

UNIVERSITY OF LJUBLJANA  
SCHOOL OF ECONOMICS AND BUSINESS

MASTER'S THESIS  
**ASSESSING THE RELEVANCE AND QUALITY OF ARTIFICIAL  
INTELLIGENCE-GENERATED CONTENTS FOR START-UPS**

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## AUTHORSHIP STATEMENT

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## ABSTRACT

This thesis explores the relevance of using ChatGPT for content marketing, specifically within the context of sports start-up marketing communications. It examines the differences in efficiency and effectiveness between traditional content creation methods and the integration of ChatGPT into the process. The findings provide valuable insights for start-ups considering the use of artificial intelligence to enhance their marketing efforts.

**KEY WORDS:** content marketing, artificial intelligence, machine learning, ChatGPT, marketing, content efficiency, content effectiveness, running, running market, Everyrun, content credibility measurement, content persuasiveness measurement, information quality evaluation, artificial intelligence history, AI implementation, ethical considerations

## SUSTAINABLE DEVELOPMENT GOALS

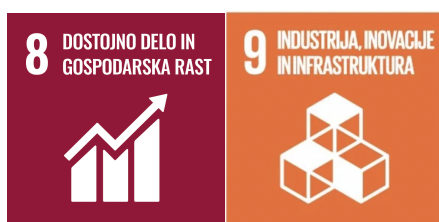


## POVZETEK

Ta magistrska naloga raziskuje pomembnost uporabe orodja umetne inteligence ChatGPT za vsebinsko trženje, zlasti v kontekstu tržnih komunikacij športnih startupov. Preučuje razlike v učinkovitosti in uspešnosti med tradicionalnimi metodami ustvarjanja vsebin in vključitvijo ChatGPT v ta proces. Ugotovitve ponujajo dragocene vpoglede za startupe, ki razmišljajo o uporabi umetne inteligence za izboljšanje svojih tržnih prizadevanj.

**KLJUČNE BESEDE:** vsebinsko trženje, umetna inteligenca, strojno učenje, ChatGPT, trženje, učinkovitost vsebin, uspešnost vsebin, tek, trg teka, Everyrun, merjenje verodostojnosti vsebine, merjenje prepričljivosti vsebine, ocenjevanje kakovosti informacij, zgodovina umetne inteligence, implementacija umetne inteligence, etični vidiki

## CILJI TRAJNOSTNEGA RAZVOJA





## TABLE OF CONTENTS

<b>1</b>	<b>INTRODUCTION .....</b>	<b>1</b>
<b>2</b>	<b>UNDERSTANDING THE ROLE OF CONTENT MARKETING .....</b>	<b>2</b>
2.1	Definition and goals of content marketing .....	3
2.2	Evolution of content marketing.....	6
2.3	Types of content marketing .....	8
2.3.1	Video as a type of CM.....	10
2.3.2	Blogging .....	11
2.3.3	Webinars and online events.....	11
2.3.4	Whitepapers .....	11
2.3.5	Podcasting.....	12
<b>3</b>	<b>EVALUATING CONTENT MARKETING EFFECTIVENESS AND EFFICIENCY: METRICS AND METHODOLOGIES .....</b>	<b>12</b>
3.1	Content efficiency and cost .....	12
3.2	Content quality and effectiveness.....	13
3.2.1	Content KPIs.....	14
3.2.2	Information quality evaluation .....	14
3.2.3	Content persuasiveness.....	15
3.2.4	Content credibility .....	15
3.2.5	Understanding consumer response to content .....	15
<b>4</b>	<b>AI DEFINITION, AI IN MARKETING .....</b>	<b>16</b>
4.1	Evolution of IA.....	16
4.2	Exploring Generative AI.....	19
4.3	ChatGPT by OpenAI.....	21
4.4	Use of AI in different fields of marketing.....	22
4.4.1	Leveraging AI for product innovation.....	22
4.4.2	Optimising pricing strategies through AI .....	23
4.4.3	Enhancing promotional efforts with AI.....	24
4.4.4	Strategic product placement optimisation with AI .....	24
4.5	Use of AI in content marketing .....	25
4.5.1	AI in content generation: automating creativity and efficiency .....	25
4.5.2	Enhancing content quality and relevance through AI .....	26

4.5.3	AI-driven social media and email marketing .....	27
4.6	Exploring ethical challenges and perceptual complexities in AI-generated content .....	28
4.7	Critical differences between AI-generated and human-written content.....	29
5	ABOUT THE RUNNING MARKET AND SELECTED COMPANY, EVERYRUN .....	30
5.1	The running market globally and in Europe .....	30
5.2	Everyrun start-up and its product.....	32
6	EVALUATING AI-GENERATED AND HUMAN-WRITTEN CONTENT: AN EMPIRICAL STUDY FOR START-UPS .....	33
6.1	Research purpose and goals .....	33
6.2	Methodology and data collection .....	34
6.2.1	Content marketing efficiency analysis methodology .....	35
6.2.2	Methodology for evaluating content effectiveness .....	35
6.3	Results .....	37
6.3.1	Content efficiency comparison findings.....	37
6.3.2	Online survey findings in content effectiveness and quality.....	40
6.3.3	Additional findings by subgroups .....	44
7	DISCUSSION .....	47
7.1	Interpretation of research results .....	47
7.2	Managerial implications .....	49
7.3	Limitations and recommendations for further research .....	50
8	CONCLUSION.....	51
	LIST OF KEY LITERATURE .....	52
	REFERENCE LIST .....	53
	APPENDICES .....	65

## LIST OF TABLES

Table 1: Comparative analysis of time spent on each content creation stage .....	38
Table 2: Cost difference calculation: human-written vs. AI-generated content.....	39
Table 3: Content effectiveness findings .....	42
Table 4: Influence of age on content origin guess.....	44

Table 5: Encouragement to participate in community running events, multivariate test ....	45
Table 6: Effect of education level on content credibility .....	46
Table 7: Effect of running experience motivation to participate in running events .....	46
Table 8: Comparative findings on content relevance nr. 9.....	47

## LIST OF FIGURES

Figure 1: Content distribution.....	5
Figure 2: The Content Marketing Matrix .....	9
Figure 3: Most commonly produced CM types worldwide in 2022.....	10
Figure 4: Glasswing Venture's proprietary, data-driven timeline of the evolution of Artificial Intelligence .....	18
Figure 5: Number of runners in leading marathons worldwide 2022-2023, by city .....	31
Figure 6: Respondents running experience .....	40
Figure 7: Involvement in running communities .....	41
Figure 8: Perceived content origin.....	43
Figure 9: Comparative findings on content relevance.....	47

## LIST OF APPENDICES

Appendix 1: Technical task for article creation .....	1
Appendix 2: Blog post, generated by ChatGPT-4o mini.....	2
Appendix 3: Blog post written by a professional copywriter.....	4
Appendix 4: Blog post content evaluation questionnaire .....	6

## LIST OF ABBREVIATIONS

<b>AI</b> – (sl. umetna inteligenca); artificial intelligence
<b>AR</b> – (sl. obogatena resničnost); augmented reality
<b>ChatGPT</b> – (sl. Klepetalni generativni predtrenirani transformator); chat generative pre-training transformer
<b>CM</b> – (sl. Evropska unija); content marketing
<b>GAI</b> – (sl. vsebinski marketing); general artificial intelligence
<b>GPUs</b> – (sl. grafične procesne enote); graphics processing units
<b>IQ</b> – (sl. kakovost informacij); information quality
<b>KPI</b> – (sl. ključni kazalnik uspešnosti); key performance indicator
<b>LLM</b> – (sl. velik jezikovni model); large language model

**ML** – (sl. strojno učenje); machine learning

**MMM** – (sl. modeliranje marketinškega spleta); marketing mix modelling

**NLP** – (sl. obdelava naravnega jezika); natural language processing

**SEO** – (sl. optimizacija iskalnikov); search engine optimisation

**VAEs** – (sl. variacijski avtokoder); variational autoencoder



# 1 INTRODUCTION

Content is king. This historical essay, written by Microsoft founder Bill Gates in 1996, is not less but possibly even more relevant these days (Kraus et al., 2019). Content creators, viral content, content strategy, branded content, AI-generated content - we hear these phrases daily, but what do they actually mean? And how do we make sense of this endless sea of different types of content that bombard us every day from each side?

Content marketing (CM) is the strategic practice of crafting, sharing, and distributing digital content designed to provide value to customers, clients, partners, and the brand and foster beneficial interactions and relationships (American Marketing Association, n.d.).

A study by the Content Marketing Institute found that 91% of B2B marketers use CM to reach customers, with 86% stating that it is a key strategy for their organisation (Singh & Mathur, 2019). Also, the projected valuation of the CM industry, reaching \$600 billion in 2024, marks a significant uptick from previous years (Haan, 2024).

The earliest practice of CM can be traced as far back as 960 A.D., when one of the first brands was created in China, using storytelling along with helpful content for its customers (Hamilton & Lai, 1989). Nevertheless, CM was first defined in scientific literature as a separate field of marketing only in 2008, when it started emerging as a rapidly growing field of marketing and communications, shifting away from traditional persuasive advertising towards providing valuable information to consumers (Forrest, 2019). It involves creating and sharing purposeful, exciting and valuable content in digital spaces, including text, video, and audio formats (Dilys et al., 2022). CM is more effective compared to traditional marketing approaches. It usually brings more sales, reduced costs, and enhanced consumer loyalty. The concept operates at the intersection of paid, owned, and earned media, with market segmentation playing a crucial role in tailoring content to specific target audiences (Forrest, 2019).

Lately, many businesses have been realising the importance of high-quality content and growing their copywriter teams as a result. Now, each successful business has to be in the publishing business as well in order to tell the story, create high-quality content and build strong, trustful relationships with customers, resulting in stable and growing profits (Pulizzi, 2011). The problem is that high-quality content is expensive, and a great CM strategy is not easy to execute. According to Forbes research, in 2024, most companies will allocate between \$550 and \$2,000 to create individual pieces of content (Haan, 2024).

The game changed dramatically when Open AI introduced ChatGPT (chat generative pre-trained transformer). This open-source large language model can analyse and produce large quantities of content in a very short time (OpenAI, 2022). A McKinsey report suggests that generative artificial intelligence (GAI) could enhance the global economy by an estimated \$2.6 to \$4.4 trillion annually across diverse applications (McKinsey, 2023).

