ROLE OF ARTIFICIAL INTELLIGENCE IN PROMOTIONAL CAMPAIGNS

Jyväskylä University
School of Business and Economics

Master's Thesis

2024

Author: Arttu Kivistö
Subject: Digital Marketing and Corporate Communication
Supervisor: Outi Niininen

JYVÄSKYLÄN YLIOPISTO
UNIVERSITY OF JYVÄSKYLÄ

ABSTRACT

Author	
Arttu Kivistö	
Title	
Role of artificial intelligence in promotional campaigns	
Subject	Type of work
Digital Marketing and Corporate Communication	Master's Thesis
Date	Number of pages
May 2024	71+2

Abstract

In recent years, artificial intelligence has emerged as a significant factor in reshaping the design and execution of promotional campaigns offering an automated and data-driven approach to tasks traditionally performed manually. AI presents several benefits to promotional campaigns, including improved automation, predictive analytics, and enhanced targeting and personalization. These opportunities incentivize companies to integrate AI tools into their strategies, to improve their promotional campaigns and run them more efficiently than in the past.

This study uses a case study approach, employing semi-structured interviews to gain insights from industry experts on the role of AI in promotional campaigns. The interviewed professionals are marketing professionals from advertising/marketing agencies with substantial experience in marketing and AI utilization. Through these interviews, the study aims to investigate the current role that AI has in promotional campaigns, its impact on decision-making processes in campaign planning and design, and the future outlook for AI in promotional campaigns.

Several key findings emerged from the interviews. The rapid improvements have caused the levels of AI implementation to vary a lot between companies. Experts considered the advanced implementation of AI as an opportunity to stand out and gain an advantage over the competition. AI was used in various stages of the promotional campaigns for different purposes. Some of the key purposes are advanced analytics, enhanced automation, and improved personalization of promotions. With AI's ability to automate complex tasks in a data-driven manner some of the decision-making has become a responsibility of the AI. These decisions were mostly simple decisions that could be made purely based on data. For the future experts expect AI-based tools to become more common as the usability of these tools improves. Most enthusiastic the experts were about the possibilities that generative AI models will offer as they improve. Despite the enthusiasm especially privacy issues raised concerns among experts.

Key words
Artificial intelligence, Machine learning, programmatic advertising, Digital marketing.

Place of storage
Jyväskylä University Library

TIIVISTELMÄ

Tekijä	
Arttu Kivistö	
Työn nimi	
Tekoälyn rooli mainoskampanjoissa	
Oppiaine	Työn laji
Digitaalinen markkinointi ja yritysviestintä	Pro Gradu
Päivämäärä	Sivumäärä
Toukokuu 2024	71+2

Tiivistelmä

Viime vuosina tekoäly on noussut merkittäväksi tekijäksi, muokkaamassa mainoskampanjoiden suunnittelua ja toteutusta. Tekoäly tarjoaa automatisoidun ja dataan pohjautuvan lähestymistavan tehtäviin, jotka on perinteisesti hoidettu manuaalisesti. Merkittävimpiä etuja, jota tekoäly tarjoaa, on esimerkiksi parannettu automaatio, ennakoiva analytiikka sekä mainosten tehokas kohdentaminen ja personointi. Nämä hyödyt kannustavat yrityksiä ottamaan käyttöön tekoälypohjaisia työkaluja mainoskampanjoihinsa parantaakseen niiden tehokkuutta ja tuloksia.

Tämä tutkimus on tehty tapaustutkimuksena, käyttäen puolistrukturoituja haastatteluja tiedonkeräysmenetelmänä. Haastattelujen tarkoituksena oli kerätä markkinoinnin ammattilaisten näkemyksistä tekoälyn roolista mainoskampanjoissa. Tutkimuksen tavoitteena on selvittää, mikä tällä hetkellä on tekoälyn rooli mainoskampanjoissa, kuinka se vaikuttaa päätöksentekoprosesseihin kampanjoiden suunnittelussa ja toteutuksessa, sekä mitkä ovat tekoälyn tulevaisuudennäkymät mainoskampanjoissa.

Haastatteluista nousi esiin useita havaintoja. Tällä hetkellä yritysten välillä on suuria eroja tasossa, jolla tekoälyä hyödynnetään. Tekoälyn tehokas hyödyntämisen nähtiin merkittävänä mahdollisuutena erottua kilpailijoista. Keskeisimmät hyödyt, jota tekoäly tällä hetkellä tarjoaa on kehittynyt analytiikka, automaatio ja mainonnan yksilöinti. Tekoälyn mahdollistama automaatio siirtää osan päätöksenteosta tekoälyn vastuulle, etenkin tilanteissa, joissa päätökset voidaan tehdä täysin datan perusteella. Asiantuntijat odottivat tekoälypohjaisten työkalujen yleistyvän tulevaisuudessa niiden käytettävyyden parantumisen ansiosta ja olivat hyvin innostuneita etenkin generatiivisten tekoälymallien tuomista mahdollisuuksista. Innostuksesta huolimatta, etenkin yksityisyyden suojaan liittyvät kysymykset herättivät huolta asiantuntijoiden keskuudessa.

Asiasanat	
Tekoäly, Koneoppiminen, Syväoppiminen, Programmatic mainonta, Markkinointi.	
Säilytyspaikka	
Jyväskylän yliopiston kirjasto	

CONTENTS

6

LIST OF TABLES AND FIGURES

Tables

Figures

1   INTRODUCTION

In the fast-paced and constantly evolving field of marketing, changes in technologies, methods, channels, and mediums are always present. Traditionally marketing has been done through different types of offline channels like billboards, newspapers, radio, and television. The field of marketing faced one of its most drastic changes at the start of the millennia when commercial use of the internet began to expand, and businesses were able to utilize it as a part of their business model. The digital environment created new opportunities for businesses to expand their operations and leverage the internet as a key component to reach potential customers more efficiently. This new digital medium also allowed businesses to create new business models where online platforms serve as the key component. (Kannan & Li, 2016.)

For marketing this adaptation of the internet as a new business medium meant that they needed to adapt to this new environment and find new ways to reach their potential customers online. Nowadays internet it accessible with mobile devices from almost anywhere and anytime which means that it offers marketers a tool to reach their potential customers much more effectively than traditional channels. Another important opportunity that the digital environment offers for marketers is the ability to collect and utilize customer data. This collected data can be used for marketing purposes in order to better understand customers' needs and preferences to offer them more personal and relevant advertising. (Chaffey, 2012.)

In recent years one of the most influential factors transforming the field of digital marketing and promotional campaigns has been the implementation of artificial intelligence (AI). As a technology, artificial intelligence has been around for a while, but with the developments in technologies artificial intelligence-based tools have become more accessible for marketers. As these tools keep improving they have the potential to revolutionize the way digital marketing is done and offer improved efficiency and effectivity for marketers as well as improved customer experience. Currently, artificial intelligence-based tools are mostly being used to improve the efficiency of marketing by automating different tasks and processes such as analytics processes, targeting, ad placement, customer support, and content generation. (Hall, 2019.)

The use of artificial intelligence in digital marketing is still a relatively new topic and improvements in technologies and processing power of computers allow marketers to constantly find new ways to implement artificial intelligence in promotional campaigns and utilize new AI-powered marketing tools. This means that the field of marketing and promotional campaigns is constantly changing

and improving, causing companies to be in very different stages of implementation of these technologies. Harnessing artificial intelligence in marketing processes can greatly improve the creation and outcome of promotions campaigns and serve as a competitive advantage over competitors that are in earlier stages of the adaptation process. Because of these improvements in technologies and opportunities that they offer, there is an incentive towards the implementation of artificial intelligence across the field of promotional campaigns. (Basha, 2023.) The constant change in the field and new ways to implement these technologies create a demand for new research to be conducted in order to gain an understanding of the state of these technologies and methods that are currently used as well as the need to look into the future to assess where the field is heading.

Artificial intelligence in digital marketing and promotional campaigns is still a relatively new concept, so the literature on the topic is somewhat limited but in recent years it has become more relevant and there have been increasing amounts of studies made on the topic. Some of the key publications on the topic of artificial intelligence in marketing and promotions are presented in the table below. (Table 1.1) These publications look at the implementation of artificial intelligence in digital marketing from different perspectives discussing the technology and its applications.

Table 1.1 Key publications used in this study

Publication	Author	Year
Artificial intelligence in marketing: systematic review and future research direction	Verma	2020
Artificial intelligence (AI) applications for marketing	Haleem	2022
A strategic framework for artificial intelligence in marketing	Huang & Rust	2020
Artificial Intelligence for Marketing: Practical Applications	Sterne	2017
Transforming Marketing with Artificial Intelligence	Jain & Aggarwal	2020

In these publications, Verma (2020) and Haleem (2022) take a literature-based approach and investigate artificial intelligence in digital marketing based on the current literature. In their paper, Huang & Rust (2020) create a strategic framework for the use of artificial intelligence in marketing. Sterne (2017) as well as Jain and Aggarwal (2020) take a more practical approach to looking at the practical implementation and approaches of the use of artificial intelligence in digital

marketing. In addition to these publications' companies, like IBM have a rich history around the topic of artificial intelligence and are still among the leading developers and experts of artificial intelligence technologies.

1.1   Research objectives

In a field that is improving at such a fast pace as artificial intelligence, businesses need to keep up with the changes. The goal of this thesis is to gain a deeper understanding of the artificial intelligence technologies, tools, and methods that are being used as well as discuss the future outlook for artificial intelligence in promotional campaigns. This thesis can serve as a guide for companies in their implementation process for artificial intelligence as it breaks down key elements involved in artificial intelligence and conducts an expert study on its current role in promotional campaigns. This thesis is a qualitative semi-structured interview study, and the interview sample consists of marketing professionals who work in Finnish marketing or advertising agencies. The thesis consists of three different research questions.

Research question 1: How do Finnish marketing/advertising agencies utilize AI in promotional campaigns?

The goal is to find out, in what processes artificial intelligence plays a role in promotional campaigns, what kind of AI-based tools are used, and what kind of benefit they offer when creating promotional campaigns.

Research question 2: What is the role of human decision-makers in Finnish marketing/advertising agencies when planning promotional campaigns with the help of AI technologies?

The goal is to find out to what extent are promotional decisions automated, how human decision-making influences processes managed by artificial intelligence, and in what processes human decision-making is necessary.

Research question 3: How do Finnish marketing/advertising agencies expect the role that AI has in promotional campaigns to evolve in the future?

The goal is to gain insight into how marketing/advertising agencies see the future of AI in promotional campaigns, how they are planning to implement it in the future, and what kind of investments these plans require.

1.2   Structure of the study

This thesis consists of five main chapters that include an introduction, theoretical framework, methodology, results, and conclusions.

The introduction (Chapter 1) chapter presents the topic as well as the research questions of the study (1.1) and the structure of the study (1.2).

The theoretical chapter (Chapter 2) creates a theoretical framework for the study based on the current literature. It gives an overview of the current digital marketing environment (2.1) and focuses on artificial intelligence (2.2), machine learning (2.3), big data (2.4), and programmatic advertising (2.5) and their key features as technologies as well as discusses the use of artificial intelligence in promotional campaigns.

The methodology chapter (Chapter 3) presents the research methodology (3.1), data collection (3.2), and -analysis (3.3) methods that are being used in this study. This chapter also presents the case companies and expert interviews that have been used for this study (3.1.3).

The results chapter (Chapter 4) presents the results and discusses the key findings of the study through five different themes that emerged from the study (4.1-4.5). This chapter also presents the results of the research questions (4.6).

The conclusions chapter (Chapter 5) discusses the theoretical- (5.1) and managerial implications (5.2) of the findings as well as assesses the reliability of the study (5.3) and presents ideas for future research (5.4).

1.3   AI Statement

In this master's thesis research, AI-based tools and assistants have been used for three main purposes: familiarizing with concepts, brainstorming, and spellchecking. In the early stages of the thesis process, ChatGPT was used to gather information to gain an initial understanding of the topics and concepts before diving deeper into academic materials and sources. ChatGPT was also used to brainstorm research topics, research questions, and technologies included in the theoretical part of this thesis. For spell-checking purposes, Microsoft Word's spell-checking features and an application called Grammarly were used.

2   ARTIFICIAL INTELLIGENCE

In the past artificial intelligence has been a term that has been most familiar to consumers through sci-fi movies and as a futuristic buzzword. In recent years awareness of artificial intelligence has improved due to advancements in technologies that have made it more accessible for companies and consumers to utilize. One of the most notable releases that have improved consumers' awareness of artificial intelligence-based programs has been ChatGPT which was released in November of 2022 and reached 100 million active users in only two months. (Economic Times, 2023.)

Chapter 2.2 dives deep into the technology of artificial intelligence and discusses what it is and how it works, how it is applied to promotional campaigns, as well as its history, future opportunities, and limitations. Chapter 2.3 discusses a subfield of artificial intelligence called machine learning and its subfields neural networks (2.3.1), deep learning (2.3.1), natural language processing (2.3.2), computer vision (2.3.2), and generative adversarial networks (2.3.3).

2.1   What is artificial intelligence?

The concept of intelligence is very broad and difficult to define precisely which makes it very hard to define the concept of artificial intelligence precisely. Even most dictionaries offer multiple definitions for the term artificial intelligence. Despite the vague definition, the literature recognizes the key features of artificial intelligence being its ability to human-like reasoning, learning, and self-correction. These are the most relevant factors differentiating artificial intelligence from regular algorithms used in computer sciences. (Kok, 2009.) As a field of study, artificial intelligence is considered a part of computer sciences. The main idea behind the development of artificial intelligence is to teach computers to be able to mimic human-like intelligence using algorithms. (Haleem, 2022).

Even though the topic of artificial intelligence might feel rather new and futuristic, the idea of artificial intelligence roots itself back several decades. The first steps for artificial intelligence were set in 1950 by Alan Turing who is considered as one of the most influential persons in modern computing. Turing was the first to create the theoretical framework for artificial intelligence in 1950 with the Turing test and introduced the question of "Can machine think" in his paper. (IBM, 2022b.) As a term, artificial intelligence was first introduced in 1956 at a conference where a group of scientists gathered together to explore the possibilities of creating machines that could mimic human intelligence. This conference also

marks the starting point for artificial intelligence as a distinct field of study. The following years in the 1950s and 60s are considered the golden age of artificial intelligence research fuelled by enthusiasm that was caused by advancements in technology. (Kaynak, 2021.)

Artificial intelligence also has a subfield called machine learning. The term machine learning was first introduced by Arthur Samuel who was conducting research for a technology company IBM. Samuels's research revolved around teaching computers to play the game of checkers. One of the most notable milestones in the field of artificial intelligence and machine learning was accomplished in 1962 when IBM 7094 computer using machine learning algorithms won a game of checkers against Robert Nealey who is a self-proclaimed checkers master. (IBM, 2020.) The next decade was slow for artificial intelligence due to limitations discovered in artificial intelligence technologies, but the interest started to resurface in the 1980s and 1990s with major developments in neural networks and natural language processing. In the 21st century, artificial intelligence has taken massive leaps forward that have mostly been driven by improvements in computing power. This has made it possible for computers to solve even more complex tasks and utilize large masses of data in the algorithms. (Kaynak, 2021.)

