translate, what type of materials can cause harm on these certain surfaces. The motivational factor for building this model and using it on drone enables for a more efficient monitoring process of the different surfaces as a flying drone can reach places in different heights and angles faster and easier in comparison to a human. The experts were asked to mention the business processes, where utilisation of AI can be commonly seen at (Figure 6). Expert C mentioned a typical business process for B2B-sales is, how to collect appropriate leads and companies, how to identify from the generate lead the potential buyers and how to find the similar leads, which would be willing to buy the offered solutions.

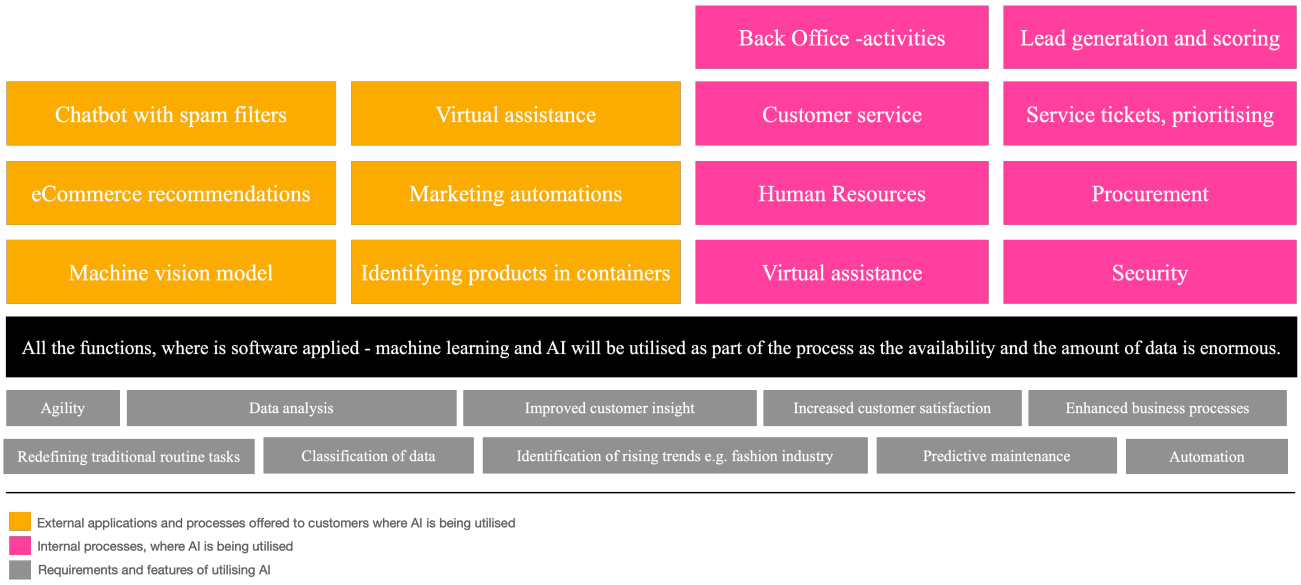

Figure 6. Mentioned processes and applications by interviewees.

As can be visible in figure 6 there are the external applications and processes along with internal processes where AI is being utilised, which can be same or similar to applications and processes offered to customer, which are already being utilised inhouse.

According to experts in several cases the motivational factor of implementing AI as a part of business is the factor to have improved efficiency as AI can work as an indicator, helping human workforce while generating a report or sending an alert about a deviation in the pre-defined process. Industries are utilising a lot of predictive maintenance to reduce the time of breakdowns. Utilisation of AI requires planning along with clear structure and KPIs to measure the developed solution. In addition to increase productivity in current processes, companies state to be seeking for new business models and aiming to build competitive advantages also by monitoring the rising and global trends carefully. The motivational factors stated have derived from business needs, which can be seen as the starting point for increased AI utilisation to solve the certain need. From these answers it can be concluded that increased utilisation and successful adoption of artificial intelligence has been influenced by a conscious strategic trend in case companies, where business and IT work together in an organization.