In 2024, 85% of marketers indicate increased use of generative AI in their work, reflecting a transformative reliance on AI to enhance and redefine content creation and engagement (Haan, 2024). According to global data from an IBM study, large corporations are twice as likely to implement AI technologies compared to their smaller counterparts. Nonetheless, 41% of smaller firms are actively developing their AI strategies (IBM, 2022).

Despite its huge popularity and high technology adoption rates, AI-generated content is not well researched, models can hallucinate, and there is a big question of copyrights: Who should take responsibility and credit for the created content?

The purpose of this study is to assess how practical and effective ChatGPT version 4o mini is as a tool for creating content in sports start-ups' marketing communications. It will compare the cost and quality of content produced by ChatGPT with that created by humans. Additionally, the study will evaluate the difference between AI-generated and human-written content in encouraging participation in community running events.

The thesis will be structured as follows: I will first introduce the concept of CM, its development history, types, and evaluation methods. Then, I present the concept and history of AI. I will go deeper into large language models (LLM) that lie behind ChatGPT and will look at the current literature review of use cases of AI for CM, as well as its limitations and ethical considerations. After that, I will move to running market research. I will present Everyrun, the selected Spartech start-up. In the final part of the thesis, I will analyse the cost and marketing department efficiency difference between using copywriters for content creation and making AI-generated content. I will then survey runners and potential Everyrun customers to understand if there is a difference in information quality, persuasiveness, credibility, and the ability to motivate customers between the two pieces of content from a customer point of view.

## **2 UNDERSTANDING THE ROLE OF CONTENT MARKETING**

In order to understand the role of CM in the modern world, I will first examine the definition of CM and its primary qualities. Later, I will delve into the history of CM, the earliest examples of its usage, and its effectiveness. I will also explore various types of CM, how they have evolved, and the role they currently play in the customer journey and sales cycle.

In the modern world, where the average user is exposed to up to 10,000 ads a day (Anderson, 2023), and our attention spans are getting shorter and shorter, customer relationship building is becoming increasingly crucial. Brands work hard to create high-quality, practical, informative content to provide value and build brand credibility. High quality content plays a significant role in it.

Although the prehistoric images found in caves can be considered as CM because they contained important information for survival in the local area (Meyer, 2022), one of the

oldest examples of CM used in a similar form to modern techniques is Benjamin Franklin's "Poor Richard's Almanack", published in the 1700s (Beard et al., 2021).

Later, Bill Gates' essay, written in 1996 and simply titled "Content is King", argued that content is the future. He predicted that with the development of the internet, publishers and creators would be able to deliver content at almost no cost and make a substantial amount of money by charging very small fees from readers for access to their work. The essay's title became a very popular phrase, and it is still relevant, even almost 30 years later, which is quite significant, considering how much the marketing industry has changed and developed since then (Kraus et al., 2019).

## **2.1 Definition and goals of content marketing**

There has been quite a lot of research and work done on defining CM. However, let us first examine the word "content" itself. According to the Cambridge Dictionary, content is defined as "information, images, video, etc., that are included as part of something, such as a website" (Cambridge Dictionary, n.d.). When it comes to the term "content marketing," I found a few definitions. For example, the American Marketing Association defines digital CM as "the activity associated with creating, communicating, distributing, and exchanging digital content that has value for customers, clients, partners, the firm and its brands." (American Marketing Association, n.d.). However, one of the first definitions was proposed back in 2008: "the creation and distribution of educational and/or compelling content in multiple formats to attract and/or retain customers" (Pulizzi & Barrett, 2008). There are also views that the purpose of CM is to "draw in leads and supplement brand credibility" (Silverman, 2012). According to A Dictionary of Marketing, CM is the process of building brand recognition, attracting potential customers, or generating sales by creating informative content in the form of blog posts, videos, comments, etc. (Doyle, 2016).

For the purpose of this research, I will adhere to the American Marketing Association's definition of CM. Although it primarily discusses digital marketing, I believe that in the modern world, even printed versions of content are typically replicated online, and this definition best suits the study's objectives.

CM differs from traditional advertising, which often interrupts the audience's experience to deliver a promotional message and persuade potential customers to buy a product or service (Ronald, 2014). Instead, the goal of CM is to attract the audience to the company's own sources and provide value with relevant content - by educating the end customer and offering innovative solutions to their problems. CM that can deliver such results is considered to be effective (Kraus et al., 2019).

Implementing a CM strategy requires rethinking the communication approach. Instead of pushing advertisements, companies should focus on an inbound strategy - attracting customers by offering educational and engaging content. In this way, companies create a

desired resource and brand recognition. While creating compelling content, marketers address customer problems and provide advice on topics they find confusing as a priority. This type of content almost never directly mentions the company or its products. Instead, it focuses on areas of the company's expertise. However, in order to effectively address customer needs, there needs to be a great understanding of the target audience, channelled into content that is of high information quality, pervasive and credible (Lopes & Casais, 2022).

The critical elements of successful CM include inbound logic, where the firm creates and presents valuable content on external sources in a natural way. The next crucial ingredient is personalisation, where messages are tailored specifically for each customer, as opposed to broad, standard market segments. This practice, in particular, solves the problem of modern consumers, who are so overwhelmed with the amount of content that they are only ready to interact or invest time in reading it if it solves a particular customer problem. The third part of a successful CM strategy is journey facilitation - creating meaningful, complementary content pathways that guide potential customers towards product purchase (Terho et al., 2022).

CM plays a crucial role in company branding, SEO visibility, and sales funnel facilitation. In terms of branding, it helps narrate the brand's story and offers a way for potential customers to engage with it. Therefore, high-quality content tells the brand story and ensures that each piece of content is crafted with the company's values in mind (Baltes, 2015). However, it is also essential to distinguish between the two concepts. While branding sets up the voice, positioning and tone that has to be followed in all communications, CM helps to execute all the above, and it can be changed and adjusted at any point (Shopify, n.d.)

It is vital to note that many companies now regard content as a significant brand asset (Wall & Spinuzzi, 2018) because it can drive traffic to a company's website and create sales and revenue as a result. Starting in the early 2000s, businesses realised the importance of SEO and optimised their content for search engines and keywords. Appearing on the first page of a search engine ensures that visitors immediately see the website, highlighted by the keywords they have entered in the search field (Setiawan, 2020). This dramatically increases organic traffic to the website and decreases customer acquisition costs as a result.

In terms of the role of CM in sales funnel facilitation, it is beautifully described by Wall, 2018, as the "art of selling without selling". The main idea behind this is to produce different pieces of content, like tweets, LinkedIn posts or blog posts, where each individual piece of content does not sell anything on its own. However, these content pieces are interconnected, collectively creating a "buyer's funnel" intended to guide the audience towards purchasing the product or service (Wall & Spinuzzi, 2018).

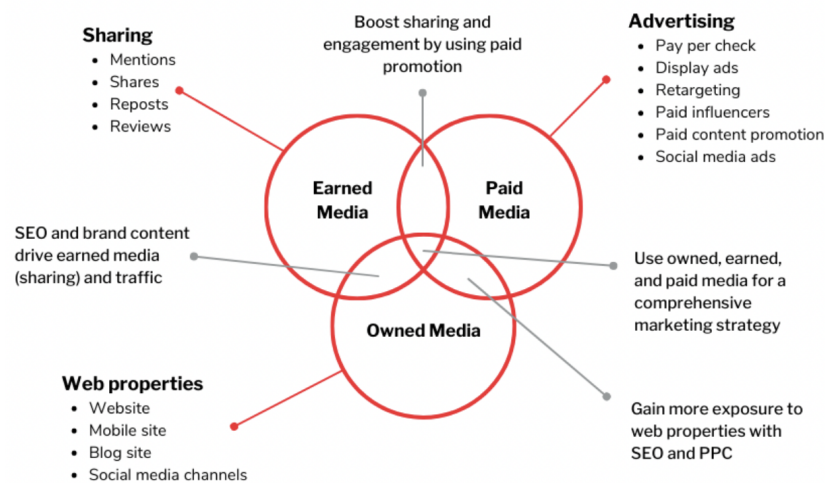
In order to produce the right content at the right time, ensure it aligns with the company's mission and vision, and deliver maximum content marketing effectiveness and efficiency, a

CM strategy needs to be created. While creating an effective CM strategy, it is vital to work on its key elements. First of all, there should be a concrete understanding of the audience: interests, needs, and behaviours. It is common to conduct in-depth market, customer and competitor analysis to help marketers identify the market gaps, create an ideal customer persona and generate content that resonates with the audience (Greenberg, 2023).

The next step would be to define SMART goals for the content strategy. SMART stands for Specific, Measurable, Achievable, Relevant, and Time-bound, and it helps to stay focused on specific objectives. In this part, the marketing team should consult and work closely with the company decision-makers to ensure that the content goals are 100% aligned with the current business goals. The fundamental bases for achieving the SMART goals are content effectiveness and efficiency. Produced content needs to be relevant to the target audience and of good quality in order to achieve effectiveness and, at the same time, have a high efficiency to ensure a high return on investment.

The next step is the production of an editorial calendar. One of the critical components of content strategy is content distribution, which involves earned, paid, and owned primary channels (Figure 1).

*Figure 1: Content distribution*



*Source: Greenberg (2023).*

The final step of the CM strategy is performance measurement. The goal of content marketing is to deliver value to customers and boost sales. The “value delivery” is challenging to measure. Therefore, standard metrics used are website traffic, engagement rates, the number of followers on social media, and sales volume. Lopes and Casais also suggest conducting annual customer in-depth interviews and satisfaction forms to identify potential areas for improvement (Lopes & Casais, 2022). Every new marketing content strategy should consider the previous marketing content strategy performance metrics to ensure constant improvement and secure high sales volume (Greenberg, 2023).

Talking about the overall company content ecosystem, each business produces various types of content, including product content, marketing content, technical content, and pass-through content, such as user-generated and social media content (Bailie & Urbina, 2013). Therefore, it is fair to say that every successful company now operates in two realms: their primary business sector and the publishing industry (Baer, 2012). As a result, sustaining a solid online presence and ensuring credibility as a “publisher” requires a lot of work. Wall proposes an excellent framework for “content recycling” and reuse. The main idea behind it is that one piece of content that is written once and usually published on owned media, such as a company website or newsletter, can later be adopted in size and complexity to be used on social media and other platforms. This strategy dramatically decreases the number of individual pieces of content that need to be produced and, at the same time, makes it easier to deliver consistent messages and brand presence across all company channels (Wall & Spinuzzi, 2018).

## **2.2 Evolution of content marketing**

Some authors suggest that the fact that our early ancestors used images on cave walls to interact, persuade, and connect can be described as the earliest CM practice (Pulizzi, 2011). Nonetheless, the function of these primitive communicative acts was primarily survival and the dissemination of knowledge within tribal groups, not communication marketing as it is recognised in the contemporary business context.