At the very core of artificial intelligence lies algorithms. They are essentially step-by-step instructions for a computer that guides artificial intelligence through different tasks and allows the machines to predict outcomes based on various input data. Algorithms used in artificial intelligence are often very complex but most basic algorithms can be very simple and straightforward. (Figure 2.2). In addition to algorithms artificial intelligence also needs vast amounts of data to function. Data is used to train complex artificial intelligence algorithms to recognize patterns, and outcomes and complete specific tasks. (Doyle, 2023.)
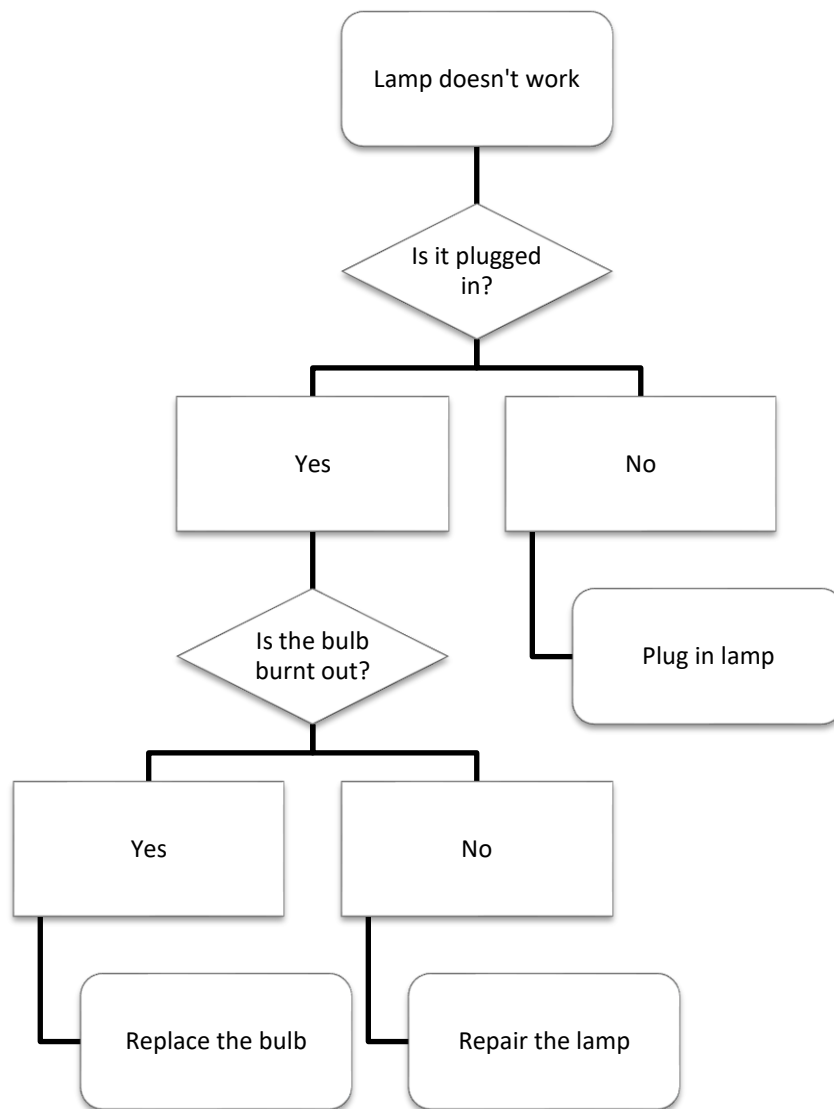
Figure 2.1 Example of a basic algorithm (Doyle, 2023 N.P.)

In order to function artificial intelligence relies on algorithms to process information and make decisions. Algorithms guide artificial intelligence through multiple different decisions step by step based on the input data and a set of rules on how the algorithm should function in different scenarios. The example shown above is a very simple algorithm, but the algorithms used for artificial intelligence can get very complex and have multiple different layers in order to solve complex problems. These kinds of artificial intelligence algorithms are used in promotional campaigns to automate different promotional tasks, like analytics, AB-testing, campaign adjustment, dynamic bidding, targeting, and segmentation following a similar step-by-step path as the example algorithm. (Doyle, 2023.)

In their paper, Huang and Rust (2020) introduce a three-stage strategic framework for implementing artificial intelligence in digital marketing. The framework divides artificial intelligence into Mechanical AI, Thinking AI, and Feeling AI based on the purpose for which the AI is being used. (Table 2.1)

Table 2.1 Three different types of AI (Huang & Rust, 2020, p.33-34).

Type of AI	Function
Mechanical AI	Mechanical AI offers an automated solution for repetitive and high-volume tasks such as data collection about customers, competitors, and other factors. Mechanical AI can also be used in automating different manual processes in promotional campaigns, like bidding, and segmentation.
Thinking AI	Thinking AI can be used to identify insights from data about the market and analyze competitors. This can be used to identify advantages and weaknesses, personalize offerings and marketing based on customer preferences, as well as in predictive analytics to predict factors like trends and demand.
Feeling AI	Feeling AI can be used to understand existing and potential customer needs and wants. This can help marketers to gain insights into customer sentiments, feelings, preferences, and attitudes. Insights gained by feeling AI can be used to manage the brand image, position the company, and personalize the messaging in a way that resonates with their potential customers emotionally.

This three-stage framework looks at different features and implementations of artificial intelligence separately and divides them based on their individual characteristics. For marketers, it is vital to know that artificial intelligence can function in multiple different roles based on the way that it is implemented into the marketing process. (Huang & Rust, 2020.)

2.1.1 Artificial intelligence in digital promotions

In recent years artificial intelligence has been constantly improving and being applied to new areas of digital marketing and promotions. When implemented correctly using artificial intelligence in digital marketing and promotional campaigns does not only benefit the marketer but the customers as well. (Figure 2.3).

For marketers, artificial intelligence is a very useful tool because it offers a data-driven and automated approach to many promotional tasks and processes. Some of the most common implementations are chatbots, recommendation engines, programmatic advertising, and different analytical purposes. (Haleem, 2022.)

Figure 2.2 Benefits of using AI in marketing. (Jain & Aggarwal, 2020, p.3965).

Key benefits for the marketer are the improved efficiency of marketing processes that are achieved with automation, and the ability to process and analyze large masses of customer data that can be used for marketing actions. The benefits for the customers revolve around improved customer experience and more personalized experiences that companies are able to provide with the help of artificial intelligence. This is possible by using artificial intelligence to analyze customers' their behavior and preferences based on historical data and browsing data to gain a better understanding of consumers and their needs. This greater level of insights combined with automation allows the marketer to tailor the offering more accurately for individual consumers which allows more personalized experiences that increase customer satisfaction while also improving the effectiveness of promotions. (Jain & Aggarwal, 2020.)

Artificial intelligence has become one of the key factors improving promotional campaigns and it is being leveraged by marketers in various stages of promotional campaigns. Artificial intelligence offers efficient tools and solutions for many marketing processes, like targeting, segmenting, content creation, analytics, automated communications, media buying, and dynamic pricing. (Jain & Aggarwal, 2020.)

Various studies have been conducted on artificial intelligence's impact on marketing and promotional campaigns, and they have demonstrated that AI has a large impact on the performance of different promotional processes. Brandtzaeg and Følstad (2017) studied chatbots and found that they improve customer service by offering instant, personalized responses, leading to higher satisfaction. In their study 80% of customers who used chatbots had a positive experience. Jannach and Adomavicius (2016) studied recommendation engines and reported that personalized recommendations can boost sales by 10-30% by analyzing customer data and suggesting highly relevant products. In a study on programmatic advertising Nikolinakou and King (2018) showed that using AI to automate ad buying and placement leads to a 32% increase in click-through rates (CTR) and a 27% reduction in cost-per-acquisition (CPA). Zhu and Xu (2021) found that AI-tailored social media posts can achieve higher engagement than generic posts by offering more tailored content. Gentsch (2018) found that companies using AI for predictive analytics improved their return on investment (ROI) by up to 25% by leveraging historical data and patterns. Wedel and Kannan (2016) found that AI-based segmentation outperforms traditional methods by identifying more precise customer segments, leading to higher conversion rates.

These studies highlight how AI enhances the precision, efficiency, and effectiveness of marketing efforts, resulting in better outcomes for both marketers and customers. As research continues to evolve, the role of AI in marketing is expected to grow and its market value is expected to increase drastically in the coming years as it provides new opportunities and implementations. (Figure 2.4)
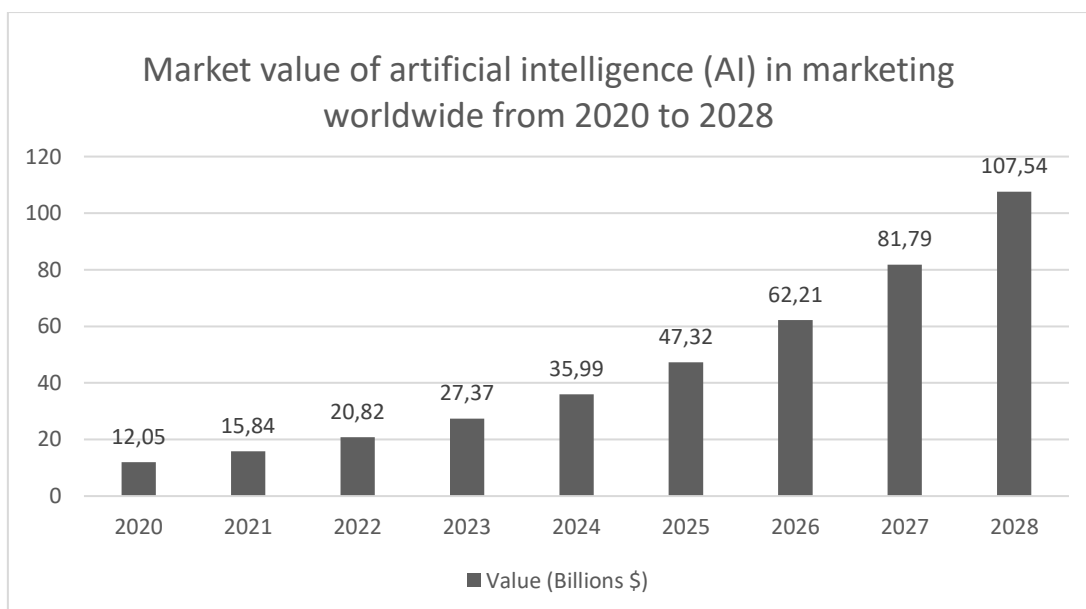

Figure 2.3 Market value of AI in marketing worldwide from 2020 to 2028 (Statista, 2020, N.P).

With advancements in technology, artificial intelligence-based tools have started to become more accessible and gained many new applications in digital marketing. A study conducted by Statista (2020) expects the market value of artificial intelligence in digital marketing to increase almost ten times from the year 2020 to the year 2028. This estimation indicates that we are currently in the very early stages of the adoption of artificial intelligence in digital marketing.

2.1.2 Limitations of artificial intelligence

Even though artificial intelligence has made some major advancements in recent years there are still multiple factors that limit its functionality and implementation. These limitations span technical, and ethical dimensions, influencing and restricting responsible development and deployment of artificial intelligence. (Chowdhury & Sadek, 2012.)

The technical factors limiting artificial intelligence revolve around the framework of artificial intelligence, the technologies behind it, and its data dependency. Artificial intelligence algorithms are very effective at solving complex problems but the structure of artificial intelligence and neural networks that involve multiple hidden layers creates a so-called "black box problem". Because the decision-making process involves multiple different hidden layers that all influence the outcome it makes it very difficult for marketers to analyze how artificial intelligence ended up to a specific solution. When running a promotional campaign this can cause problems when trying to find out the reason why AI has made a certain optimization to a campaign, like adjusted the budget, segments, targeting, or ad placement. (Chowdhury & Sadek, 2012.)

Artificial intelligence is dependent on data which means that it can only function based on the data it is provided with. This means that in order for it to function and solve problems it must have relevant data available in order to solve the issue. When training the algorithm, the training data is highly influential on its functionality. If the training data is biased or otherwise inaccurate it can cause the artificial intelligence algorithm to provide biased or unreliable results and outcomes like having algorithms target individuals that are not potential customers with promotional content and making chatbots unable to find solutions for customers questions. (Nancholas, 2023.) A great example of how biased training data can influence the output of AI algorithms is political biases that some generative AI models have been noticed as having. Heikkilä (2023) in her article observes that different generative AI models have different political biases due to biased training data that has been used to train the models. These political biases were clearly noticeable when AI models needed to address different politically charged questions as they gave answers that noticeably leaned toward specific political narratives (Heikkilä, 2023).

Training of an AI algorithm is done by setting weights to different nodes and adjusting these weights so that each node will have the correct influence on the output. The training process can be very labor-intensive because it is based on a trial-and-error approach and might require many attempts before it is correctly adjusted. (Chowdhury & Sadek, 2012.) When training the algorithm there is also a risk of under- or overfitting the algorithm. Underfitting refers to a situation where the artificial intelligence algorithm is trained with too simple datasets that cause it to not be able to recognize patterns. Overfitting an algorithm refers to a situation where the artificial intelligence algorithm is trained with too specific datasets causing it to not adapt well when introduced with new data. Both underfitting and overfitting algorithms limit the algorithm's ability to generalize to new, unseen data, leading to reduced performance in real-world scenarios. For example, if the algorithm that is used for targeting is underfitted it might target a too broad audience and waste resources but if the algorithm is overfitted it might target too specific consumer group based on the training data and miss potential customers. (IBM, 2023c) Because artificial intelligence relies on data to function and bases its decision-making on the algorithms it also lacks common sense and contextual understanding as well as empathy which means that artificial intelligence might not be able to grasp factors that people consider common sense as well as the context of different scenarios. This can cause difficulties in situations like when generating content with AI where the algorithm might not take into conservation factors that are considered common sense if they are not included in the dataset. (Nancholas, 2023.)

Artificial intelligence is a disruptive technology and its ability to automate more complex tasks than ever before has the potential to cause a major job displacement among many industries. The disruptive impact that artificial intelligence could have is one of the reasons why ethical factors are relevant to consider when implementing artificial intelligence. Mistakes and damages caused by artificial intelligence have also raised a lot of liability issues. The main question being, who is liable for damages caused by artificial intelligence? The liability issue has recently raised a lot of discussion especially around the topic of self-driving cars and on the question that who is liable in a case where self-driving car crashes. (Chowdhury & Sadek, 2012; Nancholas, 2023.) Another ethical factor that has caused a lot of discussion is data privacy. Individuals and organizations are concerned about who has access to their data and what purposes the data is being used. A great example of this is Meta's new privacy policy that allows them to use user content to train their generative AI. This has caused a lot of discussion, and many users are opposing that their data would be used. (Heikkilä 2024.)

2.2 Machine learning

As a field of study machine learning is a part of computer sciences, and it is considered as a branch of artificial intelligence. Machine learning is one of the key fields of research reshaping the way computers learn patterns and make decisions using data and algorithms. (IBM, 2020) These machine learning algorithms give computers the ability to make accurate predictions of the outcomes based on input data and improve the accuracy of its predictions over time as it is introduced to new data. These machine learning algorithms allow marketers to automate complex tasks like analytics, predictions, and dynamic optimization. (IBM, 2020; Zhang, 2019.)

The basic idea behind machine learning is that a computer is provided with a set of sample data. From this dataset, the software seeks patterns and relationships and their influence on the outcome. This sample data and the influential factors and patterns recognized can be used to base predictions on when the software is introduced with new and unseen data. This can be used to predict customer behavior based on historical data of similar individuals. (IBM, 2020) The new data and the outcomes of it are also used to adjust the machine learning algorithm in order to improve its accuracy and performance and this way the software is able to learn on its own without human interaction. So essentially the main goal of machine learning is to make it possible for computers to learn on their own, without additional programming or other aid from humans. (IBM, 2020; Zhang, 2019) The basic machine-learning process can be divided into three different steps that drive the machine learning process (Table 2.2)

Table 2.2 Steps of the machine learning process (UC Berkley, 2020, N.P)

Step of the machine learning process	Function
A decision process	The computer analyzes the data and guesses what type of pattern the algorithm is trying to identify.
An error function	Measuring how accurate the guess was compared to known examples and assessing how the decision process went and what went wrong.
An updating or optimization process	The algorithm assesses the decision process, and the mistakes made and then updates the process in a way that the error will not occur again or will be smaller.

In this three-step process, the first step is the decision process where the algorithm makes a prediction based on the input data and tries to identify what kind of pattern the algorithm is trying to find. After the decision process, the error function compares the output of the algorithm to known examples from the training dataset in order to analyze the accuracy of the decision process. The last step is the optimization process where the algorithm tries to adjust and improve the decision process based on the error function. This three-step process repeats itself over and over again which allows the machine learning algorithm to improve by itself over time and to be able to provide increasingly accurate predictions. (UC Berkley, 2020.)

Machine learning models can be categorized into four different categories: supervised-, unsupervised-, semi-supervised-, and reinforcement machine learning. (Table 2.3)

Table 2.3 Categories of machine learning (IBM, 2020, N.P).