The experts were also asked about the features of data as data-driven models are being built Expert A highlighted that gaps in data are many times that need the manual work to build the bridges and link the data appropriately. Figure 7 outlines the utilisation of data as it needs to have a plan on, how the data is being collected, stored and utilised in order to achieve improved customer understanding and creating valuable customer insight to improve the customer experience across different platforms.

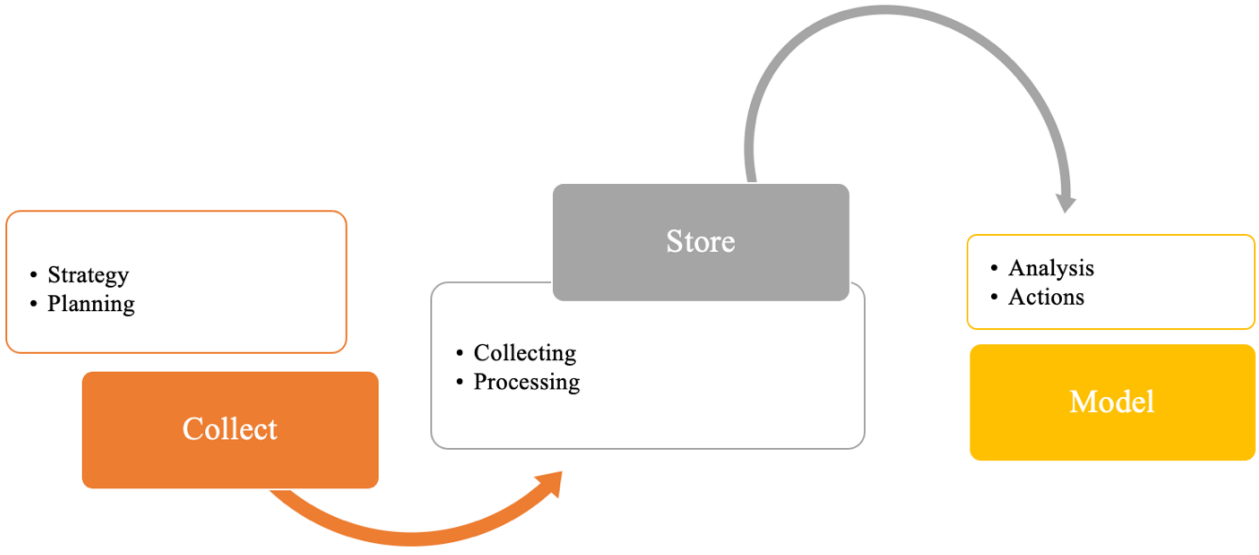

Figure 7. The outline of gathering data for business purposes.

When experts were asked about the benefits and success of utilisation of AI, experts had similarities in answers, but also answers slightly differed. Expert C stated that outcomes of combining data provides insightful results, which can be addressed. One given example was an analysis conducted for about migration phenomenon of a certain are, which had the conclusions of the analysis stating, which type of homogenous groups stay in a certain area so a city can address the issue of people moving out of a certain city. The biggest value proposition that AI is considered to have according to experts in Company C and D is speed, cost-savings and quality as machine learning models make decisions, which are qualitative, and data enables a greater customer insight. Expert B discusses the benefits of artificial intelligence based upon the different context, i.e., where the artificial intelligence is utilized. In some contexts, there may be a reduction in the amount of other work, in some context, what AI eventually accomplishes and through, which is a discovered business opportunity that directly generates benefits. Expert B concludes that greatest benefit depends on where the artificial intelligence is applied to. Expert E highlighted that there are cases, where the added value in business processes is not simple to measure and many times it is more about aiming for long-term aspects opposed to quick wins. Automation was seen as something, which is being strived towards in different processes with the desire to complete the same things as before, but faster, cheaper and with better quality.

In can be concluded from the answers from all four companies that in general automation level is rising and what is dominant is the amount of data, which can be utilised to understand what the market is and what type of customer to we have and how our offering of services and products can improve their lives. For the end-customers in B2B-market CX is a great potential outcome of automation and it can help in combining the transactions from digital ecosystem seamlessly into the company's physical business locations so the digital ecosystem can be the 'second leg' of the business.