If I follow the definition of CM as a process of value creation through storytelling, there is a valuable reason to look at the early examples of branding as well (Beard et al., 2021). Therefore, the White Rabbit sewing needles, which is considered to be one of the oldest examples of brands in the world, can be considered one of the oldest examples of CM, utilising storytelling techniques. The brand was created during the Chinese Song Dynasty from 960 to 1279 A.D. According to the legend, the Jade Rabbit is a companion to the moon goddess Chang'e, who lives on the moon and is said to pound the elixir of life for the immortals (Hamilton & Lai, 1989). Incorporating the white rabbit into the branding of sewing needles during the Song Dynasty cleverly connected these symbolic associations directly to the daily lives of the product's primary users, largely female. These women, through the act of sewing, could see themselves as partaking in the rabbit's qualities of diligence and care (Beard et al., 2021).

During the Late Imperial period in China, spanning from 960 to 1279 A.D., many tea brands existed. To stimulate demand, businesses published guides and books focused on tea consumption. According to Hamilton, these publications provided detailed discussions on different types and brands of tea, even offering recommendations on which brands were most appropriate as gifts for officials (Hamilton & Lai, 1989).

One of the important historical events in CM history was Johannes Gutenberg's creation of a metal alloy in 1450, which facilitated the development of movable type machines and

enabled widespread printing across Europe. As a result, printing information and the practice of brands using their own media became possible. Many authors believe that the earliest documented example of CM is “Poor Richard's Almanack”, published in the 1700s. The idea was to provide its readers with helpful information and promote his printing business (Beard et al., 2021). Throughout the 17th and 18th centuries, we can find countless examples of printed content distributed to educate customers and stimulate future purchases. For example, The Furrow magazine was first published by John Deere in 1895. It was made for farmers, giving tips and tricks on how to do agriculture better, how to make farming more profitable and the latest trends in farming (Lopes & Casais, 2022).

Alexander Rowland, an English businessman, played a significant role in the early history of CM by promoting “Macassar Oil”, a hair treatment product. He initially used brochures to share information about human hair care, and in 1853, he republished his content in a book titled The Human Hair. In this book, he discussed aspects of hair, including its physiological properties, how to preserve and enhance its beauty, and different decorative styles from around the world (Beard et al., 2021).

The other outstanding example was the Michelin Guide, first published in the 1900s. Even though there were about 3000 cars in France at the time, the guide was published in 35000 copies. It was filled with useful details on tyre maintenance and repair, alongside a directory of fuel stations, hotels, city maps, and a list of mechanics (which numbered fewer than 600 across all of France), among other resources (Baltes, 2015). Claude Hopkins' company also provided valuable information for their customers through print advertisements and free recipe booklets in the early 1900s (Lears & Jackson, 1983).

Furthermore, soap operas were created in the 1900s - the early days of radio and television broadcasting as a way to promote soap brands and other household products. These serial dramas were designed to capture and retain audiences by telling ongoing stories with recurring characters and plotlines. The name “soap opera” comes from the fact that many of these early dramas were sponsored by soap companies, who used the programs as a means of promoting their products to a captive audience (Smulyan, 1939). The first soap opera was “Painted Dreams”, which debuted on radio in 1930 and was sponsored by Procter & Gamble, a major soap manufacturer. The content of these soap operas was often tailored to the interests and concerns of the target audience, which typically consisted of women who were responsible for purchasing household products (Stern et al., 2007). The use of soap operas as a marketing tool was highly successful. Many brands, including Colgate, Palmolive, Lever Brothers, and General Mills, sponsored these programs and became household names as a result.

The rise of the internet in the 1990s and 2000s saw a shift towards digital CM (Baltes, 2015). Now, a new own media called “website” provided the possibility to have a brand blog. Soon, search engine optimisation (SEO) emerged, becoming an essential tool for driving traffic to these sites and growing revenues as a result (Iskandar & Komara, 2018). This was a critical

stage of CM evolution, as from now on, most businesses optimised their website content for keywords, and it was the start of a newer ending race for improving the website's visibility, ranking and making it easier for potential customers to find and engage with business content (Whitehead, n.d.).

With customers becoming digitally savvy and the internet becoming an essential part of daily life, businesses have had to adapt their marketing strategies to keep up with changing consumer behaviours. Social media platforms such as Facebook, Twitter, Instagram, and LinkedIn are now essential channels for distributing and promoting content to the targeted audience, and, as a result, CM has become an essential part of the marketing mix for most businesses. Social media has enabled brands to create more personalised and targeted content and engage with their audiences in real-time (PWC, 2023).

One of the new trends in CM practices is the use of interactive content, such as quizzes, polls, and surveys. It allows brands to engage with their audiences in a more immersive way. Other examples of interactive content can be chatbots and voice assistants. These technologies take the user experience to a whole new level, allowing users to simply speak or chat to get desired information or support (Lopes & Casais, 2022).

In addition to social media and new content formats, brands can now use data analyses to understand their audiences and create additional targeted and more effective content. Analytics tools such as Google Analytics and social media analytics can provide valuable insights into audience behaviour, content performance, and engagement rates (Ansari et al., 2019).

Furthermore, OpenAI's launch of ChatGPT in 2023 has notably reshaped content marketing by streamlining content creation, making it faster and providing a huge potential to boost content marketing efficiency. Experts in the field shared their perspectives, highlighting the benefits of ChatGPT in creating personalised content at scale without losing content effectiveness and quality (TechRound, 2023).

### **2.3 Types of content marketing**

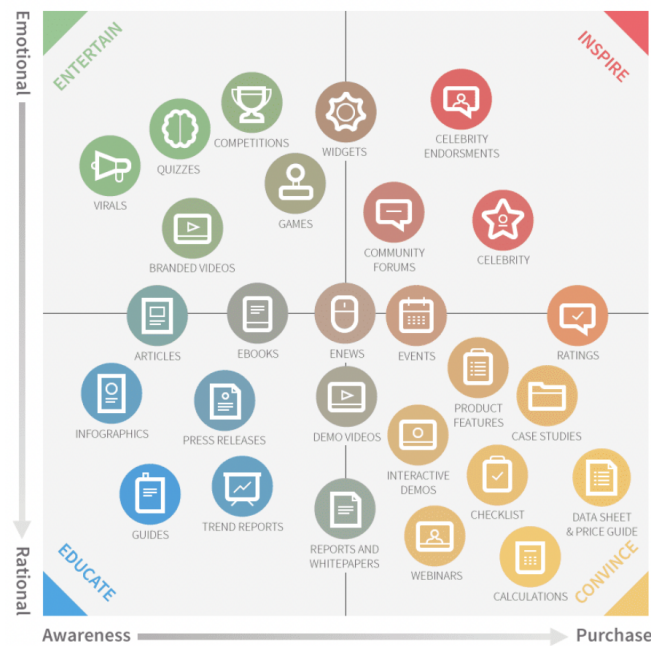
CM has continuously evolved over the years, with various types emerging, gaining popularity, and others fading away. The advancement of technologies and the increasing prominence of social media have influenced changes in audience attention spans and preferences, subsequently impacting the demand for different types of content (Li et al., 2021).

There are many types of CM available. To help us analyse and effectively organise it into logical groups and orders, I will use The Content Marketing Matrix (Figure 2), republished and updated by Dave Chaffey in 2024.



As shown in Figure 2, Chaffey divides CM into four groups based on its purpose: to educate, inspire, entertain or convince, alongside two dimensions: Emotional - Rational and Awareness - Purchase (Chaffey, 2024). In scientific discussions about Emotional and Rational appeals, I found many arguments that appeal should be deferred, depending on what product is promoted. Hedonic products tend to resonate more with emotional appeals, tapping into desires for pleasure and enjoyment. On the other hand, utilitarian products are better suited for rational appeals, focusing on their practical benefits and functionality (Belch & Belch, 2004).

*Figure 2: The Content Marketing Matrix*



*Source: Chaffey (2024).*

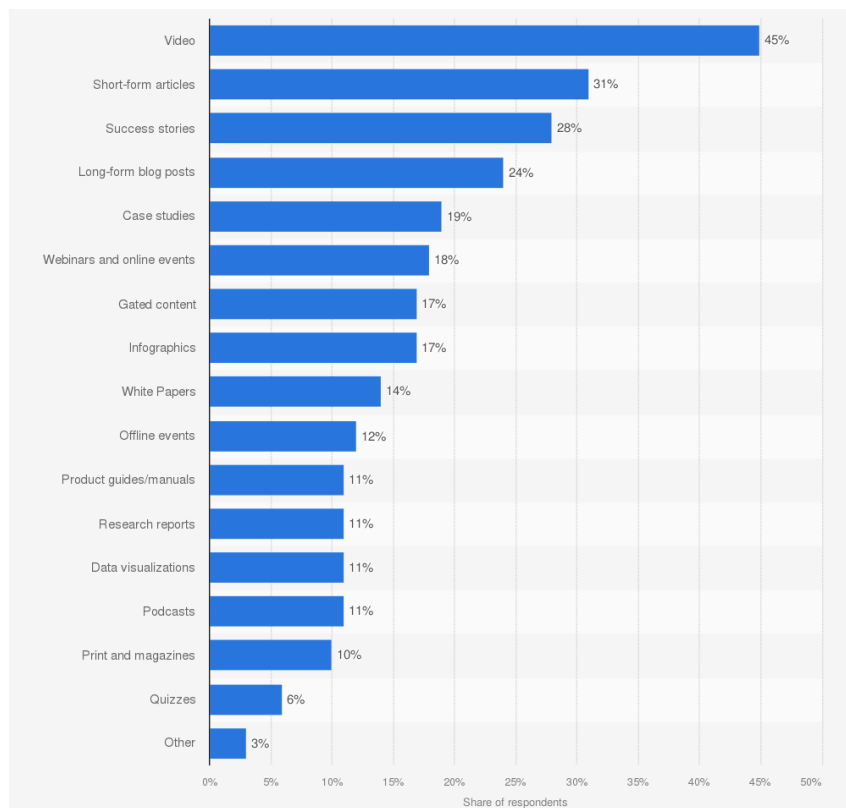
However, some authors argue that brands with products that are not very different from their competitors should target consumers' emotions in their communication strategy. In contrast, for brands that stand out from their competitors, leveraging rational arguments tends to be more suitable, as it is easier to highlight their distinct features logically (Blakeman, 2015). Nevertheless, from experience, we can see that this is not always the case and that one can argue either way. To summarise, appeal should be considered when creating a content strategy and working on CM (Lopes & Casais, 2022).