Category	Function	Use in promotional campaigns
Supervised machine learning	Supervised machine learning trains algorithms to classify data or predict outcomes by using labeled datasets as training data. This training data includes examples of one or multiple inputs and the desired outputs for different input data. Based on these example patterns and input-output relationships the computer is able to make accurate output predictions when it is introduced with new and unseen input data.	In marketing, this can be used for example in predictive customer segmentation. The machine learning model is trained using, historical customer data with labeled information like past purchase behavior. This model can then be used for segmenting in targeted campaigns, by predicting which customers are more likely to respond positively to a particular promotion based on past interactions.
Unsupervised machine learning	The main function of unsupervised machine learning is to find commonalities or the lack of them in a dataset and react based on the findings. An unsupervised machine learning algorithm bases its predictions on unlabeled training data that is used to train the algorithm.	In digital marketing, market basket analysis is a great example of the use of unsupervised machine learning. It involves analyzing customer transactions to identify products frequently purchased together. This information can inform strategies like product recommendations and bundling.
Semi-supervised machine learning	Semi-supervised machine learning falls in between supervised- and unsupervised machine learning. In semi-supervised machine learning, some of the data has labels and some of the data does not. The labeled part of the dataset guides the data classification process and can improve the	In digital marketing, sentiment analysis on social media is a common case where semi-supervised machine learning is used. The model might be initially trained on a small set of labeled data, like comments, and then applied to

	accuracy of the algorithm's pre-dictions compared to an algo-rithm trained with a completely unlabeled dataset.	a larger dataset to under-stand the overall sentiment around a brand or prod-uct.
Reinforcement machine learning	Reinforcement machine learning is in many ways very similar to supervised machine learning but instead of using labeled training data, the learning process is based on feedback. This feedback is given on a trial-and-error basis, and it works by rewarding suc-cessful behavior and punishing unsuccessful actions. This way the algorithm will discover the desired outcome by itself as it tries to cumulatively collect posi-tive rewards and avoid negative punishments.	In digital marketing, rein-forcement learning can be applied to optimize ad campaigns. The model learns to make decisions like adjusting different as-pects of the campaign to maximize the reward which in this case can be a KPI like clicks or conver-sions. Over time, the model adapts its strategy based on feedback from the performance of previ-ous decisions.

Each of these machine learning methods has its own features and functions that affect its ability to complete different tasks and influence the way how they can be applied to different scenarios and purposes. Machine learning has very versa-tile applications across most industries such as risk management in finance, in-ventory management in retail, and diagnosis and treatment plan purposes in healthcare. In marketing and promotional campaigns, machine learning is most commonly utilized to analyze consumer data, provide tailored advertisements, analyze and predict consumer behavior, automate marketing processes, and au-tomatically adapt and adjust marketing campaigns once new campaign data is introduced. For consumers, one of the most familiar forms of machine learning-assisted marketing is recommendation engines that recommend products to us-ers based on the purchase data of similar consumers. (IBM, 2020.)

2.2.1 Neural networks and deep learning

Neural networks are a machine learning framework inspired by the structure and function of the human brain. These networks are computational models made up of interconnected nodes, or neurons, arranged in layers. They excel at learning complex patterns and relationships from data, making them highly effective for tasks such as classification, regression, pattern recognition, and more. The fun-damental unit of a neural network is the neuron, which processes input signals

through an activation function and generates an output signal. Neurons are typically organized into an input layer, one or more hidden layers, and an output layer. The connections between neurons, represented by weights, determine the strength of one neuron's influence on another. (Figure 2.5)

Input layer   **Hidden layers**   **Output layer**
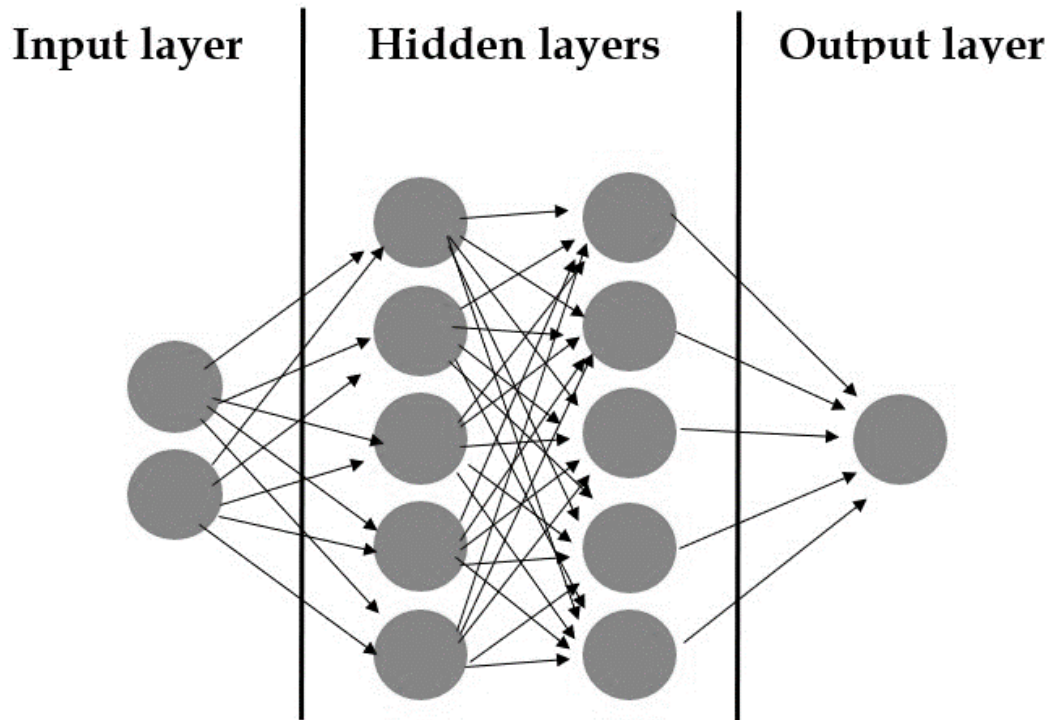
Figure 2.4 Structure of neural networks (IBM, 2023d, N.P).

The training process, for the neural networks is achieved through iterations and adjustments of weights between neurons. This is done by presenting the network with labeled data and adjusting the weights with the goal of minimizing the difference between predicted and actual outputs. This iterative learning process is done through backpropagation, where the error is propagated backward through the network, leading to adjustments in the weights. (IBM, 2023d.) Training the network helps the algorithm to map input data to the desired output and enables the neural networks to recognize complex patterns. The depth of the network allows for the extraction of hierarchical features, enabling the model to learn intricate patterns and representations. The ability to learn these complex patterns makes neural networks very effective at tasks where traditional algorithms fall short, such as image and speech recognition, natural language processing, and autonomous decision-making. (Goodfellow, 2020.)

Neural networks offer a number of different types of architectures to fit the needs of specific tasks. The most fundamental architecture is feed-forward neural networks that are comprised of an input layer, hidden layers, and output layer with the information only flowing in one direction. These are also referred to as multi-layer perceptrons (MLPs). MPLs are often used in customer segmentation, predictive modeling, and personalized recommendations. Convolutional Neural Networks (CNNs) are similar to feed-forward networks, but they specialize in image recognition by recognizing patterns through convolutional layers. CNNs are utilized in tasks with visual content, like visual content analysis and image recognition. Recurrent neural networks (RNNs) are characterized by their feedback loops that allow the algorithm to learn based on the feedback of its predictions. Recurrent neural networks are used to make predictions about future outcomes, process sequences, and tasks like language modeling, dynamic pricing, and inventory management. (IBM, 2023e.)

One of the applications for neural networks is a subfield of machine learning called deep learning. What sets deep learning apart from machine learning is that it utilizes neural networks' multi-layer framework to function, which allows it to learn hierarchical representations. (IBM, 2023d.) The training of deep learning algorithms is done the same way as the training of neural networks, so the process involves using labeled data to adjust the weights of nodes as in the training of neural networks. Compared to machine learning algorithms neural networks and deep learning offer greater capabilities to process information and make accurate predictions. This can be harnessed to marketing in functions like chatbots, recommendation engines, and automated campaign optimization where understanding hierarchical representations can offer new possibilities for improved functionality (IBM, 2023d.)

2.2.2 Natural language processing and computer vision

Natural language processing and computer vision have risen as two key elements for bridging the gap in communication between humans and computers. Natural language processing focuses on understanding humans' linguistic input and generating language and computer vision focuses on allowing computers to understand in interpret the visual world. (IBM, 2023a; IBM, 2023b.)

The main goal of natural language processing is to give computers the ability to understand and generate human language in a way that mimics human understanding. Natural language processing algorithms are based on intricate layers of syntax, semantics, and pragmatics, that allow the machines to understand the nuances of language, from simple word associations to the complexities of sentiment and context. Some of the most common applications for natural language processing include applications like chatbots, language translation, and sentiment analysis. (IBM, 2023a.)

The goal of computer vision is to replicate the way humans view the visual world and allow computers to understand and interpret visual information. Computer vision relies on vast amounts of data, and convolutional neural networks in order to break down images into labeled pixels and make predictions of what it is seeing based on the data. The main applications for computer vision include image recognition and object detection to facial recognition and scene understanding. In digital marketing and promotional campaigns, it can be used in things like image recognition, video analysis, visual search, content moderation, ad placement, and augmented reality (AR) marketing. (IBM, 2023b.)

2.2.3 Generative adversarial networks

General adversarial networks is an architecture introduced by Ian Goodfellow and his colleagues in 2014 that utilizes the power of deep learning and neural networks in order to create synthetic data. Generative Adversarial Networks consist of two neural networks that are competing against each other, a generator and a discriminator. (Figure 2.6)

Training the generator

Figure 2.5 GAN structure (Google, 2024, N.P).

The generator creates synthetic data samples using neural networks, and the discriminator evaluates them, trying to distinguish between real and fake data. The goal is for the generator to produce samples that are so indistinguishable from real data, that the discriminator cannot tell them apart. The two neural networks are competing against each other and the information provided by the discriminator is used to adjust and optimize the generator leading to the generation of increasingly realistic synthetic data. (Goodfellow, 2020.)

General adversarial networks can be applied across the field to generate synthetic data for different types of promotional purposes. Some of the most used applications for general adversarial networks in promotional campaigns are the generative AI models that can be used to generate content such as text, images, video, and audio. Creating high-quality promotional content such as texts, images, narrations, and videos is vital for promotional campaigns as the content is one of the most crucial factors regarding the success of the campaign. (Huang & Rust, 2020.)

The creation of high-quality promotional content can be a time-consuming and expensive task for businesses, as the production of this content usually requires extensive planning and labor. Generative AI tools can significantly alleviate these challenges by providing advertisers with the ability to produce content tailored to their specific needs in an automated and efficient manner. Using AI-generated images offers several benefits for promotional campaigns. AI tools allow the advertiser to generate high-quality content that is specific to their needs with a push of a button based on prompts and descriptions. Using AI image generation advertisers can also make quick adjustments and customization to this content without the need for a reshoot or redesign. These tools can generate a large number of images easily which can help the advertiser when a large number of promotional images or image variations is needed. AI-generated images are created from scratch which eliminates the concerns about copyright infringement that can arise when using stock photos or images sourced from the internet. Traditional photoshoots can also be costly, involving expenses for photographers,

models, locations, and post-production editing. AI-generated images can drastically reduce these costs by creating high-quality visuals without the need for physical resources. (Huang & Rust, 2020.)

A great example of just how realistic AI-generated images can be is a publicly accessible website called this-person-does-not-exist.com which uses artificial intelligence and general adversarial networks to randomly generate realistic-looking human portraits that are almost indistinguishable from real photographs. (Figure 2.7).

Figure 2.6 AI-generated portraits (This Person Does Not Exist, 2023, N.P)

These artificial intelligence-generated images give the advertiser the ability to create high-quality marketing images without photographers, models, and photoshoots. Using artificial intelligence in image generation for marketing can help advertisers get images for specific purposes quickly and easily. Using these images can also vastly reduce the costs of promotional campaigns since there is no need for the advertiser to pay for models, photographers, or third parties in order to get high-quality promotional content. (Hutchinson, 2022.)

Artificial intelligence and General adversarial networks can also be used in video generation. Creating videos from scratch requires a lot more computing power than image generation which is the main reason why it has not yet been as commonly used as image generation. One form of artificial intelligence-based content generation that has raised a lot of concerns is deep fake videos. Deepfake videos are videos where artificial intelligence and general adversarial networks are used to alter the video or parts of it. In these deepfake videos existing video is altered with synthetic media in a way that the person in the video is replaced with someone else's likeness so that it looks like someone else is doing or saying the things

in the video. These deepfake videos can be very realistic looking and convincing which has raised concerns about them being used unethically and maliciously to create misleading and false content. This can lead to damaging promotional campaigns, where fake endorsements or fabricated statements from influential figures are used to deceive consumers, erode trust in brands, and manipulate market behaviors. (Kietzmann et al., 2019.)

In addition to text and visual content also artificial intelligence-based audio content can be useful for promotional purposes. The most common forms of artificial intelligence-based audio content are different text-to-speech features and voice assistants. For promotional purposes, these AI-powered audio generators can used for different types of voiceovers, narrations, and audiobooks. (Hasegawa-Johnson, 2017.) Using artificial intelligence to generate this content can make the content creation process faster and more efficient since there is no need for real voice actors, practicing the script or multiple takes. Instead, in these audio generators artificial intelligence is used to generate realistic-sounding human audio based on a script with a push of a button. These AI-driven audio generators leverage machine learning algorithms and use recordings of real voice actors to create authentic-sounding human audio from text. (Mahajan, 2020.) For most consumers, one of the most familiar forms of artificial intelligence-based voice content is voice assistants, like Siri and Google Assistant. They use speech recognition powered by natural language processing to identify users' questions and provide answers and recommendations using deep learning algorithms and artificial intelligence-based voice generation. (Natale, 2020.)

2.2.4 Examples

Machine learning technologies can be used in promotional campaigns for many different purposes based on the needs and goals of the campaign. This chapter presents a few examples of how these technologies can improve different processes in promotional campaigns.

AI-Chatbots

The digital environment has allowed customers to access businesses' websites and make purchases from online stores around the clock which means that there is a demand for customer service to be available whenever customers need it (Anderson, 2012). Historically, customer service relied on phone lines, emails, and chats. However, a significant drawback of these methods is the constant need for human labor, making them expensive to operate which poses challenges, especially for smaller businesses. To solve these challenges companies are implanting artificial intelligence-based chatbots on their websites. (Jain & Aggarwal, 2020.)

Chatbots are artificial intelligence-powered bots that are trained to recognize and answer customers' questions and help with various customer issues based on data and patterns without any human interaction from the business. Chatbots use natural language processing to understand users' queries and extract relevant information. Deep- and machine-learning algorithms are used to provide answers for customers based on these queries and to improve bots' performance over time as they collect more data. This feedback based on past queries is used to adjust and optimize the algorithm which helps it to adapt and provide more accurate answers in the future. This learning process also has the risk of negatively impacting the performance of the chatbot if the feedback that it receives is incorrect. (Jain & Aggarwal, 2020.)

The implementation of artificial intelligence-based chatbots can help to cut back on costs and reduce the workload of customer service as they can provide the solution for the most common and basic issues automatically and only direct issues that it is unable to solve to a real customer service representative. Chatbots also work around the clock so it can provide customer service for the most common issues 24/7 even if the customer service representative is not available. Another benefit that chatbots offer is that they respond to customers' inquiries almost instantly which can improve the customer experience by reducing wait times that customers commonly experience when waiting for real-life customer service. (IBM, 2022c.)

Recommendation engines

For many online stores and platforms recommendation engines have become one of the key features providing customers with personalized and targeted suggestions. Recommendation engines leverage artificial intelligence and deep learning algorithms to provide personalized content, product recommendations, and experiences to their customers. (Akerkar, 2019.) The most common purposes of using recommendation engines are to improve customer experience and boost upselling and cross-selling by recommending products and content that is relevant to the customer. Some of the most common ways to utilize recommendation engines are on e-commerce to recommend products based on customers browsing and purchasing data and on entertainment platforms such as streaming services and news sites to recommend content based on previously viewed content. (Ansari, 2016.)

There are two main approaches and algorithms that are used in recommendation engines which are Collaborative Filtering and Content-Based Filtering. (Akerkar, 2019.) Collaborative Filtering is based on using shared user experiences to provide relevant recommendations. Collaborative filtering analyses historical inter-

actions and preferences of previous users in order to predict what would be relevant content for a specific user. Based on these past interactions it recommends content that has been relevant to other users with similar demographics, preferences, or browsing and purchasing histories. (Brusilovsky, 2007.) This can be a good method for cross-selling since using collaborative filtering can also suggest other products that are related in some way to the product in question. It follows the idea "People who bought this also bought…" so for example when buying a printer, it might also recommend printing paper and ink. One of the key disadvantages of collaborative filtering is the so-called cold-start issue. This happens when starting to use collaborative filtering without or with a small amount of user data. When collaborative filtering is used with a small amount of historical data it struggles to provide relevant suggestions. The more data is collected the more accurate the suggestions are going to be when using collaborative filtering. (Brusilovsky, 2007.)