From the interviews it can be concluded that utilising artificial intelligence and implementing it successfully as a part of a business process starts with quality data, which it is seen as a requirement to start experimenting with the possibilities of AI and the importance of data was mentioned by all of the interviewees and this is cohesive with the reviewed literature and studies on the topic.

In the course of this study, several factors were identified through interviews and discussions that hinder the successful (sustainable) introduction of AI in the sector, which are illustrated in figure 8.

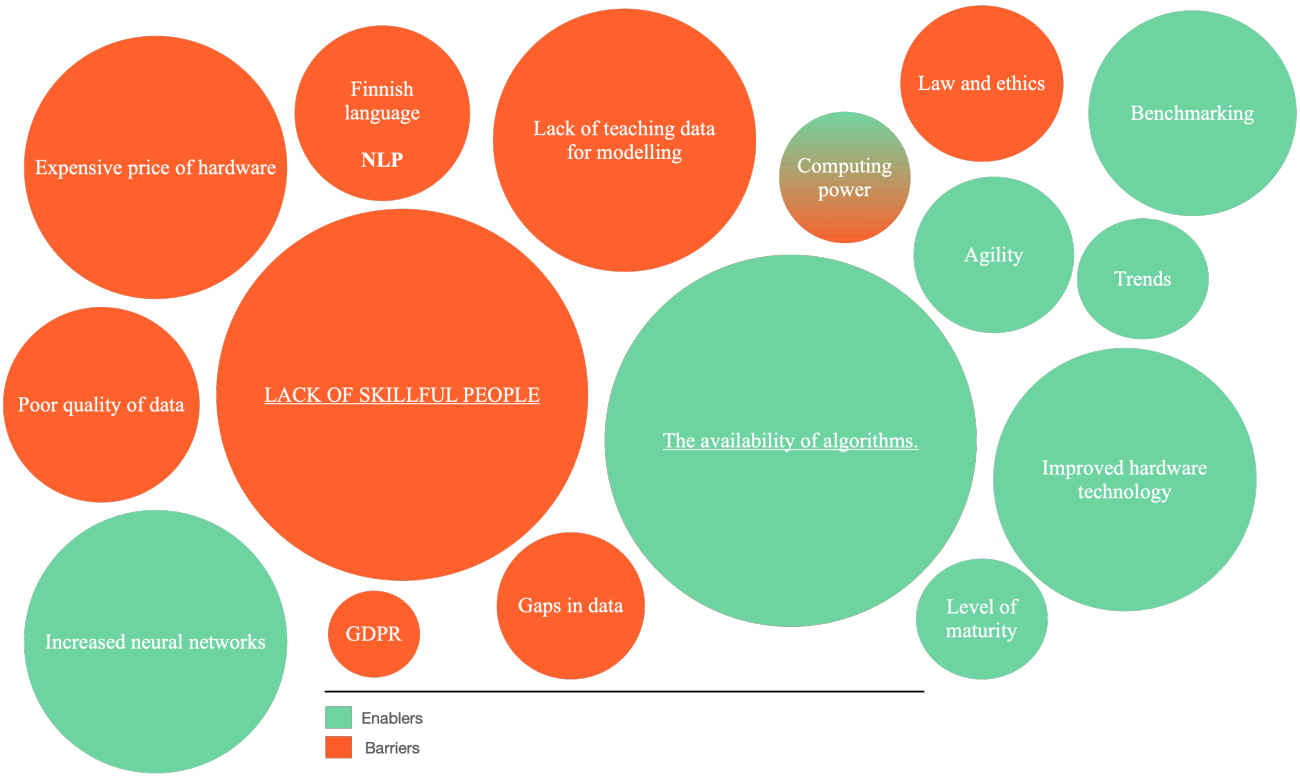

Figure 8. Enablers and barriers for utilising AI in business processes.