Having the Awareness - Purchase dimensions in the Content Marketing Matrix helps marketers identify types of content that could be used at different stages of the consumer journey and approach their CM strategy in a systematic and organised way. While emotional and rational appeals are common in advertising, Beard emphasises that CM stands out by aligning with traditional marketing objectives but differs in its focus on building long-term relationships rather than driving immediate sales (Beard et al., 2021). Therefore, as long as

content meets the criteria, we can consider all the twenty-seven types of content featured in Figure 2 as CM.

Although it is easy to find examples of the use of all twenty-seven types of CM from the Content Marketing Matrix, I will examine the most popular ones based on Worldwide research conducted across 34 countries (Figure 3).

*Figure 3: Most commonly produced CM types worldwide in 2022*



*Source: Statista (2022).*

### 2.3.1 Video as a type of CM

Video marketing is a powerful CM tool that allows brands to communicate their message visually (Lou et al., 2019). As Figure 3 shows, video is the most popular type of CM and one of the most effective. Video content is important as it can be adjusted for different purposes and platforms, for example, teasers or short Instagram clips and longer YouTube content. Video content helps expand brand presence across multiple channels, enhancing the overall reach (Zomeno & Blay-Arráz, 2021).

For brands that offer products that require significant consumer engagement, informative videos tend to be most effective because consumers generally do not put much effort into gathering information about products (Lopes & Casais, 2022). Video content can be shared on various platforms, including websites, social media channels, and video-sharing

platforms like YouTube, to increase brand exposure, engage viewers, and drive conversions (Raitaluoto, 2023).

### 2.3.2 Blogging

The second, third, and fourth positions in Figure 3 are different types of blogging, which can arguably be even more popular than Video. Blogging involves creating and maintaining a dedicated blog where brands can share informative and engaging articles.

User satisfaction with a brand's blog content significantly boosts loyalty. Satisfied users enjoy reading the content, which helps them form emotional ties with the brand and promotes sustained engagement (Lopes & Casais, 2022). Blogging has proven to be effective in establishing thought leadership, providing valuable insights, and addressing customer pain points. Well-crafted blog posts not only contribute to generating organic traffic and increasing brand visibility but also foster a sense of community among readers (Up Inc., 2023).

Case studies can also be identified as a part of blogging. However, this particular type of content helps to share brand success stories and explain how they were successful in working with specific companies. They are helpful in the later stages of the customer journey and usually serve as excellent “social proof”, especially for B2B businesses (Vinerean, 2017).

### 2.3.3 Webinars and online events

Businesses organise webinars and online events to engage a remote audience through live or pre-recorded presentations, workshops, or seminars. Typically, these events are utilised for educational purposes, lead generation, product demonstrations, or customer engagement and often feature interactive elements such as Q&A sessions, polls, and chat functions to foster interaction (Livestorm, n.d.).

During the pandemic, webinars became extremely popular and often necessary for the survival of many businesses. However, their convenience and cost-effectiveness have helped maintain their popularity even post-pandemic. Companies continue to use webinars because they allow for broad global reach without the logistical costs associated with physical events (Eric, 2024).

### 2.3.4 Whitepapers

In the landscape of CM, whitepapers stand out as a sophisticated tool designed to engage a well-informed audience. These documents typically dive deeply into the topic, offer thorough analysis and present solutions to complex problems. All the arguments are usually supported by academic research, data, and expert insights (Tanev, 2020). Whitepapers are

especially valuable in B2B marketing communications, where they serve as a pivotal resource for decision-makers contemplating significant investments or strategic shifts. Thus, whitepapers are crafted not only to educate but also to build trust and establish the issuing organisation as a leader in its field. In the CM funnel, whitepapers play a crucial role in nurturing leads further down the sales funnel (Carmicheal, 2020).

### 2.3.5 Podcasting

Despite podcasts being at the bottom of the list, used by only 11% of the companies in their CM strategies (Figure 3), I will take a closer look at this type of CM. It is one of the newest types of CM, and it rapidly achieved widespread popularity. A recent poll conducted by Backlinko discovered that there are more than 460 million podcast listeners worldwide (Backlinko, 2024), which is approximately 5.79% of the World population.

A podcast is an on-demand series of audio episodes resembling talk shows and documentaries that listeners can stream or download at their convenience on various devices and platforms like iTunes, Spotify, and Stitcher. It offers a vast selection of content typically under an hour long, ideal for daily commutes. Most podcasts are free to download or listen to (Waddingham et al., 2020).

## 3 EVALUATING CONTENT MARKETING EFFECTIVENESS AND EFFICIENCY: METRICS AND METHODOLOGIES

CM relevance and quality can be defined by content effectiveness and efficiency. Content effectiveness is characterised by its relevance, quality, persuasiveness, credibility and ability to meet the needs and interests of the audience. Highly effective content captures attention and maintains engagement through informative, entertaining, or valuable insights (O'Brien & Toms, 2018). At the same time, content marketing efficiency is the ability to maximise desired outcomes from content marketing activities while minimising the input or resources required - essentially doing more with less (Zhang, 2023).

For start-ups, where resources are often constrained, evaluating CM relevance is critical to ensuring that investments yield optimal returns (Inkorporated, 2024). I will explore the methodologies and metrics used to evaluate content from a start-up perspective, drawing on academic literature and industry practices.

### 3.1 Content efficiency and cost

Reducing costs in marketing departments is essential for enhancing both efficiency and profitability. Cutting unit costs can boost gross profit returns, offering greater pricing flexibility and the potential for increased sales volume (Dahan & Srinivasan, 2011).

Content production costs can be divided into two categories: direct and indirect. Direct costs involve expenses related to content creation and distribution (Twine, 2024). Indirect costs encompass the time and resources in-house teams invest in content creation, strategy development, and campaign management (Faster Capital, n.d.).

Many variables can affect the cost of each piece of content, such as the content type, expertise required, time, and specific resources used in production. Content efficiency is a critical metric in a brand's marketing strategy, reflecting the relationship between quality, content impact, and the time invested in its production. High content efficiency implies the ability to produce high-quality content swiftly and intelligently (Curi, 2022).

There are not many studies done on evaluating CM efficiency or costs. However, the methodology proposed by Arthorn Riewpaiboon for measuring costs offers a practical approach to comparing the costs associated with different production processes. It involves three main steps: identifying resources, measuring resource usage, and valuing these resources.

As a first step, Riewpaiboon suggests identifying all resources needed for production, such as personnel, equipment, and software. Next, he measures the usage of these resources by tracking hours worked, days of equipment rental, and software usage duration. Finally, these resources will be evaluated using standardised cost measures. For example, apply wage rates for personnel and rental or purchase prices for equipment and software. Indirect costs like administrative support are also considered (Pharm, 2008).

Han (2012) also conducted a related study evaluating the costs of e-learning content development. This methodology focuses on modelling the content creation workflow, detailing the roles and time investments required at each stage. Han suggests defining the technical personnel involved in content creation and then modelling the entire content creation workflow. The time investment depends on the complexity of the content and the team's efficiency. Han's methodology utilises two approaches to calculate the total cost: applying software development cost standards and conducting wage surveys for technical personnel. He determines the daily wage rates for mid-level technicians and multiplies them by the total input days, obtaining a comprehensive cost estimate (Han, 2012).

### **3.2 Content effectiveness**

Content effectiveness evaluation is crucial for effective CM, as it can help to enhance customer conversion, website visibility, and lead generation (Ugolokov et al., 2020). A comprehensive content quality scale usually includes both functional and hedonic characteristics to assess its impact on customer satisfaction and loyalty (Berger & Matt, 2016).

### 3.2.1 Content KPIs

Key Performance Indicators (KPIs) in CM are specific, quantifiable metrics used to evaluate the success and impact of CM efforts in achieving strategic business objectives. These indicators provide a clear and measurable way to track progress, understand the effectiveness of various content strategies, and make informed decisions to optimise future efforts (Linker, 2024).

There are many possible content KPIs that can be set up based on specific business goals, such as website traffic, conversion, SEO performance, revenue metrics, and behavioural metrics. For social media, the most common would be the number of likes, shares, and profile visits (Newberry & Macready, 2024).

It is common practice to set KPIs for each piece of content in a CM strategy. This way, marketing managers and start-up owners can see results that directly affect revenue. However, as mentioned before, the main CM goal is to deliver value to the customer, which is more difficult to measure. Therefore, I will explore other content effectiveness evaluation methods.

### 3.2.2 Information quality evaluation

Information quality (IQ) assessment frameworks can help address the growing importance of data and information quality in various domains. Stvilia et al. (2007) present a robust framework to evaluate the quality of information in diverse settings, which can be particularly useful for assessing blog posts. The framework categorises IQ into intrinsic, contextual, and reputational dimensions, each addressing different facets of information assessment.

Intrinsic measures focus on the content's inherent properties, independent of external influence. It can include the accuracy of information provided, the clarity and cohesiveness of the writing, and the timeliness of the content.

Contextual measures assess how well the content serves its intended purpose and fits the needs of its audience. Contextual quality measures usually look at how well the content addresses the audience's questions or solves their problems, the appropriateness of the content for the intended audience, and the usability of the blog's layout for accessing information.

Reputational measures include the perceived credibility of the blog based on the author's authority and the blog's history. Reputational quality could be measured by examining the author's expertise and credentials, the blog's history of providing reliable information, and external references or citations by other reputable sources (Stvilia, 2007).

### 3.2.3 Content persuasiveness

CM's persuasiveness refers to the content's ability to influence the audience's attitudes, beliefs, or actions. Persuasive content is crafted with a deep understanding of the target audience's needs, desires, and pain points and if it effectively communicates the benefits and value of a product or service. This type of content employs various techniques, such as emotional appeals, storytelling, social proof, and clear calls to action, to motivate the audience to take desired steps, such as purchasing, subscribing to a newsletter, or sharing the content with others.

Recent research has focused on developing methods to measure content persuasiveness. Guerini proposed using Google AdWords to evaluate persuasive messages quickly and cost-effectively (Guerini et al., 2010). Boerman created the Persuasion Knowledge Scales of Sponsored Content (PKS-SC), measuring nine components of consumers' persuasion knowledge. This standardised scale addresses the variability in persuasion knowledge measurement (Boerman et al., 2018).

Thomas developed a scale to measure the perceived persuasiveness of digital behaviour intervention messages, demonstrating its validity across domains. Also, the researchers pointed out the importance of paying close attention to the details when sharing the message rather than merely adhering to broad persuasion principles (Thomas et al., 2019).