Content-based filtering is the other approach and instead of shared experiences it bases the recommendations on the content itself. Content-based filtering recommends products or content based on the attributes of the items themselves and the user's historical preferences (Brusilovsky, 2007). The main elements of content-based filtering are the item representations and user profiles. In content-based filtering products or content is analyzed based on a set of attributes and features of the product itself and this is used to define what kind of product or content is in question. A user profile is used to define what type of content the specific user is interested in. A user profile is collected based on data on users' previous behavior and preferences, such as reviews, likes, and ratings. Content-based filtering follows the idea that "you are interested in this product so you might also be interested in similar products". This means that the recommendation engine suggests similar products, for example when buying a printer, it might offer multiple different options of printers that are similar based on their attributes. This method also allows the advertiser to target individuals and audiences that have similar attributes and characteristics as their main audience or target group. Using this approach solves the cold start problem because the products are recommended based on how well the attributes match the user profile which means it does not require as large amount of data to function as collaborative filtering. (Akerkar, 2019.)

Targeting and segmentation

In order to enhance the precision of marketing efforts, marketers use segmentation and targeting as tools to better direct promotional efforts towards specific customer groups. Segmentation focuses on identifying different groups within a company's customer base and targeting is a method to direct specific marketing content and promotional efforts towards specific audiences. Artificial intelli-

gence allowed companies to improve their segmentation and targeting by offering a data-driven and automated approach to dividing customers into different segments and targeting each segment with tailored messaging. (Huang & Rust, 2020.)

Customer segmentation is a fundamental practice in marketing that involves dividing a company's customer base into distinct segments based on specific set characteristics and behavioral factors. The primary objective of segmentation is to group customers who exhibit similar behaviors and preferences, allowing businesses to tailor their marketing efforts to effectively target each segment. When executed correctly, segmentation can significantly enhance marketing efficiency, as it ensures that advertising is relevant to each group of customers, increasing the likelihood of conversion. (Huang & Rust, 2020) Artificial intelligence has allowed advertisers to automate the segmentation process and create very defined micro-segments efficiently that can be targeted with tailored content. It also gives the advertiser the ability to have dynamic customer segments that move customers in and out of the segments based on changes in customer data and their behavior, like if they express interest in a specific product or do a certain action such as register to a mailing list. (Mandapuram, 2020.)

Targeting means directing promotional efforts toward a specific target group based on a set of specific characteristics, behaviors, interests, or other factors. The purpose of targeting is to enhance the precision of promotional efforts, aiming to improve results as advertisers can tailor marketing efforts based on the preferences and characteristics of a specific target segment. (Chaffey, 2012.)

One of the most commonly used methods of utilizing artificial intelligence in targeting is called predictive targeting. Predictive targeting uses artificial intelligence and machine learning algorithms to analyze large masses of demographic, and behavioral consumer data to identify the connection between these factors and individuals' buying behavior. The goal is for artificial intelligence to identify the most influential characteristics and behaviors influencing the buying behavior from the data and target promotional efforts based on these insights to similar audiences. For example, if the most profitable segment for a product is men, aged 18 to 25 years old, located in Helsinki, and interested in sports the advertiser can use predictive targeting in order to reach similar individuals. (IBM, 2022a.)

2.3 Big data

In the quickly changing and developing field of marketing, the integration of Big Data has emerged as one of the key components of efficient and successful promotional campaigns (Garduno, 2022). This chapter offers a deeper look into the role that Big Data plays in shaping promotional strategies.

The term Big Data refers to the collection, processing, and analysis of extensive and diverse datasets, both structured and unstructured. In marketing, it functions as one of the key factors helping marketers to depart from conventional strategies by supporting the implementation of artificial intelligence-powered marketing strategies that offer vastly improved precision, personalization, and efficiency. At its core, Big Data in promotional campaigns is used as a tool for discovering patterns, correlations, and hidden factors within large datasets, which can offer marketers key insights into consumer preferences and -behavior. These insights can help with targeting, segmentation, and strategic decisions. (Garduno, 2022; Kwon, 2017.)

For marketers, big data works as a useful tool to guide decision-making, support automation, and help advertisers provide effective promotions to individual consumers (Chen & Popovich, 2013). According to a study conducted by Chen and Popovich (2013), Big Data can provide valuable insights into consumer needs and behavior allowing advertisers to tailor their promotional efforts to the specific needs and preferences of their customers. Big Data can also help advertisers identify new market trends and opportunities that might otherwise go unnoticed (Haleem, 2022).

Designing and running a promotional campaign effectively involves a large amount of planning and analysis. For these analytical purposes, big data combined with artificial intelligence's ability to efficiently process large masses of data opens up new opportunities for advertisers to gain data-driven insights about their customers, campaigns, and performance. These insights can function as a powerful tool for better understanding customer behavior, refining strategies, and unlocking the full potential of marketing campaigns. These insights can help marketers make strategic decisions like choosing promotional channels, setting goals, predicting outcomes, and adjusting campaign elements, like messaging, advertisements, budget, bidding, ad placement, segments, and targeting. (Haleem, 2022.)

Big data and artificial intelligence-based programs can significantly enhance the efficiency of planning and adjusting promotional campaigns by automating and

assisting various steps, including keyword research, bid management, trend forecasting, and customer segmentation, empowering marketers to streamline their efforts and maximize campaign performance. (Verma, 2020.) Artificial intelligence can also be used to efficiently and automatically AB-test different factors of the campaign based on real-time data in order to find the optimal setting for different factors of the campaign (Haleem, 2022).

In campaign planning, different predictive models have a large role in guiding the decision-making process. In order to make predictions efficiently artificial intelligence can be used to analyze historical data to make predictions of future behavior. This can help marketers identify new trends and other factors, like the likelihood of conversions or churn. This information helps marketers allocate their budget effectively as well as guide different predictive marketing processes, like employing customer retention tactics to customers that are likely to churn. (Piyushin, 2020.)

Even though big data can offer companies a great amount of insight into consumer behavior its implementation also has its challenges. The main challenges for using big data revolve around the collection of data and its analysis process. In order to utilize big data efficiently companies must make sure that the data that they collect is valid and relevant for the purposes that they are using it. Using irrelevant or inaccurate data can cause difficulties and lead to making completely incorrect decisions. In the analysis process choosing the right tools to analyze the data as well as using the relevant data for the specific factor that is being analyzed are crucial for gaining meaningful information and insights from large masses of data. Using the wrong tools in the analysis process can mean that the marketer is not able to find the patterns and insights from the large masses of data. (SAS, 2022.)

2.4   Programmatic advertising

Among advertisers, one of the more advanced advertising tools that leverages artificial intelligence is programmatic advertising. Programmatic advertising is an automated advertising method that uses artificial intelligence to buy, optimize, and create advertising. The main role of programmatic advertising is to use artificial intelligence to recognize audiences in order to optimize the placement of advertisements and personalize the advertisement to show the right advertisement to the right person at the right time. (Sancheza et al., 2019.) Programmatic advertising is very commonly used among advertisers because it offers a great level of automation that can be used to run advertising campaigns more dynamically and efficiently compared to traditional digital advertising methods (Busch, 2016).

2.4.1 Programmatic ecosystem

Programmatic advertising consists of two main components, that are programmatic media buying and programmatic creative. Programmatic media buying consists of three platforms that are Sell side platform (SSP), the Demand side platform (DSP), and the Ad exchanger. Programmatic creative consists of two platforms which are the Content Management Platform (CMP) and the Programmatic Creation Platform (PCP). The programmatic creation platform has two different features that are Programmatic advertisement creation (PAC) and Dynamic creative optimization (DCO). (Figure 2.8)
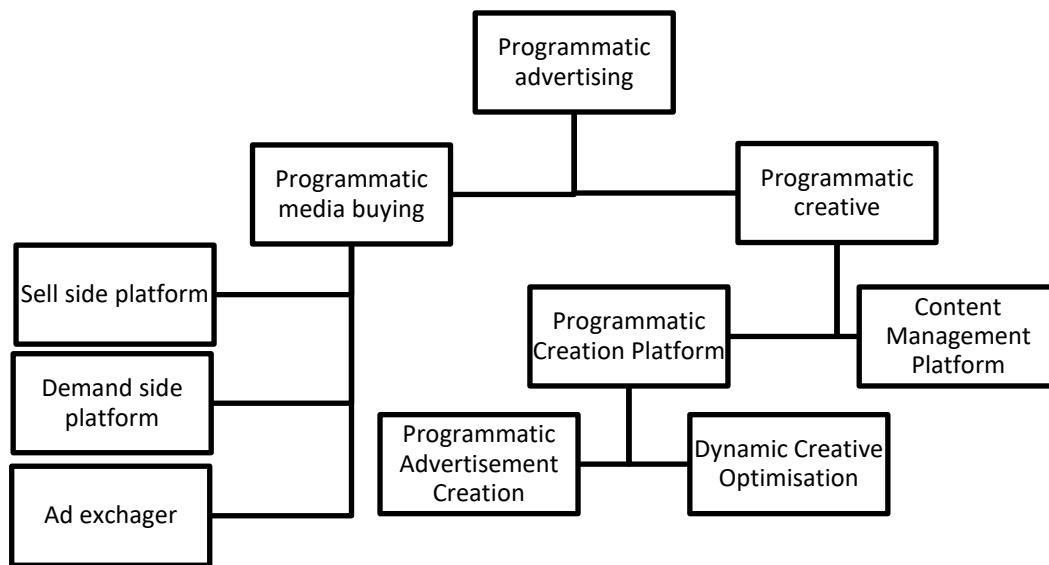
Figure 2.7 Structure of Programmatic ecosystem. (Busch, 2016, p.79-82).

Programmatic media buying and programmatic creative both play their own role in programmatic advertising. Programmatic media buying utilizes artificial intelligence-based software to improve the promotional process by automating the purchasing process of digital advertising and dynamically placing advertisements on websites. Programmatic creative is a form of programmatic advertising that focuses on personalizing the advertisement based on the individual to whom the advertisement is shown. (Busch, 2016.)

2.4.2 Programmatic media buying

The three main components of a programmatic media buying ecosystem are the sell-side platform, demand-side platform, and ad exchanger. The sell-side platform is used by publishers to list and manage their inventory of the advertising spots that they are selling. The demand side platform is used by advertisers and marketing agencies to purchase advertising spots from publishers in an automated manner. An ad exchanger is a platform that connects the supply and demand sides of the ecosystem and works as a marketplace that facilitates the purchasing process. (Busch, 2016.)

Programmatic media buying can be done in three different ways that are real-time bidding, private exchange buying, and programmatic guarantee. In real-time bidding, the price of the advertising spot is decided by an auction-based process that is open to all advertisers to participate. Private exchange buying fol-

lows a similar process as real-time bidding, but the auction is only open to se-lected advertisers. The last method is the programmatic guarantee which differs from the other two methods because it does not use an action-type process. In-stead, private exchange buying is used when advertising space is sold directly to an advertiser at a fixed cost per mille price. (IBM, 2021b.)

2.4.3 Programmatic creative

The other main component of programmatic advertising is Programmatic crea-tive which aims to efficiently create a large number of tailored advertisements that can be used for tailored promotions towards specific target groups based on customer data and preferences. Programmatic creative consists of two main plat-forms which are the Programmatic creation platform (PCP) and the Content man-agement platform (CMP). (Bakpayev et al., 2022.)

The Programmatic Creation Platform has two different elements that are Pro-grammatic advertisement creation (PAC) and Dynamic creative optimization (DCO). Programmatic advertisement creation is responsible for creating a large number of personalized advertisements based on large masses of demographic and behavioral customer data. Dynamic Creative Optimisation is the other ele-ment of the Programmatic creation platform, and it is responsible for testing the performance of advertisements created by the Programmatic advertisement cre-ation. Dynamic Creative Optimisation tests the advertisements on different au-diences and target groups and automatically optimizes and adjusts the targeting and advertisements in order to reach the optimal performance for the campaign. Programmatic advertisement creation offers a data-driven approach to creating and optimizing large amounts of tailored advertisements which makes it ideal for situations where the advertiser has a large amount of different advertised products and various target groups. The main downside of Programmatic adver-tisement creation is considered to be the lack of customization possibilities for individual advertisements. (Bakpayev et al., 2022.)

The Content Management Platform is the other platform that is part of the pro-grammatic creative. Content Management Platform also focuses on the efficient creation of advertisements but offers advertisers more ability to customize and tailor the advertisements. Content Management Platform allows the advertiser to create advertisements in multiple different shapes and sizes efficiently using wireframe structure and automated design elements. Using this method adver-tisers can set the wireframe structure themselves and better design the elements like logos and product images that are being used in the advertisements. The main advantage of a Content management platform compared to programmatic advertisement creation is the greater control to customize the advertisements and the ability to edit individual advertisements whereas the advertisements created

by programmatic advertisement creation are automatically generated based on the used dataset. (Bakpayev et al., 2022.)

2.4.4 Benefits of programmatic advertising

When comparing programmatic advertising to traditional ad creation and media buying the key benefits lay in the automation and the data-driven approach that the programmatic advertising allows advertisers to utilize. Programmatic media buying makes the media buying process more efficient by automating and optimizing the bidding and purchasing process. Compared to the traditional advertisement creation process programmatic creative drastically improves the efficiency of advertisement creation and allows the advertiser to create large masses of advertisements automatically which would not be possible using traditional methods. It also gives the advertiser the ability to offer potential customers more personalized and tailored advertising than ever before. (IBM, 2021b.) Even more companies have recently adapted programmatic advertising to their marketing operation and the marketing spending for programmatic advertising is expected to increase in the next few years. (Figure 2.9)
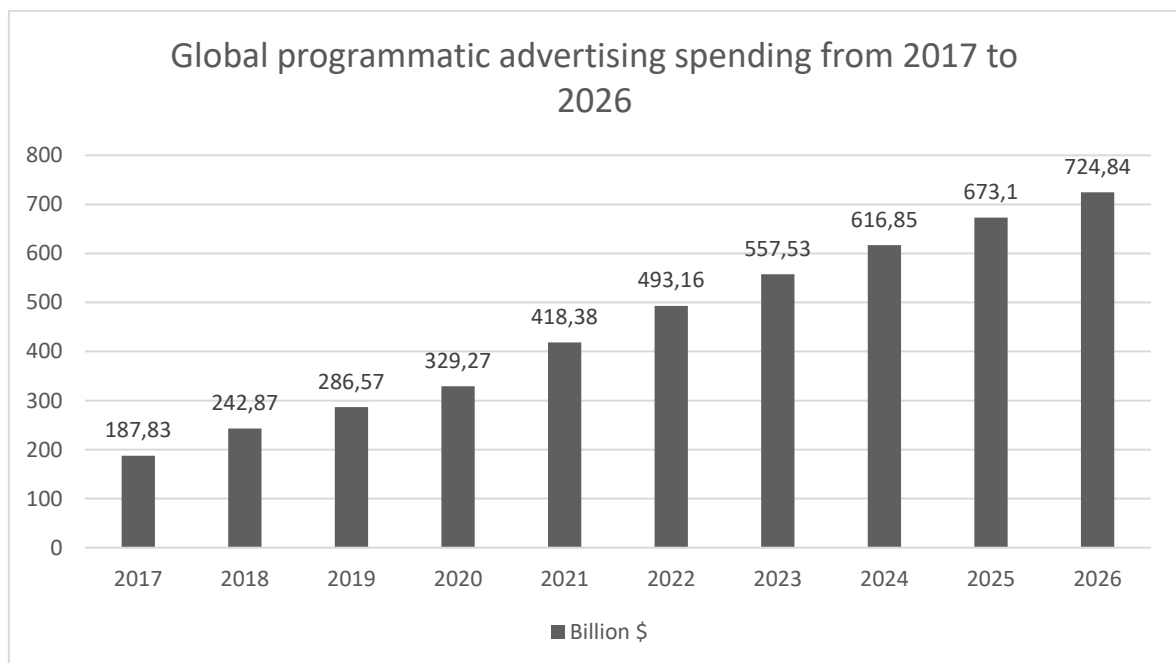

Figure 2.8 Global programmatic advertising spending from 2017 to 2026. (Statista, 2022b, N.P).