One repetitive factor mentioned is the lack of technical knowledge, such as how to formulate or plan an AI-project, its cost and successful goals. Thus, even with a good idea, the skills of existing workers may be lacking in order to actually start the project and then successfully complete it from start to finish. At the same time, it is necessary to increase both technical and substantive knowledge of the development and implementation of technology throughout the different processes across industries. Customers also need better basic knowledge to be able to be a "smart customer". Utilizing data, for example through machine learning, can lead to better targeting in marketing, where the target audience is reached more effectively. In addition, by gathering information and utilizing algorithms, it is possible to achieve results that man alone cannot. In many companies, it is a reality that humans are working side-by-side with AI. The common enablers and barriers of utilising AI in business processes is summarized in the figure 8 below. Noticeable for one interview was that sometimes, when operating in a global environment, meaning having operations also abroad the choices of technology are rather given from the Group-level as opposed the country choosing the most suitable software. The other aspect, which can hinder behind having the most beneficial software in terms of AI implementation for the company can be derived from the needs and defined requests of the large customers.

The experts all seem to agree upon the outcome of efforts in utilising AI across companies. The main factors affecting the utilisation of AI is the level of digitalisation in the company along with its resources (technology and human capital), which are illustrated in figure 9. Thus, for the successful utilisation of AI there needs to be the cooperation between business activities, business strategy, analytics and data scientists. The nature, privacy and quality of data plan an important role in terms of success, because the better the quality of the data there is, the more reliable the modelling of automation is. There are the practical challenges in gathering data such as language barriers, privacy issues, which can prevent or slow down effective utilisation of data.

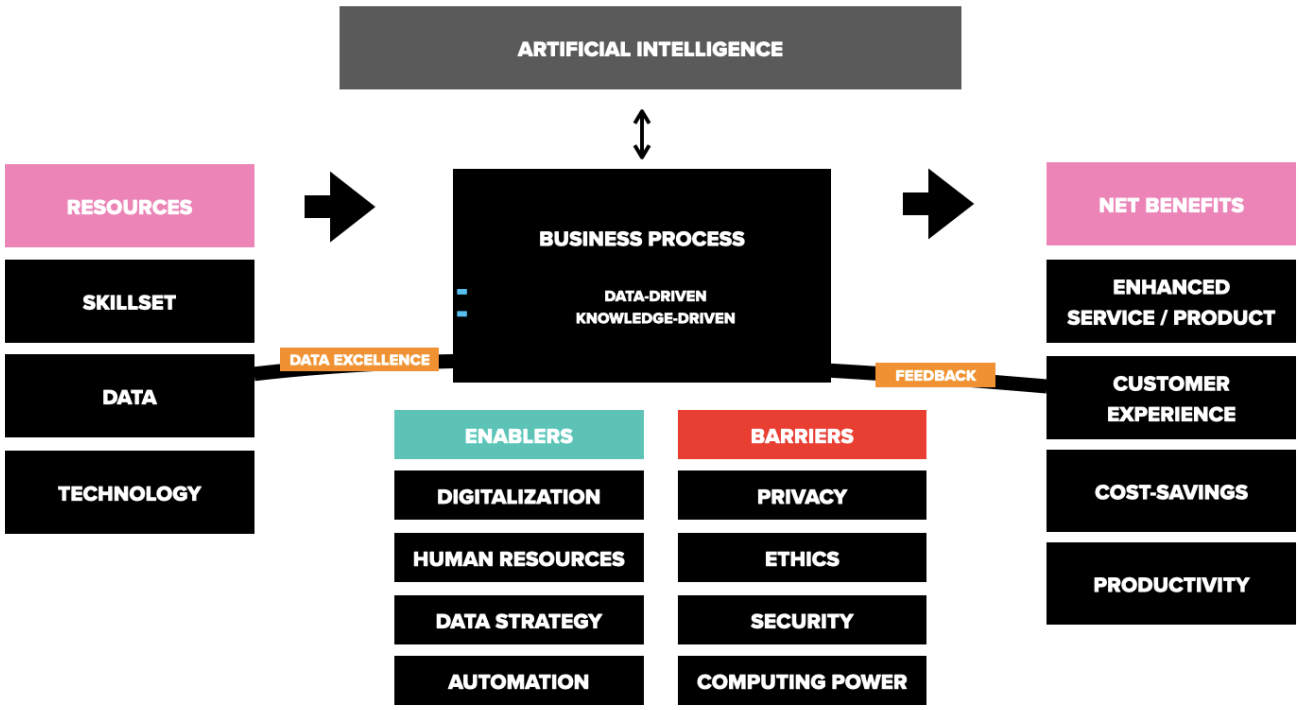

Figure 9. Framework for utilising AI in business processes.