### 3.2.4 Content credibility

The integrity of content credibility remains a pivotal element in CM, shaping the audience's perception of the trustworthiness and reliability of the information presented: credible data, statistical evidence, expert insights, and references from credible sources.

Given the escalation of unchecked information on the internet, scholarly inquiry into the credibility of web content has gained much significance (Tanaka, 2010). The “4Cs of eWOM Credibility” framework, Community, Competence, Content, and Consensus, have been proposed to understand credibility in social networking sites (Moran & Muzellec, 2017). These components are essential because they address the credibility of both: the source and the message. In this framework, the Community evaluates the relationship between the sender and receiver, emphasising the importance of social ties in credibility (Moran & Muzellec, 2017).

### 3.2.5 Understanding consumer response to content

Schrivver suggests that user-centric text evaluation through questionnaires is the most effective method for assessing text quality because it directly captures feedback from the intended audience. The questionnaire typically evaluates criteria like comprehensibility, persuasiveness, overall satisfaction, preferences regarding various aspects of the text,

attitudes and beliefs influenced by the content, and the effectiveness of visual and verbal features (Schriver, 1990)

Haase et al. provide a robust framework for exploring the differential effects of content on consumer product evaluations. The methodology outlined by Haase et al. involved conducting two online studies, which were experiments. He examined how distinct advertising strategies - sensory, functional, and symbolic - impact consumer feedback. This approach was instrumental in isolating the effects of each advertising type, offering insights into how the type of advertising contributes to consumer perception of product quality and desirability (Haase et al., 2018).

The dual-study approach adopted by Haase et al. is particularly relevant to the current research, as it underpins the experimental design used to investigate the difference in impact between human-written and IA-generated content.

For the purpose of this research, I will evaluate and compare the content effectiveness and efficiency of the two pieces of content, and to do that, I will combine multiple frameworks. Therefore, to measure and compare content efficiency, I will perform a quantitative study, while for content effectiveness, I will evaluate the combined impact of information quality, content persuasiveness, and credibility.

## **4 AI DEFINITION, AI IN MARKETING**

In this chapter, I will examine AI's transformative impact on marketing strategies and practices. I will explore AI's historical development, from its conceptual beginnings to its modern applications in marketing. Later, I will discuss how AI technologies, such as machine learning (ML) and natural language processing, are leveraged for strategic communication, customer engagement, and market analysis. I will also discuss how businesses use AI to enhance their marketing efforts.

### **4.1 Evolution of IA**

Artificial Intelligence (AI) is a prominent field in computer science. It aims to develop intelligent machines that can mimic human cognitive abilities (Mijwel, 2015) and replace human labour at factories (Lambert, 2012). Several milestones, breakthroughs, and paradigm shifts have marked the historical development of AI.

The early concepts of AI were presented to the general public in the early 20th century through science fiction movies, starting with characters like the “Tin Man” and “Maria” (Figure 4). Just two decades later, British polymath Alan Turing became one of the pioneering scientists who delved into the mathematical potential of AI. He declared that if humans are capable of using information and reasoning to address issues, then machines might be equipped to do the same. In his 1950 paper, “Computing Machinery and



Intelligence”, Turing discussed building and testing intelligent machines (Council of Europe portal, n.d.).

However, Alan Turing could not move fast, mainly because, prior to 1949, computers were unable to store commands and could only execute them (Hewlett Packard Enterprise, n.d.). Additionally, the cost of computing during the early 1950s was very high, which made it difficult for Turing and other researchers to delve into uncharted territories (Mayor, 2022).

There was a lack of funding, mainly due to a lack of proof of concept. Additionally, in order to build a case for the importance of AI and its potential impact, the scientists lacked collective effort and support from influential individuals (Anyoha, 2017).

As shown in Figure 4, in 1955, Allen Newell, Cliff Shaw, and Herbert Simon launched a foundational project in AI with the creation of the Logic Theorist program. This program was supported by the RAND Corporation and was designed to replicate the problem-solving abilities of humans. It was introduced at the Dartmouth Summer Research Project on AI, marking its recognition as the first AI program. This significant event, organised by John McCarthy and Marvin Minsky, convened top scholars from various disciplines to explore AI. McCarthy coined the term “artificial intelligence” at the event, envisioning a collaborative effort. Although the conference fell short of expectations regarding establishing standard methods, it fuelled two decades of AI research, reinforcing the belief in its possibility (Anyoha, 2017).

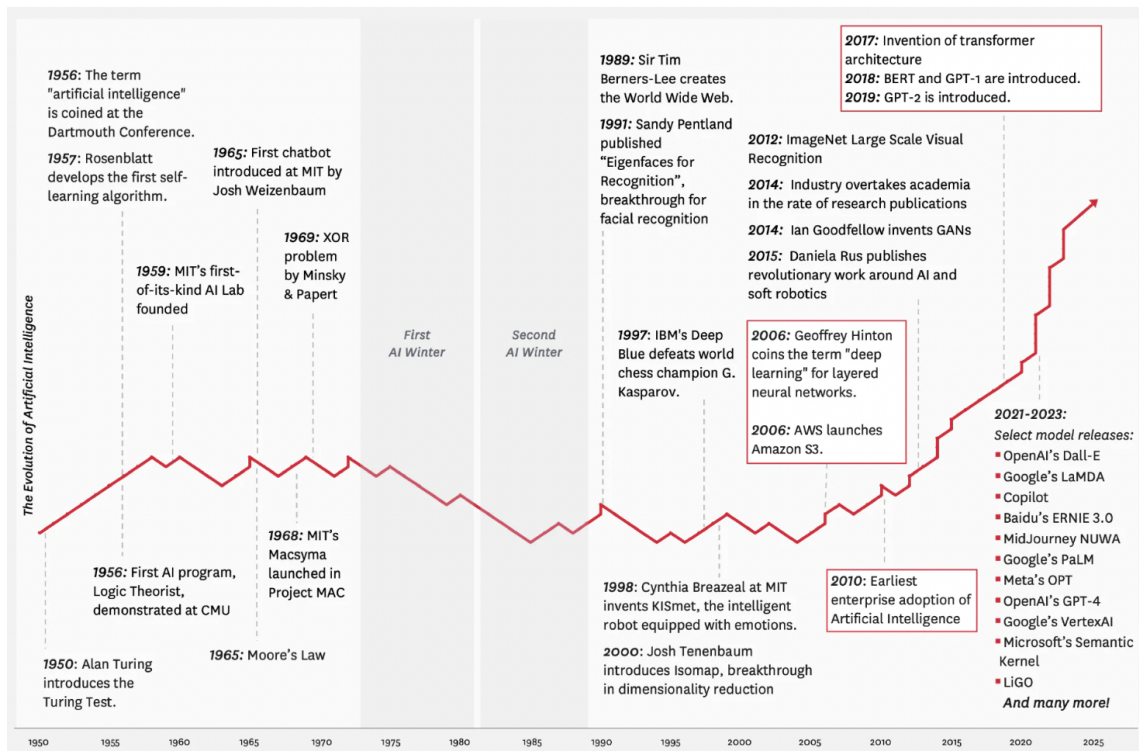
The timeline diagram in Figure 4 shows that over the next two decades, AI experienced significant advancements. Computers became more powerful, affordable, and accessible, with increased storage capacity and faster processing speeds. ML algorithms improved, and people became more adept at selecting suitable algorithms for specific problems (History Computer, 2023).

The General Problem Solver emerged as a pioneering concept crafted by the brilliant minds of Allen Newell and Herbert Simon in 1957. This revolutionary program aimed to mirror the ingenuity of human thought processes in solving complex problems. At its core, the General Problem Solver utilised a carefully curated set of predefined rules and heuristics to navigate complex challenges. The program would identify potential actions and strategically choose the most promising steps to steer toward a viable solution by analysing the current state of a problem (Newell et al., 1958).

It is worse to mention that Joseph Weizenbaum's ELIZA, developed in the mid-1960s, was an early natural language processing (NLP) program that mimicked a psychotherapist. ELIZA could engage in conversation with humans by using simple pattern-matching techniques to respond intelligently to user input. Despite its straightforward approach, ELIZA was surprisingly effective in creating the illusion of understanding and empathy, sparking considerable interest in AI's language interpretation capabilities. ELIZA's impact on the development of chatbots and conversational AI cannot be overstated, as it was an

inspiration for developing more sophisticated NLP algorithms that we encounter today (Norman, n.d.). These achievements, combined with the support of influential researchers and government agencies like DARPA, led to funding for AI research in various institutions. Governments mainly focused on developing speech transcription, translation, and high-speed data processing (Anyoha, 2017).

*Figure 4: Glasswing Venture's proprietary, data-driven timeline of the evolution of Artificial Intelligence*



*Source: Seseri (n.d.).*

In the 1980s, a remarkable re-emergence of AI was witnessed. It was due to two important changes: the expansion of the algorithmic toolkit and a substantial increase in funding. At this time, visionary researchers like John Hopfield were working on "deep learning" techniques, which empowered computers to learn from experience, bringing AI closer to human-like learning processes (Markoff, 2015).

Despite losing public interest, during the transformative decades of the 1990s and 2000s, AI underwent significant advancements: algorithms of support vector machines and decision trees. Significantly, IBM's Deep Blue win against chess champion Garry Kasparov in 1997 showcased the ability of AI to surpass human intelligence in strategic gameplay (ABC News, 2000).

In the 2000s, driven by the widespread adoption of smartphones, AI-powered digital assistants like Siri made remarkable progress in natural language processing, facilitating seamless and intuitive human-computer interactions (Kaplan & Haenlein, 2019).

Concurrently, the rise of deep learning, empowered by graphics processing units (GPUs), carried significant breakthroughs in diverse domains such as image recognition, language processing, and self-driving technology (Fisher, 2013).

Recent advancements in significant global technologies have predominantly been driven by major corporations, attributed to their substantial computational resources. The swift transition of primary research findings into practical business applications uniquely characterises this sector. Notable examples include Amazon, which leverages this research capability to enhance its Alexa voice assistant, and Meta, which is developing a model that outperformed humans in “Diplomacy”, a complex strategy board game. These companies made a significant contribution to technological research, rivalling academic giants such as Stanford University in output. Alphabet and Microsoft not only exceed this research volume but also enhance their capabilities through specialised entities like DeepMind and OpenAI (Haddad, 2023).