A survey conducted by Statista shows that the global spending on programmatic advertising has steadily increased in recent years which indicates that its role as

part of companies marketing is becoming more relevant and businesses are allocating more resources towards its use. Global programmatic spending is expected to keep increasing steadily in upcoming years which means that it will most likely play an even bigger role in media buying and advertisement creation in the future. (Statista, 2022b.)

2.4.5 Limitations of programmatic advertising

Even though programmatic advertising offers a great ability to automate the advertisement buying and creation process human decision-making still plays a crucial role in the advertising process. Humans are still responsible for creating the overall marketing strategy and planning the programmatic campaign. This includes defining campaign objectives, target audiences, and key performance indicators (KPIs). Human strategists make decisions about budget allocation, bidding strategies, and the selection of ad formats. (Busch, 2016.)

Programmatic advertising can automate ad placement and creation process, but humans are still essential for managing and leading this process. They play a key role in ensuring that the marketing messaging is consistent with the brand's other messaging, brand image, tone of voice, and values. Artificial intelligence's lack of contextual understanding and nuances in language also limits its functionality and adaptability to campaigns that use humor, sarcasm, and other concepts that are difficult for AI to grasp in promotional messaging. (Bakpayev et al., 2022.)

Overall, programmatic advertising offers a great level of automation and efficiency, but it still requires humans to set the strategy and guidelines that artificial intelligence follows. Also, artificial intelligence is not able to measure up with human brains level of understanding and contextual awareness which causes the need for humans to guide and monitor the output of artificial intelligence algorithms. (Bakpayev et al., 2022.)

3 RESEARCH METHODOLOGY

This chapter presents the methodology used in this research. Chapter 4.1 discusses the research approach, chapter 4.2 focuses on the data collection methods, and chapter 4.3 discusses the data analysis methods.

3.1 Research approach

This research is conducted as qualitative research with the research method being a case study. This chapter discusses conducting qualitative research and using case study as the research method. This chapter also presents the case companies and expert interviews used in the research.

3.1.1 Qualitative research

Qualitative research itself is an umbrella term that includes multiple research methods that focus on empirical study of issues, such as interview and observation-based methods providing a structured framework for the systematic investigation of issues. (Flick, 2009) The data that is used in qualitative research tend to be non-quantitative. Some examples of data that can be used in qualitative research are interview transcripts, voice recordings, and photographs. Using qualitative research methods allows the collection of rich and detailed data, enabling a nuanced understanding of the subject matter. (Saldaña, 2011.)

Essential to conducting qualitative research successfully is choosing the research methods and theories correctly. In order to be able to analyze qualitative data and explore different perspectives to identify patterns, gain insights, and make findings the research method has to be suitable for the data being used as well as for the research question. (Flick, 2009.) According to Flick (2009), qualitative research is more about gaining knowledge based on empirical data than it is about proving and testing the correctness of pre-established concepts.

The goal of this study is to gain valuable insights into the utilization of artificial intelligence in promotional campaigns. Given the need for empirical knowledge from marketing professionals, the choice of qualitative research methods aligns seamlessly with the study's objectives. The structured approach of qualitative research, coupled with the case study as the research method, ensures a systematic and rigorous examination of the empirical data, facilitating a nuanced exploration of the role of artificial intelligence in the domain of promotional campaigns.

3.1.2 Case study as a research method

A case study is a research method that focuses on a single individual, group, or event. As a research method case study is used to gain detailed and holistic knowledge based on the analysis of multiple empirical sources (Eriksson & Kovalainen, 2008). The advantage of a case study is that it can present complex issues in a form that is easy to grasp through a real-life example. As a research method, case studies enable investigators to preserve the holistic and meaningful aspects of real-life events. (Yin, 2009.) Yin (2009) considers case study as the preferred study method when the researcher has little control over the events, the research question is a "how" or "why" question and the focus is on a contemporary phenomenon within a real-life context.

Case studies have two main approaches that are intensive- and extensive case studies. The goal of intensive case studies is to gain a holistic and detailed understanding of a specific individual case. Extensive case studies focus on testing and creating theoretical constructs by comparing multiple different cases. (Eriksson & Kovalainen, 2008.) According to Eriksson and Kovalainen (2009), the subjects of multi-case studies can be chosen based on various reasons that are the following: they extend emergent theory, fill theoretical categories, provide examples of polar types, or replicate previously selected cases.

This research is an extensive case study because the goal of the study is to gain a holistic understanding of the use of artificial intelligence in promotional campaigns through the empirical knowledge of multiple marketing professionals. For this study, the case study is a suitable research method since the research questions are "how" and "why" based, the events are not controllable by the researcher, and artificial intelligence is a contemporary phenomenon in the real-life context of marketing and business.

3.1.3 Case companies and expert interviews

The goal is to conduct research based on expert interviews and therefore, the case companies and experts interviewed were recruited for this study using purposive sampling. As a sampling method, purposive sampling allows to selection of participants who are considered to be the most knowledgeable or informative about the research topic. (Bryman & Bell, 2011.)

In this study in order to ensure that the participants had sufficient knowledge of the field of promotional campaigns and marketing as well as implementing tools of artificial intelligence to these processes three different criteria were set for the selection of the participants.

1. Participants must work in a marketing/advertising agency.
2. Participants must have at least 3 years of work experience in the field of marketing.
3. Participants must utilize artificial intelligence in their work with promotional campaigns.

In this study, all of the case companies are marketing/advertising agencies operating in Finland and offering digital marketing services to their customers. The sizes of the companies varied from small to large and the implementation of artificial intelligence was at various levels between the companies. The goal was to find different-sized companies in order to have diverse views of the implementation of artificial intelligence throughout the field of marketing. The experts being interviewed were also working in various positions within their companies which helped to gain views of the topic from different organizational levels. (Table 3.1)

Table 3.1 Expert interviews

Respondent	Position	Experience	Date	Duration
Expert 1	Commercial Director	15 Years	29.1.2024	39 min
Expert 2	Lead Strategist	9 Years	2.2.2024	53 min
Expert 3	Head of Marketing	7 Years	3.2.2024	42 min
Expert 4	Digital Executive	11 Years	6.2.2024	63 min
Expert 5	Head of Marketing	13 Years	15.2.2024	51 min
Expert 6	Marketing Expert	4 Years	19.2.2024	48 min

3.2   Data collection

Interviews are considered to be one of the most common forms of data collection in qualitative studies. Interviews are used when the personal knowledge or experience of the interviewee works best to answer the research question (Saldaña, 2011). As a data collection method, semi-structured interviews have been commonly used since the subject of the interview is expected to be more likely to give a better understanding of their viewpoints in an openly designed situation rather than in a strict questionnaire (Flick, 2009).

One of the most important factors to ensure the success of an interview is having a good understanding of the issue being studied. This is vital in order for the interviewer to be able to ask the right questions and understand the answers. Another factor is being a good listener and being able to listen and understand a lot of new information without pre-existing bias. (Yin, 2009.) Flick (2009) states that the most essential factor for conducting successful interviews is the situational competence of the interviewer.

The main advantage of semi-structured interviews is that they provide a flexible and adaptive approach to data collection while also offering a standardized structure to ensure data comparability. The semi-structured nature of these interviews allows for the exploration of a wide range of topics, while still maintaining a certain level of structure to ensure that the data collected is both consistent and meaningful. This also allows for the exploration of sensitive or personal topics, as the interviewer can adapt their approach to suit the needs of the participant. (Rubin & Rubin, 2012.)

For this study semi-structured interview is suitable and expected to be the most effective data collection method since the topic is a contemporary phenomenon and is studied the best through the knowledge of professionals working in the field. The semi-structured format allows the possibility to gain a better understanding of the expertise of different individuals and find viewpoints, constructs, and theories that might not have been discussed earlier.

3.3   Data analysis

Thematic analysis is a widely used qualitative analysis method that aims to identify and explore the themes that emerge from a dataset. (Braun & Clarke, 2006) For this study thematic analysis is used as the analysis method because it offers an effective approach for identifying patterns and themes in the qualitative dataset and as a model is flexible enough to be suitable for the research questions. In this case study, thematic analysis was utilized to analyze the qualitative data collected from the semi-structured expert interviews.

The thematic analysis was conducted using a six-step process as recommended by Braun and Clarke (2006). The six steps are: familiarizing with the data, generating initial codes, searching for themes, reviewing themes, defining and naming themes, and producing the report. Data analysis followed the six-step model. (Table 3.2)

Table 3.2 Steps of thematic analysis (Braun & Clarke, 2006, p.15-24).

Step	Acton
1. Familiarizing with the data:	Records and transcripts of the expert interviews were listened to at least 2 times per interview.
2. Generating initial codes	Initial codes were created by identifying recurring patterns and themes.
3. Searching for themes:	Themes were created from the initial codes and grouped into categories.
4. Reviewing themes:	The themes were reviewed and refined to ensure that they accurately represented the data.
5. Defining and naming themes:	Final themes were defined and named to provide a clear description of each theme.
6. Producing the report:	Results and findings of the thematic analysis were reported.

4   FINDINGS

This chapter presents the findings of a qualitative research study conducted through six semi-structured expert interviews, aimed at exploring the implementation of artificial intelligence in promotional campaigns. The insights gathered from these interviews shed light on several crucial aspects of AI integration in promotional strategies. From the interviews, five different themes were identified including its current status, challenges and ethical factors encountered, knowledge acquisition, decision-making influence, and future trends (Figure 4.1).
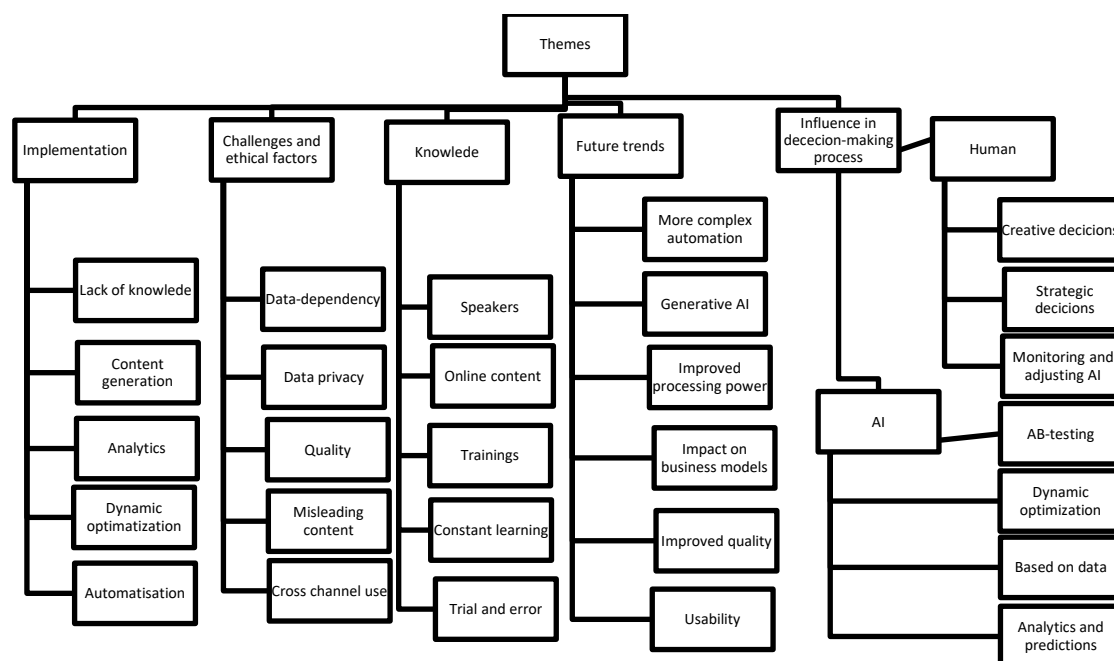
Figure 4.1 Thematic map

4.1   Implementation of AI

All of the experts interviewed for the study described that their company's ability to utilize AI was at a very high level and they had the capability to offer their customers some of the most modern and advanced tools and technologies available. The interviewees described that their customers had very varying levels of AI implementation and very different needs based on their industry and goals.

> *"We try to keep up with the latest trends and tools and offer them to our customers based on their needs and goals." (Expert 3)*

"Some of our customers are very aware of the possibilities that AI offers and have a clear idea of what they want, but for the most part all these tools are new for them and they are a bit unsure of what AI tools can help them" (Expert 6)

The main benefits that the interviewees considered AI offering were identified to be its ability to automate manual tasks allowing marketers to complete tasks faster and more efficiently than before as well as analytical tools that can offer valuable insights from large masses of data.

"In our promotions, we have used AI for a while and for us, the most important tools are different prediction models that help us to predict demand and outcomes of the campaigns" (Expert 1)

The thing that most divided opinions between experts was the role and applications of generative AI models and the use of this AI-generated text and image content in promotional campaigns. Some of the case companies have often used generative AI models to generate campaign texts and pictures, especially if the campaign budget was limited but some companies remained much more skeptical towards its implementation. The main concerns were the quality of AI-generated content as well as its suitability for promotional campaigns as they considered that it is difficult to get AI-generated content to match the brand image, tone of voice, and other messaging and this way keep the companies marketing consistent. The general opinion among experts interviewed was that even though the generative AI models are a trending topic and have a lot of potential to revolutionize the creation of promotional content still at the moment more relevant AI-based tools are the ones that have been in use for a while that focus on automation of different tasks, handling large masses of data, and different prediction and forecast tools.

"We don't use AI-generated images in our campaigns because they do not offer high enough quality for our marketing purposes. Sometimes we have been able to utilize ChatGPT in creating different marketing text, but we always have to double check the content generated" (Expert 1)

"We use AI-generated images to illustrate our ideas to our customers and in some cases when our customer has a low budget we can use AI-generated images in promotions in order to save on costs" (Expert 5)

The experts did not have any specific criteria for when they would apply AI-based tools to promotional campaigns. The experts aim to utilize AI whenever they have tools available that could improve the efficiency of the campaign and consider it to be effective.

"We don't have any specific criteria, we aim to use AI always if it makes sense or helps with the task" (Expert 5)

The interviewees aimed to utilize AI-based tools in all stages of promotional campaigns if they were suitable for the campaign. Before the campaign, marketers use AI-based tools to set goals, make predictions, generate and analyze promotional content, create segments, as well as conduct market research, trend analysis, and sentiment analysis. During the campaign, AI tools are used in dynamic optimization, AB-testing and variating ads, bid optimization, dynamic segmentation, targeting, programmatic advertising, recommendation engines, and chatbots. After the campaign, AI tools are used in post-campaign analysis to gain insight into its performance and find patterns from campaign data. These tools can also be used to automatically generate post-campaign reports, and in sentiment analysis to analyze the impact that the campaign has had on public perception and brand image.

"We use different AI tools in different stages of the campaign. Like in planning, we use different analytics tools to help with the design of the campaign. While running the campaign different AI tools help us automate the campaign, generate and test content, and segment and target audiences. After campaign different reporting and analysis tools are useful." (Expert 3)

4.2 Challenges and ethical factors

Based on the experts' opinions the challenges for applying artificial intelligence to promotional campaigns revolved around the limitations of artificial intelligence as a technology, its application to specific campaigns, and ethical factors.

Artificial intelligence-based technologies are very data-dependent and the quality of the predictions and analysis conducted by AI depends on the quality of the data that the marketer has available. The experts considered that when working with customers, especially at the beginning of customer relationships the application of AI to promotional campaigns might be difficult due to lack of data available.

"AI-based analytics tools need data to function and in some cases, our clients don't have the data necessary to use those tools so their performance at the beginning might not be great but it keeps improving" (Expert 3)

Using AI to analyze and handle customer data also raises privacy and security concerns. The main concern is the risk of data leaking and even ending up being misused which the experts consider to be a major risk factor especially when handling sensitive data and information. In addition to this experts mentioned that among their customers and the general public, there are a lot of ethical concerns about companies accessing and using their private data to train AI algorithms and other promotional purposes like targeting and segmentation.

> *"Of course, you need to be really careful every time when handling customers' data, especially if it contains sensitive information, and ensure that it is handled properly and without risk of leaking this information." (Expert 4)*

> *"Many people are very strict about their personal data and about what it's being used for and in general people are very much against their personal data being used for promotional purposes" (Expert 2)*

The varying quality of content produced with AI-based programs divided experts' opinions. Some experts had very positive opinions on using AI-generated content in promotional campaigns and others remained far more skeptical and questioned AI's ability to create content that is high enough quality to be used in promotional campaigns.