According to the interviews AI aims to bring value with the help of different machine learning models based on different algorithms, overcoming the difficulty of redefining a traditional, routine process as AI is more than only digitalising an old process done by paper into a web interface. If a company has well-designed organisational structure with right people AI will promote quality of processes.

6. Discussions

In this chapter the theoretical contributions and practical implications are introduced. At the last section of this chapter, the limitations and future research topics are discussed. The information gathered through literature has been combined with the case interviews. Thesis contributes towards guidance on, what should be the first concrete steps when beginning the implementation of AI in a business as the starting point of this study has been an identifiable gap in existing literature on, how a company operating in B2B-sector should begin the process of utilising AI in business processes through concrete steps. Thus, when utilising AI the central themes are, how gathered data can be utilised and how current processes could be enhanced and develop with the help of this specific technology as the objective of this thesis was to determine, how a company can utilise the possibilities of AI in business processes. Furthermore, the limitations for companies in utilisation of AI in different business processes are evident and they will be discussed at the end of this chapter.

In brief, there is a lot of talk about AI on a general view, but not too much about concrete steps on as stated in chapter 1, how the possibilities of AI could be utilised and what they could really consist of in practise. As companies have the ambitious desire to automate time-consuming manual routines is being derived from the motivational standpoint, what is to create more value and even to monetise on the tool. The research results highlight the enabling factors of utilizing AI in business processes. The study shows that AI involves a variety of concepts, a variety of applications, and with a small sample and testing, AI can be used to build a scalable model for business. It is clear that in a modern world the interdependence between analytics, data and business decision have increased as the computing power is more developed than ever before. With a careful and considerate planning of utilisation a certain technology internally, it should be able to provide the models which can be piloted internally and furthermore monetised if proven successful. As utilization of AI offers multiple benefits and with the increasing popularity of the AI-technology, companies should seek for opportunities to adopt it as a part of the business to stay in the competition. There are several requirements for the introduction of artificial intelligence, one of which is emphasized above the others - several experts stressed that automations in business processes must benefit the company. The use of artificial intelligence is not recommended by the experts unless reproducible processes have been identified. There must be courage in the introduction of artificial intelligence to a company, one must be aware of which business processes can be improved and how to make the most of the data collected by utilizing artificial intelligence.

The research problem was examined through literature and case interviews. The main goal of the study was to find an answer, how companies could utilize artificial intelligence and as the first research question, *How do firms are currently utilizing AI in their different business processes?,* was answered it had several answers in the literature as well as through interviews. It became clear that there are multiple opportunities for AI, which can be deployed. There was seen to be a common AI-powered solution, which helped internally to look for people with certain skillset and to use chatbots for improved service processes. There are different ways in similar industries to utilise on AI as there are multiple internal and external processes in which artificial intelligence can been utilized. All of the interviews stated several applications and processes for utilisation of AI. Thus, the utilization of the tool is dependent on different factors, such as capabilities of the company to harness and extract data in a manner it can provide insight about market or the customer or the business itself. In addition, the maturity level of digitalisation in the companies affects the process and its timing on AI.

The next question, ***RQ2:*** *What kind of value has the utilization of AI created for the firms?,* concerned the importance of the utilisation of AI for companies, and a study of the literature and interviews revealed the added value which the utilisation of AI means to the company and implication in a company can provide. The purpose of this question was to understand the outcome of utilisation of AI to conduct general analysis if experimenting with AI should be pursued. It was found out that business processes can improve in speed and quality when utilizing machine learning models in back-office functions. The mentioned net benefits were stated to be in speed, quality and cost-savings throughout the interviews. In addition, cost-savings for a company is also seen as a potential benefit. Thus, cost-savings come after a certain time period, which needs to be calculated case-by-case as the maturity and capabilities among companies differ. As the company's maturity level within the field of AI increases new data-driven business models can be built, but this needs skilful people in addition to technology.