## **4.2 Exploring Generative AI**

A significant number of people have recently developed an interest in AI due to the rapid rise in the popularity of ChatGPT. Consequently, terms such as “Transformer models”, “LLM”, and “ML” have become commonplace. But what do these terms mean, and where does generative AI fit into the picture? To clarify this, I will examine the broader context as well as fundamental concepts and definitions.

The term “artificial intelligence” represents a significant branch of computer science dedicated to the development of machines capable of emulating tasks typically requiring human intelligence (Grewal, 2014). This broad domain encompasses various subfields, among which ML emerges as a cornerstone technology. ML equips computers with the ability to autonomously learn from data and improve their performance over time without explicit programming and with no instructions (Brynjolfsson & Raymond, 2023).

One of the ways to categorise ML models is by their function and design - namely Discriminative and Generative. Discriminative models usually focus on differentiation. They are essential in applications requiring classification, such as spam detection or image recognition (Goyal, 2023). Generative models are great at generating new data by capturing the joint probability distribution of the input and outputs. Therefore, they can synthesise data that mirrors the training set, facilitating tasks such as simulation, augmentation of data, and anonymisation (Nelson, 2021).

ML methodologies are using a broad spectrum of techniques. Each is uniquely adapted to address distinct challenges across various domains and data types. The field is categorised into several primary learning paradigms: supervised, unsupervised, and reinforcement learning, along with a specialised branch known as deep learning. Each methodology is

tailored to different aspects of learning and data processing, and each model needs to be trained on a large set of data sets (Klontzas et al., 2023).

In supervised learning, the algorithms are trained on a pre-labelled dataset where each input data point is paired with a correct output. The model's primary goal is to learn a mapping from inputs to outputs, enabling it to predict the output for new, unseen data. In unsupervised learning, the training data does not need to be labelled. The algorithms are designed to discern structures and patterns from the data, categorising information into clusters or spreading it along a continuum based on intrinsic similarities.

A conceptually different learning system is reinforcement learning. This type of learning uses a system of rewards and penalties to compel the model to learn optimal behaviours in a given environment. It is comparable to teaching through a process of trial and error and is primarily used in navigation, gaming, and real-time decision-making scenarios.

The fourth type of learning paradigm is deep learning. It uses layered neural networks (which have a structure similar to the human brain) to analyse data. These models are particularly powerful in handling vast datasets and can be trained using semi-supervised techniques that require minimal labelled data and a larger pool of unlabelled data (Taye, 2023).

Another sophisticated AI domain is Generative AI (GAI). This model, in addition to data interpretation, can also be used to create data. GAI employs complex algorithms to understand and replicate input data distribution, enabling it to generate new data that retains the statistical properties of the original set. Vidrih and Mayahi beautifully describe this technology: “Creating noise from data is easy; creating data from noise is Generative modelling” (Vidrih & Mayahi, 2023). Such models can synthesise realistic text, images, and sounds, effectively turning abstract data patterns into coherent, tangible constructs (Bandi et al., 2023).

There are many types of GAI. For example, Generative Adversarial Networks (GANs) are mainly used to generate images, video, and music. It typically contains two neural networks contesting with each other to enhance the generation of new, realistic data. One network creates new data from a training set while the other network evaluates these creations, determining their authenticity - whether they appear genuine or fabricated. This adversarial process continues until the creations are indistinguishable from the original data, significantly improving the quality of the generated outputs (AWS, n.d.). GANs are particularly useful in generating large amounts of synthetic data that can be used to train AI models with a limited amount of original data (Klontzas et al., 2023).

Another type of GIA is Variational Autoencoders (VAEs). The system consists of an encoder and a decoder. The encoder compresses the input data into a smaller, encoded representation, capturing the main attributes of the data. The decoder then takes these samples and attempts to reconstruct the original input data from this compressed knowledge. VAEs mostly focus on the statistical properties of the data, enabling them to not only compress data but also

generate new data instances that are variations of the inputs they were trained on. This capability makes VAEs particularly useful in fields like image generation, where they can produce new images that look similar to those in the training set but are uniquely generated by the model (Choudhary, 2024).

The type of GAI that interests me most in the context of this paper is a large language model (LLM). It is designed to understand and generate human-like text based on the patterns it has learned from a vast dataset of existing text. These models use deep learning techniques, particularly a structure known as a Transformer, to process and produce language in a contextually relevant and coherent way.

LLMs are trained on diverse internet text, allowing them to handle a wide range of language tasks, from answering questions and summarising documents to composing essays and even creating code. The strength of LLMs lies in their ability to understand the nuances of language, including syntax, semantics, and style, making them highly versatile tools in natural language processing. Their training involves adjusting millions, or even billions, of parameters, which helps them capture the complexities of human language and generate increasingly indistinguishable responses from those written by humans (Kaur et al., 2024). LLMs can also be used to produce protein patterns, sound sequences, programming scripts, or strategies.

Transformers' invention in 2017 was a huge milestone in AI development history. Transformers revolutionised how sequence-based data, especially text, is processed. Unlike previous models reliant on sequential data processing, Transformers use self-attention mechanisms to handle data in parallel, significantly enhancing efficiency. This enabled the development of advanced AI models like ChatGPT (Brynjolfsson & Raymond, 2023).

General-purpose LLMs can be optimised for specific applications through “fine-tuning,” which aligns their outputs with particular objectives. For instance, an LLM tailored for social media might need engagement data input to better predict successful content. This enables the refinement and enhancement of the model’s relevance and effectiveness in specific contexts (Turing, n.d.).

### **4.3 ChatGPT by OpenAI**

From time to time, new technologies and innovations capture the global imagination and demonstrate significant influence across various sectors. The Chat Generative Pre-Training Transformer (ChatGPT) is a prime example of such an event. This artificially intelligent chatbot, developed by OpenAI, managed to attract one million users within just five days after its release in November 2022, categorising it as one of the most rapid consumer product launches in recorded history (Economist, 2023). ChatGPT can tackle intricate queries, craft poetry, and even simulate human emotions (Metz, 2023). The GPT-3 model included 175 billion parameters, was trained on 300 billion tokens, and generated approximately 5 million

dollars in computing costs alone. The GPT-4 model, launched in March 2023, is estimated to include 1.8 trillion parameters, trained on 13 trillion tokens, at a rumoured computing-only cost of \$ 65 million (Brynjolfsson & Raymond, 2023).

This enormous investment into GPT-4 allows the processing of both text and image inputs, a considerable leap from the text-only format of ChatGPT-3. It can determine more nuances and can take an input of visual content. Furthermore, ChatGPT-4 can generate more contextually relevant content in more extended conversations (OpenAI, 2023).

For this research, I will use the newest free version - ChatGPT-4o mini, launched in July 2024. It is a more cost-efficient and scalable version of the GPT-4 model. GPT-4o mini significantly reduces the computational power and resources required, making it more accessible for a wider range of users and applications. Despite its smaller size, it retains much of the power of GPT-4, providing a good balance between capability and cost (OpenAI, 2024).

#### **4.4 Use of AI in different fields of marketing**

AI should be on the radar of every marketing manager because it is the fastest-growing technology in the field. By 2025, it is anticipated to impact marketing by \$40 billion (Reavie, 2018). At the same time, according to a 2023 survey, 73% of businesses indicated that AI is somehow adopted into their businesses (PWC, n.d.), and 41% of marketing professionals believe that AI and ML are key drivers in boosting revenue growth and enhancing performance (Columbus, 2021).

After careful analysis, I found a lot of scientific articles about the use cases of AI in different fields of marketing. Still, none of them are structured enough to be able to observe the bigger picture. Therefore, I divided all the information and the use cases into four groups based on the 4P from the Marketing Mix theory by Kotler (Kotler, 2002).

##### **4.4.1 Leveraging AI for product innovation**

Product strategy is one of the fundamental aspects of the 4P Marketing Mix, encompassing the development, design, and positioning of products or services in the market (Kotler, 2002). AI is transforming businesses and the organisation of innovation management. With swift technological advancements and substituting human processes, AI could force management to reassess the entire innovation process within a company (Haefner et al., 2021).

One notable example of idea development facilitated by AI is observed in AI-driven research, where these models assist researchers in identifying proteins suitable for various technological, scientific, and medical applications. Similarly, ML models trained on artistic data can generate art in specific styles (Unemur, 2018).

AI models are also commonly used and deliver good results in terms of product support. Businesses utilise AI-powered chatbots to offer 24/7 customer support and customised experiences. Already in 2017, the count of chatbots accessible through Facebook Messenger surpassed the 100,000 mark (Zumstein & Hundertmark, 2017). Chatbot tools market size is projected to reach around \$1.25 billion in 2025 (Joshi, 2023). Although they are helpful, customers do not always positively welcome chatbot support. On average, 50% of customers prefer human interactions to chatbots. Therefore, many businesses use chatbots to support the help desk: identify consumer problems and connect customers to the right assistant (Campbell et al., 2020).

#### 4.4.2 Optimising pricing strategies through AI

One of the critical marketing mix components, pricing, is pivotal in determining a product's perceived value, demand, and profitability (Kotler, 2002). Lately, AI has become an invaluable asset for marketers, helping them make data-based decisions, refine pricing tactics, and secure a competitive advantage in the market (Bharadiya, 2023).

First of all, AI algorithms are great at processing and analysing immense amounts of data from various sources, such as customer demographics, historical sales data, competitor pricing, market trends, and macroeconomic indicators. By harnessing AI-powered tools, marketers can gain real-time insights into customer behaviour, preferences, and buying patterns, enabling them to accurately make data-driven pricing decisions that reflect market dynamics (Campbell et al., 2020).

AI-driven technologies can also effectively tailor promotional offers. AI models can help with customer segmentation based on buying history, geographic location, age, interests, etc., and facilitate personalised pricing strategies that cater to individual customer preferences. This enables businesses to implement price discrimination strategies and optimise revenue as a result (Gautier et al., 2020).

The other use case is the implementation of dynamic pricing strategies, which involves adjusting prices in response to shifts in demand, competitor pricing, and other external factors. In this case, all the selected variables are continuously monitored in real time, and prices are optimised accordingly. As a result, businesses can optimise their revenue by charging higher prices during peak-demand periods and offering discounts during low-demand periods (Bharadiya, 2023). It is important to remember that price discrimination can be a sensitive topic, and businesses should be careful not to break any laws or ethical guidelines. Gautier did significant research comparing price discrimination and algorithmic tacit collusion. They can both be done using ML models, but algorithmic tacit collusion requires a reinforcement model. In contrast, price discrimination can only be done with a controlled learning model (Gautier et al., 2020).