> *"We always need to double-check and edit the content that AI creates which in some cases takes more time than creating the content from scratch would have taken. Often the writing generated by AI is pretty poor and doesn't match the level of professional copywriters." (Expert 1)*

> *"The text generation tools are great and save us a lot of time when we need to create a lot of content with certain specifications. For example, when we need to create multiple different variations of an ad text." (Expert 2)*
> *"We prefer to use real images in the campaigns but if our customer has a low budget I think AI can produce images that are good enough to be used in campaigns" (Expert 5)*

Other challenges that the experts mentioned in the interviews included AI programs being specific to a single channel and the difficulty of assessing the performance of AI-based elements. Most of the AI tools are related to a specific channel and there is no ability to use these AI-based tools between different channels and platforms. This limits the ability to dynamically automate multiple channels and elements of the promotional campaign. In most cases also the benefit and value that AI-based elements bring into the campaign are difficult to assess. For something like, AI-based AB-testing the performance of the advertisement can give an indication of how much the AI has impacted its performance but, in many cases,

the influence that the AI-based elements have on a promotional campaign remains hard to measure.

> *"Yeah, it's hard to directly say what impact AI has. I guess you can estimate the time saved with automation and in things like AB testing you can estimate the influence from the data on how the AI selecting a specific ad copy to show has influenced the performance." (Expert 2)*

When considering the ethical factors involved in the use of AI in promotional campaigns one of the main concerns that experts all mentioned was differentiating AI-generated content from authentic content. If the AI-generated content is not clearly labeled as such it might be mistaken as authentic content which can be misleading especially when talking about AI-generated images. All of the experts considered the most important tool for combatting this issue to be transparency about the use of AI. This includes clearly stating that AI has been used to create a specific piece of content. Many of the case companies had set some kind of ethical guidelines for the use of AI that addressed these concerns.

> *"There is already a lot of AI-generated content around passed off as real so for us it's important to be transparent and clearly state if we have used AI to create content like images because they can be misleading." (Expert 5)*

> *"We have set guidelines and rules for our use of AI in our ethical guidelines." (Expert 1)*

When discussing possible concerns that customers of the case companies might have about the use of AI in their campaigns it became apparent that AI has become a key element of promotional campaigns in a way that most customers expect it to be used as efficiently as possible and care more about the end result of the campaign rather than what tools are used to get there.

> *"For us, it seems that most of our customers want us to use the latest AI and are not concerned about them being used. For them the thing that matters the most is the result that they get from the campaign regardless of what tools have been used" (Expert 2)*

4.3   Getting the knowledge to utilize AI

In the interviews, all of the interviewees recognized constant learning and improving as a key element for staying competitive and creating effective promotional campaigns while the field of marketing is constantly changing, and AI-

based tools keep improving. The methods for gaining knowledge and staying updated on new AI technologies differentiated a lot between different case companies.

One key method that most of the interviewees mentioned was training hosted by different AI service providers. This was the most important method for getting started and gaining the initial knowledge on how a specific AI-based tool should be used. In addition to these trainings, different expert content like, videos, blogs, instructions, and books had a large role in the learning process. Larger companies mentioned that they had hired expert speakers to host events for their employees to teach them more about artificial intelligence and future trends. Smaller companies focused more on the more affordable content that is available online, like instruction videos, webinars, online publications, and different recordings of speakers talking about artificial intelligence.

> *"Usually when we implement a new tool the company providing the tool will come to host a training session to our employees demonstrating the use and explaining how it works" "Expert 6"*

> *"We try to stay ahead of the competition by providing our employees with regular training and other opportunities like guest speakers to improve their knowledge and keep them updated with the latest trends." Expert 4*

Besides these different training and expert content, the case companies had a very hands-on approach to learning and using AI tools. Most of the experts stated that most learning is done by trying and experimenting with different things and this way learning through practice. This seemed to be the main learning tool for the smaller case companies where the resources were more limited. Apart from learning through practice also sharing knowledge between co-workers was identified as a key element for gaining the knowledge most efficiently and successfully keeping everyone up to date with the latest technologies and tools that case companies had available.

> *"We encourage our employees to experiment with different tools and learn through practice to find new ways to use AI that works for us." Expert 1*

> *"For every tool that we use, we assign one person as the expert for that specific tool, and they are responsible for staying up to date with new updates and training our other staff in the use of the tool." Expert 2*

4.4   Influence in the decision-making process

Based on the experts' opinions the role that AI has in the decision-making process varies between different stages and functions of the campaign.

> *"We have AI tools that influence decision-making on every step of the campaign but in the end, we want to keep humans responsible for the most important decisions" Expert 3*

Most commonly decisions that are made by humans are decisions that require creativity or understanding of concepts or entities that AI cannot grasp. These decisions also can not be made purely based on data. These human-made decisions involve decisions such as strategies, goals, brand image-related decisions, creative decision-making, and KPIs. Even in these decisions AI-based analytics and predictions are often used to assist the decision-making process.

> *For us, the decisions where AI isn't involved at all are creative tasks like graphic designs and strategic factors and operational factors where AI might lack the specific understanding, like our values, tone of voice, and style of communications. (Expert 5)*

When AI is used to assist human decision-making the role of the AI is to provide analytical data and predictions as well as identify patterns from large masses of data. This can help to guide the decision-making process and assist human decision-makers make educated decisions that are backed by data. These decisions where AI is used to assist human decision-making include decisions like planning campaigns, budgets, audiences, and strategies based on predictions, analysis, data, and reports provided by AI.

> *"For most of our decisions, we use AI-powered programs to provide us predictions and analytics to support the decision-making and analyze the options." Expert 1*

Using generative AI can shift the decision-making fully as a responsibility of AI but most commonly it combines AI decision-making with human decision-making as the content is generated by AI based on criteria or prompts set by humans. In most cases, the content generated is also inspected and edited by humans before publishing.

> *"We use generative AI models to create content but before publishing it is always monitored and edited by humans" Expert 1*

Decisions made fully by AI include manual tasks and processes that are auto-mated using AI as well as smaller everyday decisions that can be made fully based on data. Typical for this kind of decision is that they are within a single channel, based on data, and monitored and inspected by humans periodically when analyzing the campaign. These kinds of decisions include AB testing of advertisements, workflows, triggers, ad placement, content generation, media buying, bidding, and campaign optimization.

> *"AI allows us to automate a huge number of everyday tasks in the campaign man-agement which allows us to use that time more productively." Expert 2*

> *"We use programmatic advertising to automate most parts of our online media buying" Expert 4*

Experts considered the main benefits of involving AI in the decision-making pro-cess in promotional campaigns being improved automation and efficiency of the campaign which is achieved by automating decision-making processes. This also frees up the human decision-makers to spend their time on more important de-cisions where careful consideration, problem-solving, and human creativity are required. The other main benefit was considered being the support that AI-pow-ered tools can provide to humans in the decision-making process by offering data and predictions to support the decision-making.

> *"AI provides us with data to back up our decision-making and can help us find patterns and factors that we might have missed" (Expert 6)*

> *"When we use AI to automate tasks it leaves us with more time to spend on more important and actually creative tasks where the time and focus is needed" (Expert 2)*

4.5   Future trends

For future trends, interviewees considered improvements in the technologies and processing power of computers to be the most influential factor fueling the changes in the way that artificial intelligence is being used in promotional cam-paigns.

Out of the AI-based technologies, most experts were enthusiastic about the pos-sibilities that generative language models and generative AI tools have to offer. Currently, the generative tools can generate content efficiently, but the quality of

the content was considered inconsistent by the interviewees. Also, the ability of these generative models to understand specific nuances that are crucial for creating output content that is usable for promotional purposes as it is was considered to be somewhat limited. The experts interviewed anticipated these models to improve and the quality of the content to become more refined and professional in a way that it can be better utilized for promotional purposes. Experts also saw a lot of potential in training these generative models with different datasets specific to the purpose it is being used. Currently, these generative language models base their predictions and output on the data that is publicly available on the internet which results in them being able to function and base their predictions only on the data that is available on the internet. Combining generative models with datasets that are specific for the user and the purpose could revolutionize the way generative models are used and allow more specific and tailored content generation.

> *"Generative AI is a relatively new thing with a lot of buzz going around it. If we give it a few more years I think it can revolutionize how marketing and promotional campaigns are done." (Expert 4)*

> *"Right now generative models like ChatGPT are only able to use data from the internet. I think the next big thing is combining these models with different datasets that users have collected." (Expert 2)*

The improvements in technological capabilities were also expected to improve the current implementation of artificial intelligence in promotional campaigns. The improvements in processing power are expected to improve the speed and quality of predictions and allow AI algorithms to handle even larger masses of data efficiently. It is also expected that in the future the AI algorithms will be able to automate even more complex tasks and processes and make a dynamic micro adjustment to the campaign as an entity in a way that every channel and element is dynamically adjusted and optimized based on the performance of the campaign.

> *"Recently computer processors and computing power have improved a lot which has allowed AI to improve exponentially. This exponential improvement is likely to keep going in the next few years and allow even more advanced automation." (Expert 4)*

Interviewees mentioned that their customers are constantly becoming more aware of the possibilities that artificial intelligence can offer them and are starting to expect that these case companies are able to offer the latest knowledge and tools that are available. In order to match the increasing expectations of clients and get ahead of the competition the interweaves emphasized the importance of

constant learning and curiosity from marketing professionals. The other key element to staying at the leading edge of artificial intelligence is for the company to provide sufficient resources to implement new AI-based tools and allow experimentation and learning through practice for their employees.

> *AI is improving fast, and we need to keep up with the changes and constantly learn new things to stay competitive in the future. (Expert 6)*

Based on the experts' opinions the most crucial factor influencing the larger-scale adaptation of AI-based tools is the improvement in user interface and usability. In the past, the use of artificial intelligence has been very complex and required the knowledge of IT experts to operate and manage. In recent years the user interfaces of artificial intelligence-based programs and tools have improved drastically, and it has allowed people with much less technological expertise to utilize these tools. Interviewees expected this trend to continue in a way that the AI-based tools will become even more accessible for everyone even with very limited knowledge of the field of IT and artificial intelligence. They also expected that in the future these improvements would allow the operator of these tools to do more complex tasks like train and adjust the AI algorithms easily with limited knowledge. This kind of improvement in usability could greatly improve the accessibility of AI-based tools for all marketers and bring these tools to everyone's hands. For marketing and advertising agencies, the experts also considered this as a potential risk since it might reduce their customers' need for expert knowledge which might directly affect their business.

> *"AI tools have become a lot easier to use than before thanks to improved user interfaces that are finally getting simple enough that you don't need to be an IT expert in order to use them." (Expert 3)*

> *"AI tools like ChatGPT are really easy to use and it can reduce the need for expert knowledge especially if the trend continues with other tools as well." (Expert 5)*

One expert also pointed out that the adaptation of AI might have an impact on other aspects of marketing agencies' business such as their business model and charging policies. Advertising and marketing agencies are typically charging their customers based on an hourly rate which might become problematic because AI-based tools can greatly reduce the amount of time that it takes to complete certain tasks which would directly influence the charged amount. This is problematic because advertising and marketing agencies still need to be compensated for the investments that they have made in AI-powered tools and the expertise needed to utilize them. This means that the agencies might need to reconsider and restructure their business models in the future in order to stay competitive and profitable in this changing field and environment.

"We charge our customers by hourly rate and of course, if our investments in AI help us do the tasks in a shorter time, we might have to change this because it is achieved by investing in AI and we still need a return for that investment." (Expert 2)

5 CONCLUSIONS

This master's thesis research was conducted in order to gain a better understanding of artificial intelligence and its role in promotional campaigns. Artificial intelligence and machine learning are technologies that have been around for a while but in recent years they have gained many new applications that can be implemented in digital marketing and promotional campaigns. Artificial intelligence is rapidly improving technology and new tools like generative language models have the potential to revolutionize the field of promotional campaigns therefore it is important to study the way artificial intelligence is currently applied to promotional campaigns and how the experts see its role now and in the future. The study consists of a theoretical part and an empirical part. The theoretical part creates the theoretical framework and gives the theoretical groundings to understand artificial intelligence as a technology as well as the role it plays in promotional campaigns. The empirical chapter gathers empirical knowledge of experts through semi-structured interviews and aims to find answers to research questions through the knowledge of experts. This chapter presents the theoretical- and managerial implications of the findings and evaluates the study.

5.1 Theoretical implications

Basha (2023) stated in his study that even though AI is being utilized in most companies, in many cases there is still a lack of high-level implementation. This trend was clearly noticeable from the expert interview as many of the interviewees mentioned their customer companies' implementation of AI as an example. The case companies were industry experts in the field of digital marketing and advertising and therefore had extensive knowledge of artificial intelligence and its implementation, but their customers were various businesses throughout different fields, and in many cases, there was a lack of AI implementation. Most companies are just starting to see the potential in the use of AI and new implementations and improvements have made the tools more accessible to them. Due to this AI is a very new tool for some companies and this lack of high-level implementation is considered to be caused mostly due to limited AI expertise in the company. The general level of AI implementation is expected to improve in the future as AI technologies become more accessible and easier to operate without expert knowledge.

In their study, Jain and Aggrival (2020) identified that the key benefits for companies using artificial intelligence revolve around improved efficiency and improved customer experience and satisfaction which helps to build stronger cus-

tomer relationships. For customers, the main benefits are based on a more tai-
lored and personal customer experience. Piyushin (2020) focuses more on the
benefits of the analytical side of artificial intelligence and states that artificial in-
telligence can provide analytical insights and predictions to help with decision-
making. These analytical benefits were highlighted by many of the experts who
stated that they are vital in their decision-making process. For many of the case
companies these analytical benefits that artificial intelligence offers were still the
most important advantage that AI provides to their promotional campaigns de-
spite the increasing interest in more advanced tools like generative language
models. AI-based tools had very various roles in different stages of promotional
campaigns (Figure 5.1). When considering implementing AI-based tools these
case companies assessed the value and benefits that it creates compared to costs
but did not have specific criteria for implementation.

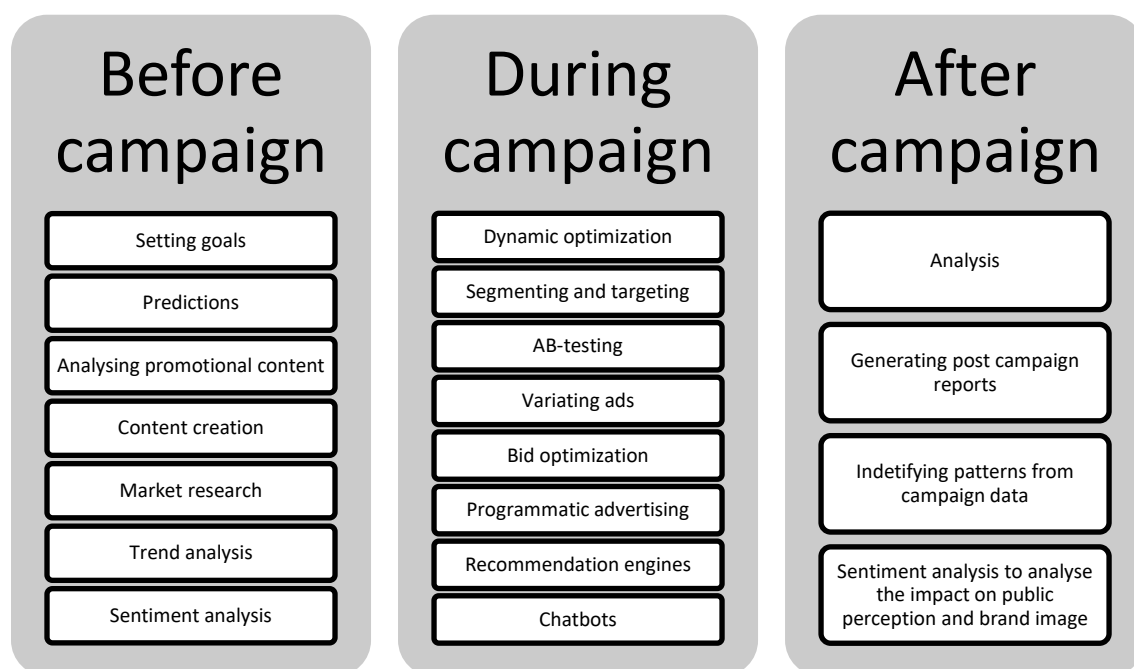| Before campaign	During campaign	After campaign
Setting goals	Dynamic optimization	Analysis
Predictions	Segmenting and targeting	Generating post campaign reports
Analysing promotional content	AB-testing	Indetifying patterns from campaign data
Content creation	Variating ads	Sentiment analysis to analyse the impact on public perception and brand image
Market research	Bid optimization	
Trend analysis	Programmatic advertising	
Sentiment analysis	Recommendation engines	
	Chatbots	

Figure 5.1 Role of AI in different stages of the promotional campaign based on this master's
research project

The same three-stage framework that Huang and Rust (2020) presented in their
paper was clearly identifiable from the purposes for which the AI was being used.
Based on the interviews in the designing stages of promotional campaigns the
main focus is on mechanical AI and its ability to automate different analytical
tasks. The key tools being used were data analysis tools and prediction tools that
were used to plan the campaign, and outcomes, and support the decision-making
process when creating the overall strategy for the campaign. This includes plan-
ning the strategy, promotional channels, targeted target audiences, and budget.
During the campaign mechanical AI is used to automate factors like AB-testing,

adjusting the campaign, and optimizing the bidding. Mechanical AI is also used during and after the campaign to provide data analysis and create reports about the campaigns' performance and results. Feeling AI is mostly used for testing customer sentiments and analyzing customers' feelings and views about the promotion and brand. Thinking-AI is used in the planning and running stages of the campaign to generate content and test different variations of promotional materials.