To create an overall picture, the study also addressed drivers, motivational factors, and retardations in the introduction of artificial intelligence, which was addressed through ***RQ3:*** *What factors facilitate/hinder the utilization of AI in different business processes*? -question and it was also answered. It was highlighted that it is crucial for data collection to have a defined goal, what is needed to achieve, and these objectives need defined processes on, how to process and analyse the data a system has acquired to act towards that goal. It was mentioned the barriers of utilisation to be in law and privacy matters as

in cases, where a person's data cannot be anonymised it cannot be used and even if anonymised then not all of the data can be combined, it is dependent on the legislation, how data can be processed and where the data can be imported from. In addition, a hindering obstacle is also in the structure of data as not all the data if not been collected in a same way makes it more difficult to combine. Therefore, it can be concluded that data collection needs to be planned out and it should be aligned with the KPI's for the target process or the company. Collecting data for the sake of collecting data can be seen as a non-valuable function.

Managerial implications

The emerging technology cannot be picked up from a spur of the moment. For businesses, having data utilised in development of business processes or generating new data-driven business models it should be part of company's strategy -- only by looking into a company, its processes and the infrastructure along with different ecosystems it can be seen if it is ready to utilize more advanced machine learning, machine intelligence or AI. As a company's goal and strategic investment target, AI requires investment in hardware and people if it is pursued inhouse instead of buying a solution from another service provider.

The company should take AI as a systematic investment target so that it can be genuinely tested for example by data scientists in collaboration with business developers and analysts. Data and analytics are at the core and the foundation of enhancing processes and realizing along with understanding it can create significant competitive advantages for companies as well as more efficient processes. Many companies most likely have a lot of data collected without the proper knowledge on, how to leverage the gathered data into a full potential and what insight could be locked from this data with the help of tools, such as AI for example. By the help of ML and AL the data can be processed much faster and with fewer mistakes than being handled by a person, but it still needs a person to plan the purpose of deployment unless we reach the superintelligence, which several people believe in.

If a company pursues with AI, its recruitment program must take into account what kind of people the company needs to hire in order to take the first steps or development in utilizing AI. In addition to the right people, a company also needs change management in order to understand how the business needed to change first through digitalization and automations, if the company has not yet taken advantage of the mentioned opportunities and then move towards more advanced tools.

Suggestions for a company, which aims to pursue in unleashing AI-powered opportunities:

1. Adapt data and analytics part of company's strategy when developing business
2. Identify the processes, which can be automated
3. Recruit people, who can collaborate on the topic with different expertise
4. Remember – business strategists, data analysts and data scientists need to work collaboratively
5. Build a small model, test, fail fast and test again
6. Implement the tested model as part of the business
7. Monitor and develop the process accordingly

Business development and streamlining of processes is about several factors within a company, also collaborative with different industries. As the amount of data is available AI can be utilised across industries in different functions as AI strives to improve customer experience. Companies need to invest in both analytical and technical capabilities along with people who can identify business opportunities. If the opportunities are low and the company does not have the human resources and financial investment in technology, which in itself is a significant investment, the company has a weak starting point in the world of data and analytics if it lacks understanding it and the proper tools. In those cases, companies need a business partner when their own resources are limited but the service can be purchased.

Data can create many benefits for a business, either directly financial ones or even strategic benefits. Having data and collecting it is a way to understand the consumers, the customers, the digital landscape and the market and by looking into data it will provide insight on, how the service process could be improved along with the services the end-customer might benefit from or seek for. There are different challenges related to data collection, storing and processing, but first and foremost it is crucial to have a data strategy, a plan to collect data in a cohesive matter based on the company's strategy and set goals for data collection. Data monetization is one of the key themes in creating a new business model for a company. When combining valuable data and creating tangible benefits or reducing costs from it, one can speak of monetizing the data. Data monetization can be approached in three ways, which are selling, bartering or wrapping. The benefits can be obtained either in the form of cost savings and reduced manual work by man.

In conclusion the key of utilising AI can be found in the company's aim as well as courage to use agile experimentation to test intelligent machine learning in different environments, also hiring data scientists who realize and can train the company's existing employees to increase their efficiency as a machine-assisted, non-substitute system but as a complementary tool to more profitable operations. This study gives a base for the further studies as some rising patterns can probably be identified also for a larger sample as some of the patterns have already been assessed and mentioned in literature.