#### 4.4.3 Enhancing promotional efforts with AI

Promotion constitutes a pivotal element within marketing strategy. It encompasses various activities and communication efforts to raise awareness, generate interest, and stimulate demand. Through promotional efforts, companies effectively convey the value and benefits of their offerings to the target audience, fostering brand recognition and influencing purchasing decisions. Promotional techniques include advertising, public relations, sales promotions, and direct marketing (Kotler, 2002).

AI-powered marketing mix modelling (MMM) is a new and exciting tool that has reappeared on the market. This model can predict customers' reactions to different messages and placement. However, historically, because of the high cost of computing power, the need for large sets of historical data, and the presence of great analysts in the team, this model was used by very few large companies that could afford it. Instead, marketers would just play a guessing game and instinctively divide the budget between different channels. Various platforms, such as Pecan AI, now provide MMM as a service. They minimise the work and resources required to start using the model. The model can predict which channels are better for advertising to each customer group (Bronfman, 2023).

Nowadays, 76% of customers expect personalised brand communications and product recommendations (Arora et al., 2021). Therefore, using product recommendation algorithms on e-commerce websites can increase profitability by up to 40%. A brilliant example is Amazon's e-commerce website with the book recommendation system. Moreover, AI algorithms make it possible to send customised emails recommending products even before customers decide to buy them, predicting future purchases based on social media and other web activity (Lin, 2022).

Insides, gained from deep learning and neural network models, can also be used for better product or service positioning to highlight unique value propositions tailored for each of the earlier identified market segments. ML capabilities enable differentiation between distinct behaviours such as purchasing, genuine conversion, and exploratory engagement. Thus, targeted re-engagement can be more effective if driven by such data (Haleem et al., 2022).

The Time Series Analysis and Sentiment Analysis models can be used for effective social media marketing. Those models are great for assisting with content tailoring and engagement strategies, identifying relevant topics, and optimising posting schedules (AI Contentfy, 2023).

#### 4.4.4 Strategic product placement optimisation with AI

The strategic placement of products and services is a crucial component of the 4P Marketing Mix. Placement, also known as distribution, involves determining the most effective channels and locations to make products available to consumers (Kotler, 2002). Marketers



turn to AI to optimise placement strategies and gain a competitive advantage as the business landscape evolves.

AI-driven demand forecasting models have revolutionised inventory management and product placement. These algorithms can analyse historical sales data, seasonal trends, market fluctuations, and other relevant factors to predict future demand accurately. This takes inventory optimisation to another level. Consequently, businesses can avoid overstocking or stockouts, minimise carrying costs, and improve overall supply chain efficiency (Feizabadi, 2020).

AI algorithms can also help marketers make data-driven decisions about opening new stores or pop-up shops and expanding their businesses by combining geographical data, customer demographics, foot traffic patterns, and competitor locations (Heinemann, 2023).

#### **4.5 Use of AI in content marketing**

In an era defined by the relentless pace of digital innovation, CM has emerged as a vital strategy for businesses seeking to engage, educate, and convert their target audiences. The proliferation of digital platforms and the ever-increasing volume of online content have made it important for marketers to find more efficient and effective ways to create, distribute, and optimise their content (TorchPoint, 2023). AI can handle data analysis and information processing tasks, freeing marketers to concentrate on more creative work. Incorporating AI into CM provides opportunities to gain precise customer insights and foster more robust customer relationships (Hsu & Liou, 2021). Although the use of AI in CM is still relatively new, some companies, like iQiyi, an Asian streaming platform, have already embedded AI in each stage of their content generation journey and can see significant positive results (Rosser, 2024).

The increased dependence on AI heightens concerns about data security, as businesses must comply with complex regulations and handle customer data with greater care. Moreover, maintaining customer trust becomes more challenging as consumers grow more conscious of how their information is utilised. To fully leverage AI's potential, marketers must balance innovation and ethical practices, ensuring that AI's advantages are achieved without compromising customer trust (Hsu & Liou, 2021).

In this chapter, I will discuss which areas of content creation can be empowered by AI, as well as AI implementation challenges, benefits, and future potential.

##### **4.5.1 AI in content generation: automating creativity and efficiency**

AI-powered content generation tools have gained significant traction in recent years. These tools leverage NLP and ML algorithms to generate written content, from articles and blog posts to product descriptions and social media updates. Content generation tools can be

helpful for marketers looking to maintain a consistent publishing schedule and scale their content production efforts (Wang et al., 2023).

The adoption of AI tools is proving to be a game-changer by significantly improving content marketing effectiveness: content relevance, personalisation, and the speed at which content is produced (Adwan, 2024). These tools assist marketers at every content creation stage, from idea generation to fine-tuning personalised content tailored to specific target audiences (Murar & Kubovics, 2023).

However, while AI offers numerous advantages, it has significant limitations. Technology often struggles with creativity and a deep understanding of emotions, humour, and ethics. These challenges underscore the necessity of maintaining human oversight to ensure that content meets high standards of quality and also aligns with ethical practices (Advan, 2024). Despite these challenges, integrating AI into CM processes holds immense potential for improving customer engagement and enhancing the effectiveness of marketing strategies (Kose & Sert, 2017).

#### 4.5.2 Enhancing content quality and relevance through AI

Beyond generating new content, AI is also helpful in enhancing existing content. Advanced ML algorithms, such as GANs and RNNs, are increasingly integrated into various aspects of content creation, analysis, enhancement, and post-production workflows (Anantrasirichai & Bull, 2022).

One illustrative case study of AI's role in content enrichment is the creation of educational materials. AI models enable educators to rapidly generate and distribute high-quality content tailored to specific learning objectives. This also enables the rapid scaling of educational resources, which is critically needed to meet the demands of diverse and widespread student populations (Barish et al., 2023).

In the media industry, AI's application goes beyond content generation. It includes high-performance data analytics that provide deep insights into audience preferences, tailor content to specific viewer segments, and predict trends that resonate with their audience. However, integrating AI into media production and analysis has its challenges. Ethical considerations, particularly around data privacy, and the need to build and maintain trust with audiences are critical factors faced by organisations (Sancanin & Penjisevic, 2022).

AI-driven tools can analyse content for readability, grammar, and SEO optimisation, ensuring it meets the highest standards (McDonald, 2023). Also, models like GAN can push keywords into text, ensuring they are more easily findable and bring more value to the customer (Zhang et al., 2023a).

#### 4.5.3 AI-driven social media and email marketing

Running social media accounts is a crucial part of CM. AI-powered tools for social media management are becoming essential for this task. These tools help plan when to post content, analyse how people engage with it in real-time, and even respond to customer questions automatically. By making these tasks easier, AI allows marketers to focus more on generating creative content (Alawneh et al., 2023).

When setting up email campaigns, marketers can use AI to optimise the times of day when emails are sent, personalise email text, and predict the most resonant subject lines and calls to action. This blending of automation and personalisation significantly improves the effectiveness of email marketing, leading to higher open rates and more purchases (Barnett, 2020).

In higher education, AI-powered tools such as Sprout Social and Rival IQ are transforming the way institutions engage with their audiences on social media platforms (Golab-Andrzejak, 2022). For small and medium enterprises (SMEs, start-ups), integrating AI into social media management is proving to be a game-changer. AI-driven tools enable businesses to optimise their marketing activities by automating routine tasks, analysing audience behaviour, and refining content strategies based on data-driven insights. This improves efficiency and allows businesses to compete more effectively in a crowded market where larger corporations typically dominate (Krajcovich, 2024).

The other interesting case is disaster management. AI is being increasingly used to process and analyse vast amounts of social media content, which can be crucial and can enhance the speed and accuracy of decision-making as well as ensure that resources are allocated where they are most needed during crises (Saleem & Mehrotra, 2022).

Marketing professionals are also recognising the potential of AI to gain a competitive advantage in social media campaigns. AI tools allow marketers to perform audience analysis, image analysis, and sentiment analysis, tailoring their content more precisely to their target demographics. This creates messages that more strongly resonate with target audiences, leading to higher engagement rates and more successful campaigns.

However, the widespread adoption of AI in digital marketing also raises significant concerns. One major issue is algorithmic bias, where AI systems may unintentionally perpetuate stereotypes or exclude certain groups from targeted campaigns. Another concern is job displacement, as AI automates tasks that were traditionally performed by human workers, potentially leading to unemployment in specific sectors. Moreover, there is the risk of AI being used to spread misinformation, either intentionally or through the amplification of biased content (Micu et al., 2018).

As AI technology continues to develop, it is increasingly important to prioritise social responsibility and media literacy. This involves educating marketers and the general public

about the potential impacts of AI on content creation and dissemination and ensuring that the information shared on social media platforms is accurate, diverse, and free from bias (Krajcovich, 2024).

#### **4.6 Exploring ethical challenges and perceptual complexities in AI-generated content**

Recent progress in AI has led to the creation of highly lifelike content, sparking ethical debates and difficulties in telling apart AI-generated media from those made by humans (Partadiredja et al., 2020). Current versions of LLM, like ChatGPT, are very good at mimicking human-like speech. Therefore, some may also mistakenly believe that the technology is conscious. Also, while interacting with AI-powered chatbots, people often perceive them as having human qualities. For instance, they might see it as kind or cruel based on its answers, even though it cannot actually feel emotions (Pasick, 2023). At the same time, Mou discovered that when AI does not feel personalised in user interactions, users tend to resist it more. This happens because the lack of uniqueness in AI makes it hard for users to trust it (Mou et al., 2023). So, as a business, it is crucial to find a good level of systematisation and communicate clearly about the use of AI for the company products. It is important to note that chatbots of a lower quality are seen as lacking intentions and control, and in such scenarios, customers tend to blame the company for poor service performance (Pavone et al., 2023).

The recent LLM development also poses risks of automated mass manipulation, disinformation, and low-quality content production (Illia et al., 2022). Automating tasks traditionally done by human professionals, such as journalists, copywriters, and graphic designers, introduces a risk of job loss due to the advancements in generative AI. Additionally, it is important to remember that LLMs are trained on large, unfiltered datasets, and any existing biases in the data can be reflected in their output, potentially reinforcing negative stereotypes (Shaikh & Mhaske, 2023).

The rise of AI-generated content also makes it necessary to review and restructure data infrastructure, attribution mechanisms, and publication processes to ensure accountability, transparency, and trust (Israel & Amer, 2022). Therefore, Dergaa raises the question whether AI should be included in the list of authors if the technology was used in the content creation process, particularly in academic writing. While it sounds like a valuable idea, he concludes that it is better to avoid listing LLMs as authors on research papers since AI tools cannot take responsibility for the work. He advises noting the use of LLMs in the methods or acknowledgements sections of papers (Dergaa et al., 2023).