As AI-based tools have become more commonly used in promotional campaigns their impact on the decision-making process has increased. In promotional campaigns AI both assists human decision-makers in the decision-making process as well as makes decisions on its own. (Figure 5.2)

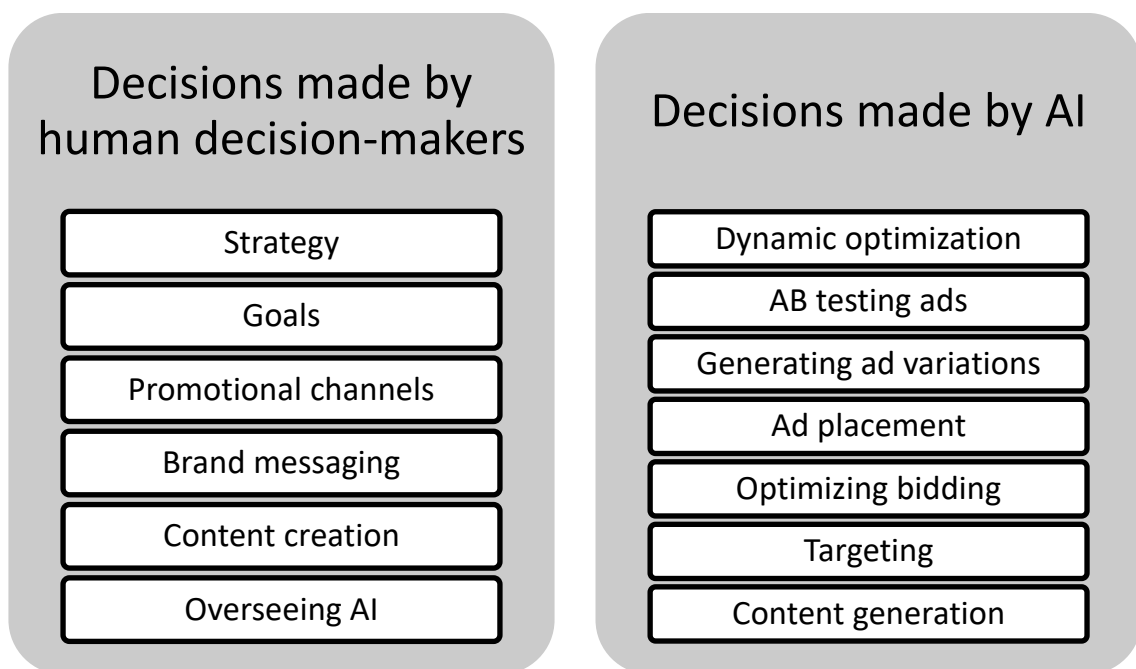| Decisions made by human decision-makers	Decisions made by AI
Strategy	Dynamic optimization
Goals	AB testing ads
Promotional channels	Generating ad variations
Brand messaging	Ad placement
Content creation	Optimizing bidding
Overseeing AI	Targeting
	Content generation

Figure 5.2 Role of humans and AI in the decision-making process based on this master's research project

As Piyushin (2020) states AI provides valuable insights, analytics, and predictions and this way assists human decision-makers by supporting their decision-making process with data-driven insights. Another form of decision-making where AI assists and collaborates with decision-making is AI-generated content. When using AI-generated content the content is generated based on descriptions or guidelines set by humans and after AI has generated the content it is inspected and edited by humans. In their study, Huang and Rust (2020) point out that artificial intelligence also has the capability to automate many manual and creative tasks that have traditionally involved human decision-making. Experts stated that decisions that can be made purely based on data are typically the ones that

AI is fully responsible for. These kinds of decisions include targeting, segmenting, adjusting bids, and AB testing different ad copies. The experts unanimously agreed that the more important decisions that had a large impact on the company or the strategy are still the responsibility of a human decision-maker and are expected to stay so in the future as where the less important everyday decisions would be even more automated by AI in the future. These important decisions that were considered to stay as the responsibility of a human decision-maker include things like strategy, goals, campaign budget, brand-related factors, and campaign objectives. Experts expected that at some point with more technological advancements AI could take over control of between-platform decisions and this way automatically manage the campaign as a whole. This would free up more time for the human decision-makers to spend on the other aspects of the campaign.

Even though there is a lot of interest in artificial intelligence by companies as Basha (2023) stated in many companies there is still a lack of high-level implementation of these technologies. The interviews suggested that this is mainly due to a lack of technological knowledge, the difficulty of using these AI-based programs, and the lack of available resources. In the future experts expect its implementation among businesses to soar fuelled by improvements in its accessibility. The improvements in user interfaces are expected to improve usability and allow marketers with less technological knowledge to operate these tools. This would make AI-based tools much more accessible for most companies that are not currently utilizing AI and improve the adaptation of AI-based tools in the future. This improvement in usability could also affect the field where marketing and advertising agencies operate since this might decrease their customers' need for expert knowledge and allow them to operate these programs themselves.

When looking at the future opportunities that AI offers for promotional campaigns the experts interviewed consider better integration of AI elements as the next big improvement. Currently, most AI programs are mostly designed to do one specific task or manage a specific promotional channel. Integration of all of these tools in a way that all of the company's promotional campaigns could be managed from start to finish through a single tool would be a massive step towards the seamless implementation of artificial intelligence. Another opportunity that experts considered has a lot of potential is the possibility of combining generative AI models with a specific set of collected data. This would allow the marketers to train the generative algorithm to generate content even more detailed and tailored for specific needs in promotional campaigns.

Artificial intelligence still has different technical and ethical limitations that restrict its implementation. According to Nancholas (2023), one of the key factors among technological limitations is its lack of human-like understanding of context and other nuances. This shows up most clearly in generative AI models and it makes it difficult for them to generate content for a specific purpose in a way

that matches the overall tone and image of a brand. According to experts processing power has been a limiting factor in the past but due to technical developments nowadays limitations that it creates are very minimal.

Experts had very varying opinions on ethical factors that limit the implementation, but the key concerns were its possibility for job displacement, different misleading content, biases, and environmental concerns due to increased consumption of energy and the need for hardware. Experts considered the most important tools for combatting these factors and implementing AI responsibly to be transparency of its use, data integrity, assessing its ethical impact, and only using AI if it is ethically appropriate.

5.2   Managerial implications

For businesses, artificial intelligence offers a great potential for improving the efficiency, quality, and results of promotional campaigns and it has changed the field where these businesses operate as well as impacted their daily operation. The improving and changing environment of promotional campaigns and AI as a technology puts a lot of pressure on companies to stay up to date with the latest trends and technologies. In order to not get left behind the competition companies need to constantly be learning and improving while trying to find new and improved ways to implement AI in their promotional campaigns.

Companies are utilizing AI at very various levels and therefore successful implementation creates an opportunity to stand out from the crowd and gain an advantage over their competition with more effective and efficient AI-powered promotional campaigns. Taking advantage of the opportunity requires skill and investments, so it is vital for businesses to allocate enough resources for AI-based tools as well as invest in a skill and crate environment for their employees that allows and encourages learning and improvement. This way the company and its employees can become experts in these programs and AI-based promotional campaigns. Different courses and training can help the learning process, but the most important method is learning through practice and a trial and error process (Figure 5.3). Therefore, for businesses, it is important to allocate enough resources, time, and budget to accommodate the learning process and encourage their employees to try and experiment with different AI programs and keep them up to date with the new technologies.

```
┌─────────────┐  ┌─────────────┐  ┌─────────────┐  ┌─────────────┐  ┌─────────────┐
│ Trainings   │  │  Learning   │  │  Searching  │  │ Sharing the │  │More advanced│
│ held by the │  │ through     │  │ information │  │ knowledge   │  │ trainings   │
│ AI tool     │  │ trial and   │  │ and guides  │  │ and collab- │  │ held by     │
│ providers   │  │ error       │  │ online      │  │ orative     │  │ experts     │
│             │  │             │  │             │  │ learning    │  │             │
└─────────────┘  └─────────────┘  └─────────────┘  └─────────────┘  └─────────────┘
```
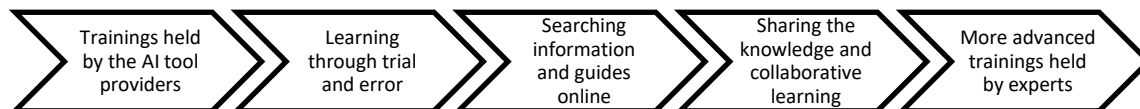
Figure 5.3 Ideal learning process for AI-based tools based on this master's research project

Based on the expert interviews the ideal learning process to use artificial intelligence-based tools involves formal learning as well as self-study. For most people, the most crucial factor driving the learning process is the enthusiasm for AI and the opportunities that it creates. The learning process starts with training held by the AI-tool providers to teach the basics. After that, the key method for learning is trying out the tools and learning by testing different things through trial and error. Different tutorials and guides from the internet support this learning process and help with issues faced. Sharing this knowledge among colleagues and teaching each other helps the company to share the knowledge effectively among all employees and creates an environment where everyone can learn from each other. For the more advanced uses and tools, additional more in-depth pieces of training might be necessary in order to understand and be able to operate these tools.

Even though companies want to take the best possible advantage of AI-based tools it might not still be efficient and sensible to use every single tool that is available. When implementing AI-based tools the marketer should consider what benefit it offers compared to cost and assess whether or not it makes sense to apply to their operation. There are many instances where having humans do the tasks that could also be done by AI is still the better way to go. With the various tools available and different functions that feeling, thinking, and mechanical AI can complete it is important for marketer to consider their needs and goals and choose the tools that suit them the best. For most businesses, the tools that mechanical AI offers are the most effective as they offer the possibility to automate different mechanical tasks which saves time and resources and reduces the manual labor required for running a successful promotional campaign. The tools that thinking and feeling AI offers are currently developing rapidly but when applying them to a promotional campaign marketers need to carefully consider what value they offer and whether are they suitable for the purpose. From the ethical point of view, it should also be considered if humans would be able to do the same task as efficiently and this way aim to avoid unnecessary job displacement if AI does not offer any additional value compared to humans completing the same task.

In the online environment marketers are able to collect and utilize vast amounts of customer data and this data plays an influential role in the decision-making process in promotional campaigns. In order to gain meaningful insights from the data the marketer needs to ensure that the data collected is high quality and relevant to the purposes it is being used. Planning the data collection process and assessing what key information is needed to run a successful promotional campaign can help to ensure that the collected data is relevant. The collected data is being used to assist the decision-making process and the role of AI is to draw insights from masses of data. These insights can help advertisers identify trends, patterns, behaviors, and needs, as well as predict results and outcomes. In order to make solid decisions that are backed by data it is important for marketers to leverage these AI-provided analytics and predictions. AI can also be used to fully automate different decisions that have traditionally been made by human decision-makers by using masses of data. Generative models have also given AI the ability to take charge of some creative decisions like content creation. Since this decision-making is based purely on data and AI lacks the ability to understand different contextual nuances and information that is not included in the data therefore marketers can not blindly trust the decisions made by AI and it is important for marketers to monitor, assess, and edit the AI decision-making regularly. If there are issues with the data collection process the data that the decisions are based on can also be biased or inaccurate which can cause issues with AI-based decision-making and can lead to incorrect decisions.

When implementing artificial intelligence into promotional campaigns companies must ensure that it is done ethically. Companies should aim to ensure the security of customers' personal data and be transparent about what data is collected and what purposes it is being used. AI-generated content that is being used in promotional campaigns should not be misleading and companies should clearly label AI-generated content as such. Different biases in algorithms and training data should be avoided and AI programs should be audited in order to identify and correct biases. When implementing these technologies to promotional campaigns companies need to assess all the ethical factors and ensure that they are implemented and used ethically. Clear guidelines and ethical standards should be established to govern the ethical use of AI within the company.

5.3   Summary

5.3.1 Results for RQ1

How do Finnish marketing/advertising agencies utilize AI in promotional campaigns?

Finnish marketing and advertising agencies have embraced AI technology as part of their daily operations in order to enhance the efficiency and effectiveness of their promotional campaigns. The experts interviewed indicated that marketing and advertising agencies are proficient in using advanced AI tools and are able to offer the latest AI tools and technologies to their customers.

AI's primary benefits in promotional campaigns include automating manual tasks, dynamic adjustments to campaigns based on their performance, providing valuable insights from large datasets, identifying patterns in customer behavior, testing promotional content, and forecasting campaign outcomes. Among experts, there are various opinions about the use of generative AI for creating promotional content such as text and images. While some agencies leverage generative AI to produce content cost-effectively, especially when the budget is limited, others remain skeptical about its ability to maintain brand consistency and quality.

Overall, AI tools are integrated throughout the campaign lifecycle from goal setting and market research to dynamic optimization and post-campaign analysis enhancing efficiency at every stage.

5.3.2 Results for *RQ2*

What is the role of human decision-makers in Finnish marketing/advertising agencies when planning promotional campaigns with the help of AI technologies?

AI's role in the decision-making process within Finnish marketing agencies varies between different promotional decisions based on their complexity and creativity. AI assists human decision-makers by providing analytics, predictions, and identifying patterns, helping human decision-makers in planning, budgeting, audience targeting, and strategic adjustments.

AI is employed to automate routine tasks such as AB testing, media buying, and campaign optimization, freeing human resources for more critical, creative tasks. Despite AI's growing influence, human oversight remains crucial for decisions involving creativity, brand image, and strategy, where AI lacks nuanced understanding. The integration of AI in decision-making enhances efficiency and allows marketers to leverage data-driven insights while maintaining essential human creativity and strategic oversight

5.3.3 Results for RQ3

How do Finnish marketing/advertising agencies expect the role that AI has in promotional campaigns to evolve in the future?

Experts foresee significant improvement in AI technology and its application in promotional campaigns. Generative AI models have recently shown their potential and they are expected to improve allowing for more refined and tailored content generation. Enhancements in processing power and AI algorithms are expected to enable more complex automation and dynamic adjustments of the entire campaign across multiple promotional channels and platforms.

The increasing accessibility of AI tools due to improved user interfaces will potentially reduce the need for specialized IT knowledge and make AI more accessible to most companies that lack expert knowledge. This trend might necessitate a re-evaluation of business models for marketing agencies, as the traditional hourly billing might not be a viable option as the AI allows the completion of promotional tasks faster but the investments in these technologies still need to be compensated to stay profitable.

Experts recognize the importance of continuous learning and staying updated with the latest AI advancements to meet client expectations and maintain a competitive edge. Companies also recognized the need to allocate enough resources and time to facilitate the implementation and learning process for new tools and technologies. As AI tools become more sophisticated, their integration into promotional campaigns will likely become even more seamless, driving innovation and efficiency in marketing strategies.

5.4   Evaluation of the study

When evaluating a study according to Eriksson and Kovalainen (2008) the two key factors to consider are reliability and validity of the study. Reliability refers to the consistency of research findings, ensuring that the same results would be

obtained if the study were replicated. It guards against measurement errors or inconsistent procedures. Validity ensures that a study accurately measures what it claims to measure or that its conclusions are justified and meaningful. It guards against inaccuracies or biases, ensuring that findings are credible and applicable. (Eriksson & Kovalainen, 2008.)