Limitations and further research

All studies have their own limitations, and next the most prominent ones are introduced. First of all, as mentioned before there could have been more interviews taken from the case companies to gain more comprehensive picture. Therefore, the topic itself should also be further studied as the generalization is partly limited. As the focus was set for B2B sector, partly B2C-sector perspective in the literature review was also included due to the small sample size. In addition to this, it needs to be noted that research was conducted in Finland, where the maturity of digitalisation varies, but as the companies were similar there is no major market structures taken into consideration. However, the limitation was done purposefully, to have the insight on a particular area and as all the studies have their own limitations this is no exception. In addition, the most recent research in the topic is being published daily as the topic is fascinating and the prominent leaps towards superintelligence are being pursued.

The collected data was not completely comparable as the questions varied as the interview was done by using semi-structural interview method. This means that the interview questions varied depending on the interviewed person, and the course of conversations. However, this is an issue that concerns all the studies that have been done with using this method. As sample of this study is small and there is not one concrete answer, what process itself can be powered by AI – it is more about the idea, courage and bold testing, requiring time, money, repetitions and iterations. Therefore, the findings can be utilized as guiding material into possibilities of AI, its current applications and what it truly is about behind the hype of the word - practices of this study need to be evaluated judiciously. In conclusion a lot is based about the quality of data when discussing utilisation of AI and this study has succeeded to only shed a small amount of light on the topic.

Further studies could focus on the privacy issues as data determines our business opportunities more than ever before, but an individual's privacy needs to be considered and at the moment there is no special legislation related to robotics or AI in Finland. Further research and complementary research would be on ethics and the law in the utilisation of data, as well as on how to make AI more efficient and diverse and how to strive AI towards better decision-making.

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Appendices

Appendix 1 – Case interview questions

Background questions

1. What is the main industry your company operates at?
   Mikä on teidän yrityksenne pääasiallinen toimikenttä?
2. What has been the most significant change in your industry in the past 3-5 years? Mikä on toimialallanne merkittävin muutos viimeisen 3-5 vuoden aikana?
3. What part of your customers come from the B2C and B2B -sectors?
   Miten asiakkaanne jakautuvat B2C ja B2B-asiakkaiden välillä?
4. What is responsibility and what title do you hold in your company?
   What type of projects do you participate at?
   Mikä on toimenkuvasi ja vastuualueesi?
   Minkätyyppisissä projekteissa olet itse mukana?
5. How long has the company been utilising AI?
   Miten pitkään yritys on hyödyntänyt tekoälyä?

AI

6. What have been the motivations to introduce the AI in your company?
   Mitkä motivaatiotekijät ovat vaikuttaneet tekoälyn käyttöönottoon?
7. Which business processes utilise AI?
   Missä liiketoimintaprosesseissa tekoälyä hyödynnetään?
8. What has been the most challenging part of deploying AI?
   Mikä on ollut haasteellisinta tekoälyn käyttöönotossa?
9. What have been the benefits of deploying AI?
   Mitä hyötyjä on ollut tekoälyn käyttöönotosta?
10. What type of added value AI has in your business processes?
    Millainen on tekoälyn tuoma lisäarvo liiketoimintaprosesseihin?
11. How do you evaluate the added value by AI, is it measurable?
    Miten tekoälyn tuomaa lisäarvoa arvioidaan, onko se mitattavissa?
12. What kind of challenges and difficulties utilization of AI has had?
    Millaisia haasteita ja vaikeuksia tekoälyn hyödyntämisessä on ilmennyt?

Yritykseen liittyvät kysymykset

Kuinka hyvin mielestäsi tekoälyä käytetään yrityksessänne?

Haluaisitko, että tekoälyä olisi käytössä laajemmin?

Millaisia onnistumisia tekoälyn hyödyntämisessä on esiintynyt?

Mikä on ollut yllätyksellisintä tekoälyn hyödyntämisessä?

Mitä hyötyä mielestäsi tekoäly on tuonut yrityksille?

How well do you think AI is used in your company?

Would you like AI to be used more widely?

What successes have there been in the use of AI?

What has been most surprising about the use of AI?

What benefits do you think AI has brought to businesses?