When considering the reliability of the research a key factor is the sampling and selection of the case companies. Case companies were selected by the researcher based on the preset criteria. This method allowed researchers to choose companies that have sufficient knowledge of the topic of artificial intelligence in promotional campaigns, but it also has a risk of creating selection biases. In total, six interviews were conducted. This was chosen as the final number because the saturation of answers during the research process suggested that further variation in responses would have been minimal. While saturation is indicative of reaching a point where new data does not significantly alter the findings, it does not guarantee the absence of variation (Eriksson and Kovalainen, 2008.) The case companies used in this study are all marketing/advertising agencies and have a solid understanding of promotional campaigns and artificial intelligence as a technology. This sample could affect the generalizability of the findings to other companies working in different fields with more limited knowledge of the topic. Thus, while efforts to ensure reliability are apparent, there are potential limitations that should be acknowledged.

The goal of this study was to understand how artificial intelligence is currently utilized in promotional campaigns, how it influences the decision-making process and what is the future outlook for artificial intelligence in promotional campaigns. This research can be considered valid as it provides the answers to all three of these research questions based on the holistic knowledge of industry experts.

5.5   Ideas for future research

Artificial intelligence in promotional campaigns remains an interesting research topic as it has the potential to revolutionize the way companies design and run their promotional campaigns. The constant improvements in the technologies and AI-based programs create new opportunities and keep the field changing at a rapid pace which also creates a constant need for research. Some of the most interesting technologies that require more research in future research involve technologies like deep learning, neural networks, generative AI, and augmented reality. Below are listed some interesting ideas for future research.

AI-generated content creation: How is the use of artificial intelligence in generating promotional content such as ad copies, visuals, and video advertisements? Compare the effectiveness of AI-generated content with human-created content in terms of engagement, relevance, and brand perception.

AI-based predictive analytics for campaign optimization: What is the role of predictive analytics and machine learning algorithms in optimizing promotional campaigns in real time? This could include researching how predictive models can be used to anticipate consumer responses and adjust campaign strategies accordingly to maximize effectiveness.

Cross-channel Integration: How can AI technologies be utilized to create seamless integration and coordination of promotional efforts across various channels, like as social media, email, mobile apps, and websites?

Ethical Considerations and Consumer Trust: What are consumer perceptions of AI-driven promotional campaigns and their attitudes towards AI-generated content, data privacy, transparency, and trust? Including how these ethical considerations influence consumer behavior and brand loyalty.

Emerging Technologies and Trends: Exploring the potential of emerging technologies, such as augmented reality, virtual influencers, generative AI, and voice assistants, in improving promotional campaigns. Research could assess how they impact ROI, engagement, and brand perceptions.

REFERENCES

Akerkar, R. 2019. Artificial Intelligence for Business. Springer Cham.

AMA. 2017. American Marketing Association. Retrieved 2.6.2023.
https://www.ama.org/the-definition-of-marketing-what-is-marketing/

Ansari, S. 2016. Building a Recommendation Engine with Scala. Birmingham,
UK: Packt Publishing.

Bakpayev, M., Baek, T. H., van Esch, P., & Yoon, S. 2022. Programmatic creative:
AI can think but it cannot feel. Australasian Marketing Journal, 30(1),
90-95.

Bala, M. & Verma, D. 2018 A critical review of the digital marketing. International
Journal of Management, IT & Engineering, 8(10), 321–339

Basha, M. 2023. Impact of artificial intelligence on marketing. East Asian Journal
of Multidisciplinary Research. 2(3): 993-1004.

Brusilovsky, P. 2007. The Adaptive Web. Methods and Strategies of Web
Personalization. Berlin: Springer.

Brandtzaeg, P. B., & Følstad, A. 2017. Why people use chatbots. Internet Science,
44, 377-392.

Braun, V. & Clarke, V. 2006. Using thematic analysis in psychology. Qualitative
Research in Psychology. University of West England. 3(2), 77-101

Busch, O. 2016. Programmatic Advertising: The Successful Transformation to
Automated, Data-Driven Marketing in Real-Time. Berlin: Springer

Chaffey, D. & Ellis-Chadwick, F. 2012. Digital Marketing: Strategy,
Implementation and Practice. UK: Pearson Education

Chen, H., & Popovich, K. 2013. Understanding customer relationship
management (CRM): People, process and technology. Business process
management journal, 19(2), 364-380

Chaffey, D. & Smith, P. 2017. Digital Marketing Excellence Planning, Optimizing
and Integrating Online Marketing. Fifth Edition. London: Routledge

Choudhury, M. 2023. What are AI Content Writing Tools?. Hubspot.com
Retrieved 8.9.2023. https://blog.hubspot.com/website/ai-writing-gener-
ator

Chowdhury, M. & Sadek, A. 2012. Advantages and limitations of artificial
intelligence" Artificial Intelligence Applications to Critical Transportation
Issues. Transportation Research Circular. 1(1), 6-8.

Dania, R. 2016. Blending traditional and digital marketing. Bulletin of the
Transilvania. University of Braşov. 9 (58), 51-56

Doyle, K. 2023. What Is an Algorithm?. Stanford Business. Retrieved 2.10.2023.
https://www.gsb.stanford.edu/insights/explainer-what-algorithm.

Economic times. 2023. ChatGPT witnesses massive rise, Chatbot gains 100
million users in two months. The Economic Times. Retrieved 4.10.2023.
https://economictimes.indiatimes.com/news/new-updates/chatgpt-

68

witnesses-massive-rise-chatbot-gains-100-million-users-in-two-
months/articleshow/98428443.cms

eMarketier. 2022. Worldwide ad spending 2022. Insiderintelligence.com.
Retrieved 25.8.2023. https://www.insiderintelligence.com/
content/worldwide-ad-spending-2022/

Eriksson P., Kovalainen A., 2008. Qualitative methods in business research.
London: SAGE publications inc

Flick U., 2009. An introduction to qualitative research. London: SAGE
publications ltd

Garduno, C. 2022. How Big Data Is Helping Advertisers Solve Problems. Forbes.
Retrieved 16.9.2023. https://www.forbes.com/sites/forbesagencycoun-
cil/2022/03/15/how-big-data-is-helping-advertisers-solve-prob-
lems/?sh=528341e425e0

Gentsch, P. (2018). AI in marketing, sales and service: How marketers without a
data science degree can use AI, big data and bots. Springer.

Goodfellow, I. 2020. Generative Adversarial Networks. Communications of the
ACM. 63 (11), 139-144

Google. 2023a. In-depth guide to how Google search works. Google. Retrieved
12.10.2023.   https://developers.google.com/search/docs/fundamen-
tals/how-search-works

Google 2023b. Basic tips for building keyword list. Google. Retrieved 18.10.2023.
https://support.google.com/google-ads/answer/2453981?hl=en

Google 2024. GAN structure. Google. Retrieved 26.11.2023.
https://developers.google.com/machine-learning/gan/gan_structure

Haleem, A. 2022. Artificial intelligence (AI) applications for marketing: A litera
ture-based study. International Journal of Intelligent Networks, (1)3,
119-132

Hall, J. 2019. How Artificial Intelligence Is Transforming Digital Marketing.
Forbes. Retrieved, 5.11.2023. https://www.forbes.com/sites/forbesagen-
cycouncil/2019/08/21/how-artificial-intelligence-is-transforming-digi-
tal-marketing/?sh=3b5492b321e1

Hasegawa-Johnson, M. 2017. Image2speech: Automatically generating audio
descriptions of images. US: University of Illinois.

Heikkilä, M. 2024. How to opt out of Meta's AI training. MIT Technology Review.
Retrieved 29.6.2024. https://www.technologyreview.com/2024/06/14
/1093789/how-to-opt-out-of-meta-ai-training/

Heikkilä, M. 2024. AI language models are rife with different political biases. MIT
Technology Review. Retrieved 29.6.2024. https://www.technolo
gyreview.com/2023/08/07/1077324/ai-language-models-are-rife-with-
political-biases/

Huang, M. & Rust, R. 2020. A strategic framework for artificial intelligence in
marketing. Journal of the Academy of Marketing Science. 49(1), 30-50.

Hutchinson, A. 2022. Can You Use AI-Generated Art in Your Digital Marketing

and Content Efforts?. Social media today. Retrieved 10.9.2023
    https://www.socialmediatoday.com/news/can-you-use-ai-generated-
    art-in-your-digital-marketing-and-content-efforts/632398/

IBM. 2020. What is machine learning?. IBM. Retrieved 3.11.2023.
    https://www.ibm.com/cloud/learn/machine-learning

IBM. 2021a. What is contextual advertising. IBM. Retrieved 12.11.2023.
    https://www.ibm.com/watson-advertising/thought-leadership/what-
    is-contextual-advertising

IBM. 2021b. What is programmatic advertising? IBM. Retrieved 4.10.2023.
    https://www.ibm.com/watson-advertising/thought-leadership/what-
    is-programmatic-advertising

IBM. 2022a. How to use predictive analytics in advertising. IBM. Retrieved
    22.9.2023.   https://www.ibm.com/watson-advertising/thought-leader-
    ship/how-to-use-predictive-analytics-in-advertising

IBM. 2022b. What is artificial intelligence. IBM. Retrieved 3.10.2023.
    https://www.ibm.com/topics/artificial-intelligence

IBM. 2022c. What is a chatbot. IBM. Retrieved 15.11.2023.
    https://www.ibm.com/topics/chatbots

IBM 2023a. What is natural language processing (NLP)?. IBM. Retrieved
    8.10.2023. https://www.ibm.com/topics/natural-language-processing

IMB 2023b. What is computer vision?. IBM. Retrieved 8.10.2023.
    https://www.ibm.com/topics/computer-vision.

IBM 2023c What is overfitting?. IBM. Retrieved 7.11.2023.
    https://www.ibm.com/topics/overfitting

IBM 2023d. What is deep learning? IBM. Retrieved 28.11.2023.
    https://www.ibm.com/topics/deep-learning

IBM 2023e. What are neural networks? IBM. Retrieved 4.12.2023.
    https://www.ibm.com/topics/neural-networks

Jain, P. & Aggarwal, K. 2020. Transforming Marketing with Artificial Intelligence.
    International Research Journal of Engineering and Technology (IRJET).
    7(7), 3964-3976

Jannach, D., & Adomavicius, G. 2016. Recommendation engines. IEEE Computer
    Society, 49(9), 100-108.

Kannan, P.K. & Hongshuang, L. 2016. Digital marketing: A framework, review
    and research agenda. International Journal of Research in Marketing 34(1),
    22-45

Kaynak, O. 2021. The golden age of Artificial Intelligence. The golden age of
    Artificial Intelligence. Discover Artificial Intelligence. 1(1), 1-7

Kietzmann, J. Lee, L. McCarthy, I. Kietzmann, T. 2019. Deepfakes: Trick or treat?.
    Business Horizons. 63(2), 1-12

Kok, J. 2009. Artificial intelligence: definition, trends, techniques, and cases.
    Oxford: Eolss Publishers Co.

Kwon, O., Lee, N. & Shin, B. (2017). Big data analytics in E-commerce: A
    systematic review and agenda for future research. The International
    Journal on Networked Business. 26(2), 1-52

Mahajan, D. 2020. Artificial Generation of Realistic Voices. International Journal of Applied Sciences and Smart Technologies. 3(1), 11-26

Mandapuram, M. 2020. Application of Artificial Intelligence (AI) Technologies to Accelerate Market Segmentation. Global Disclosure of Economics and Business. 9(2), 141-149

Nancholas, B. 2023. Narrow artificial intelligence: advantages, disadvantages, and the future of AI. University of Wolverhampton. Retrieved 22.9.2024. https://online.wlv.ac.uk/narrow-artificial-intelligence-advantages-dis-advantages-and-the-future-of-ai/

Natale, S. 2020. To believe in Siri: A critical analysis of AI voice assistants. Communicative Figurations. 32(1), 1-17

Nikolinakou, A., & King, K. W. 2018. Viral video ads: Examining the effects of message and emotional appeal on consumer responses. Journal of Interactive Advertising, 18(1), 1-14.

Rubin, H. J. & Rubin, I. S. 2012. Qualitative interviewing: The art of hearing data (3rd ed.). Thousand Oaks, CA: Sage Publications.

Saldaña, J. 2011. Fundamentals of Qualitative Research. UK, Oxford University Press, Inc.

Sancheza, P., Saura, J. & Velicia, F. 2019. A study of the effects of programmatic advertising on users' concerns about privacy overtime. Journal of Business Research. 96(2019), 61-72

SAS. 2022. Big Data, Bigger Marketing. SAS. Retrieved 30.8.2023. https://www.sas.com/en_us/insights/big-data/big-data-market-ing.html

Statista. 2020. Market value of artificial intelligence (AI) in marketing worldwide from 2020 to 2028. Statista. Retrieved 4.9.2023. https://www.sta-tista.com/statistics/1293758/ai-marketing-revenue-worldwide/

Statista. 2022. Share of budgets allocated to online marketing according to CMOs worldwide as of March 2022, by channel. Statista. Retrieved 4.9.2023. https://www.statista.com/statistics/1222784/marketing-budget-share-channel/

Statista. 2022b. Global programmatic advertising spending from 2017 to 2026. Statista. Retrieved 4.9.2023. https://www.statista.com/statis-tics/275806/programmatic-spending-worldwide/

Statista. 2024. Average time spent per day with digital media in the United States from 2011 to 2024. Retrieved 27.6.2024 https://www.statista.com/statis tics/262340/daily-time-spent-with-digital-media-according-to-us-con-sumsers/

Sterne, J. 2017. Artificial Intelligence for Marketing: Practical Applications. Rising Media. New jersey: Wiley.

This Person Does Not Exist. 2023. This Person Does Not Exist. Retrieved 8.10.2023. https://this-person-does-not-exist.com/en

UC Berkley. 2020. What is machine-learning. UC Berkley. Retrieved.14.11.2023 https://ischoolonline.berkeley.edu/blog/what-is-machine-learning/

Verma S. 2020. Artificial intelligence in marketing: Systematic review and future research direction. Amsterdam: Elsevier Ltd.

Yin, R. 2009. Case study research: design and methods. California: SAGE Publications, Inc

Wedel, M., & Kannan, P. K. 2016. Marketing analytics for data-rich environments. Journal of Marketing, 80(6), 97-121.

Zhang, Y. 2019. Machine Learning Croatia.: INTECH d.o.o

Zhu, H., & Xu, Y. 2021. Exploring the effectiveness of AI-generated content in digital marketing. Journal of Business Research, 134, 312-319.

APPENDIX 1   Interview questions

Background questions

- What is your academic and professional background?
- What is your current position and main responsibilities?
- How long have you worked in marketing?
- Can you tell me about your experience with artificial intelligence in digital marketing?
- How long have you worked with AI and what is your experience utilizing it in marketing?

Current use of artificial intelligence

- Why do you use artificial intelligence in promotional campaigns?
    - What are the benefits and limitations?
- What artificial intelligence-based tools do you use in the various stages of promotional campaigns?
    - What are the roles of these different tools?
- How do you decide when to use artificial intelligence in promotional campaigns?
- What challenges have you faced applying AI to promotional campaigns?
- In your opinion, what ethical considerations should be taken into account when using artificial intelligence in promotional campaigns?
- How do you acquire the necessary skills and knowledge to effectively use AI in promotional campaigns and stay updated on emerging AI technologies?
- How do you measure the effectiveness of AI-driven elements in promotional campaigns?
- How do you address concerns or skepticism that clients may have about the use of artificial intelligence in promotional campaigns?

How AI impacts decision-making processes

- In what ways has the adoption of AI impacted the creativity and innovation in promotional campaign designs?
- How do humans collaborate with AI during the planning and running of promotional campaigns?
    - What decisions are made by humans and what are decided by AI?
- To what extent do you trust the recommendations and insights provided by AI systems?
    - Has this changed over time? Why?
- How do you address potential biases in AI recommendations and decisions?
    - What measures are taken to ensure fairness and inclusivity in campaign strategies?
- In your opinion, how do you see the role of human decision-making evolving in the future when utilizing AI in promotional campaigns?

Future outlook

- How do you envision artificial intelligence enhancing promotional campaigns and their planning process in the future?
- What are the key developments and features of artificial intelligence that you expect to influence promotional campaigns the most in the near future?
- Are there any specific tasks or activities in your promotional campaigns where you plan on implementing artificial intelligence in the future?
- What challenges do you anticipate facing when incorporating artificial intelligence in future promotional campaigns?
- What financial investments are required to improve the use of artificial intelligence in future promotional campaigns?