AI-generated content is a relatively new phenomenon. Therefore, the development of ethical frameworks and policy measures is crucial for guiding the responsible development and deployment of LLMs, addressing both their potential positive and negative impacts (Zhang

et al., 2023b). For example, Google has set up its internal ethical frameworks and review processes to ensure ongoing monitoring and accountability of its AI systems.

While machines can simulate thinking, they cannot truly experience emotions and spiritual insights or appreciate higher human qualities such as truth, goodness, and beauty. Therefore, more profound levels of truth, goodness, beauty, morality, and ethics require human involvement, as these advanced aspects of the human experience are beyond the capabilities of current machines (Lou, 2023).

#### **4.7 Critical differences between AI-generated and human-written content**

The digitalisation of content creation has catalysed a paradigm shift in how information is generated, shared, and consumed. At the heart of this transformation is the increasing use of AI in generating content across various domains, from news articles to creative writing (Reddy, 2023). This chapter explores the literature review on critical differences between AI-generated and human-created content, highlighting how each influences content quality, efficiency and effectiveness.

I could not find any research on efficiency comparison. Most of the existing research was done on content quality and effectiveness comparison. Therefore, in this chapter, I will look into the differences in terms of content effectiveness: information quality, persuasiveness, and credibility.

From an information quality perspective, in scientific writing, AI-generated text tends to contain more factual errors and needs more depth of human-written content despite being grammatically sound (Ma et al., 2023). In poetry, AI-generated works are considered distinct artistic events rather than inferior creations, though they cannot replace human artistic expression. Linguistic analysis of news texts showed that human writing exhibits more varied sentence lengths, complex dependency structures, and stronger emotional content. In contrast, AI-generated text uses more objective language and pronouns (Muñoz-Ortiz et al., 2023). However, in the context of student essays, ChatGPT-generated texts were rated higher in quality than human-written despite exhibiting different linguistic characteristics (Herbold et al., 2023).

When it comes to content credibility, which is one of the important aspects of content effectiveness, research indicates that readers generally attribute similar levels of credibility to both AI and human-authored texts (Martin Huschens et al., 2023). However, participants need help to accurately differentiate between AI and human-written texts, often displaying overconfidence in their judgments (Gunser et al., 2022). The credibility of different domains can vary. However, Graefe and Bohlken conclude that readers' perceptions of automated news show no difference in credibility compared to human-written news. However, human-written content is perceived as higher quality and more readable. Readers tend to rate articles

higher when told they are human-written, raising ethical concerns about disclosure in automated journalism (Graefe & Bohlken, 2020).

More research needs to be done on content persuasiveness. However, despite AI's ability to generate accurate content, there remains a depth and overall quality gap compared to human-written text (Ma et al., 2023). AI-generated text is also often prone to factual errors, which may affect content persuasiveness. However, AI-generated text can be highly persuasive in the context of propaganda, with its effectiveness further enhanced through human editing and curation (Goldstein et al., 2024).

To mitigate these negative reactions, human-AI collaboration strategies have been investigated, with human control over AI proving more effective than AI-supported human authorship in preserving message credibility and attitudes towards companies (Haupt et al., 2024).

## **5 ABOUT THE RUNNING MARKET AND SELECTED COMPANY, EVERYRUN**

This chapter delves into the running market on a global scale, with a particular focus on Europe. It highlights the economic significance of endurance sports, valued at approximately 18 billion euros worldwide, and examines the growth in participation rates and the organisation of running events. In this chapter, I will also discuss the underlying infrastructure supporting running events, including community initiatives and public policies encouraging physical activity. Additionally, I will look into the health benefits of running, the rising challenge of obesity in Europe, and the role of community health programs and social prescribing in promoting physical activity and improving public health.

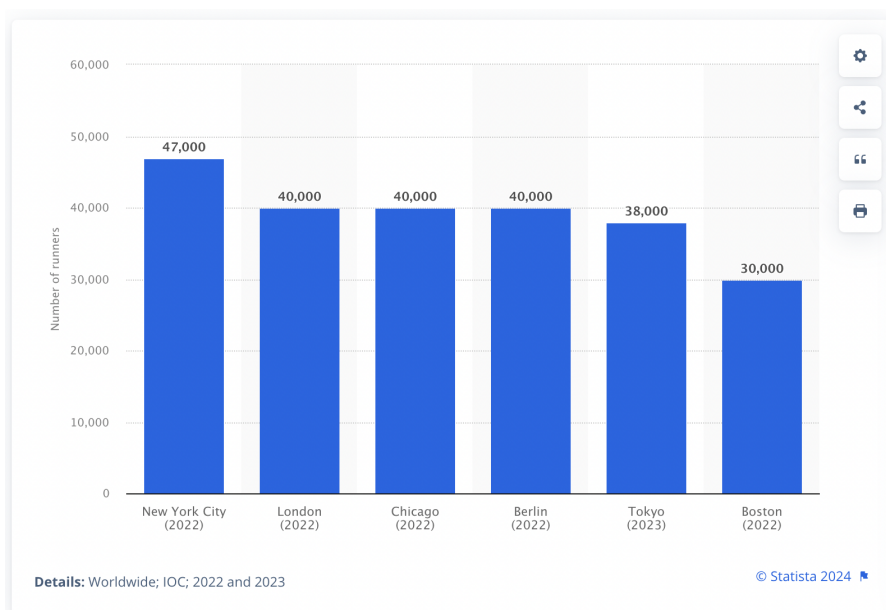
### **5.1 The running market globally and in Europe**

An endurance sport is defined as a physical activity that demands sustained performance over extended durations, typically at moderate to high levels of intensity. These sports challenge the athlete's stamina, cardiovascular and muscular endurance. It often requires a combination of aerobic and anaerobic exertion (Myburgh et al., 2018).

The global endurance market is estimated to be 18 billion euros and is only projected to grow (Butcher, 2022). In 2019, about 10.000 ultra-trail running events were organised globally (Global Sports Partner, 2019). In 2020, participation rates for running in the US ticked up, topping 63 million people (Tiso, 2023). Also, each of the major marathons is usually oversubscribed and, as shown in Figure 5, attracts an average of 40.000 participants worldwide.

If we look at the bigger picture, these kinds of large-scale semi-professional events are just the tip of the iceberg in the world of running. This is what we celebrate and see. However, what lies beneath the surface is a vast ecosystem that supports these events. It starts with neighbourhoods with accessible and well-equipped running tracks, public policies, local culture that encourages running, and the possibility of joining a run with family and friends (Scheer, 2019).

*Figure 5: Number of runners in leading marathons worldwide 2022-2023, by city*



*Source: Statista (2023).*

Increasing physical activity improves health markers and reduces the incidence of long-term conditions such as cardiovascular disease, cancer, and mental health disorders. Outdoor sports and physical activities also offer social and psychological benefits across genders and age groups. International health organisations prioritise promoting physical activity for wellbeing and disease prevention through population-based interventions. Most recommendations advise engaging in at least 150 minutes of moderate aerobic exercise or 75 minutes of intense physical activity each week. Despite widespread acknowledgement of these benefits, many adults and children fail to meet these activity levels (Khanji et al., 2022). As a result, despite the massive popularity of running, obesity has become a critical public health issue across Europe, with substantial implications for health and wellbeing. Currently, one in six Europeans is considered obese, and more than half of the adult population is overweight. The obesity rates are exceptionally high in countries such as Malta and Croatia, while Italy and France have lower rates (Yanatma, 2023). This rate of obesity causes over 1.2 million deaths annually in the European Region and is a significant contributor to non-communicable diseases (World Health Organization, 2024).

A range of studies have explored implementing community events for preventative healthcare. Elmandy and Stover both highlight the effectiveness of these events in improving

health literacy and delivering preventive health services, particularly to underserved populations (Elmahdy et al., 2023; Stover et al., 2024). Kinne underscores the importance of community organisations in enhancing the delivery of preventive health services (Kinne et al., 1989).

Social prescribing is a mechanism by which health professionals refer patients to non-clinical services that can help improve their health and well-being. Running programs, often recommended as part of social prescribing, offer therapeutic benefits beyond physical health, such as improved mental health and reduced symptoms of depression and anxiety (National Academy for Social Prescribing, n.d.).

In Europe, where healthcare systems often emphasise preventative measures, running can be integrated into public health strategies to enhance population health (Jackson et al., 2006). Technology, especially AI, has the potential to transform the running market by enhancing the way communities are built and engaged (Perazo, 2024). For instance, virtual running events recently gained popularity due to their convenience and inclusivity. They can be enriched with AI features like real-time tracking, virtual cheering, and interactive leader boards to mimic the communal experience of physical events (Atarc, n.d.).

## **5.2 Everyrun start-up and its product**

Everyrun is a social running platform that provides an easy way to organise, monetise, and participate in grassroots community running events by building an innovative mobile app and website (Everyrun. n.d.).

Everyrun's mission is to democratise running and physical activity access, promoting global connectivity and a wellness vision. The platform helps to remove geographical and physical barriers, creating an environment where individuals can engage in running events regardless of their physical ability or location. Everyrun supports the development of a healthier, happier, and more interconnected global population by emphasising participation over competition (Nash Squer, 2024).

Everyrun offers a comprehensive suite of services tailored to runners and race organisers. The platform allows runners to find and participate globally in virtual or offline running events. Users can also monitor their progress, connect with fellow runners, and disseminate their experiences. A distinctive feature of Everyrun is its inclusive approach, offering both free and paid events, thereby broadening access to running activities.

For race organisers, Everyrun provides all the necessary tools to create, manage, and monetise running events. This includes functionalities for event creation, ticket sales, race result recording, and promotional activities. Unlike other similar platforms, Everyrun permits organisers to monetise their events, thus providing a sustainable model for local community engagement in running (Everyrun. n.d.).



Everyrun distinguishes itself through several key features. First, it is a community-oriented product that fosters community involvement and collective fitness over competitiveness. It also facilitates events in diverse locations, allowing runners to explore novel environments. Finally, Everyrun provides a free timing solution for events, reducing organisers' logistical and financial burdens. Everyrun has profoundly impacted the running community by promoting inclusivity and leveraging technology to enhance community health and connectivity (EU-Startups, n.d.).

## **6 EVALUATING AI-GENERATED AND HUMAN-WRITTEN CONTENT: AN EMPIRICAL STUDY FOR START-UPS**

In the theoretical part of the thesis, I introduced the concept of CM and AI. I explored different case studies of AI use in marketing and looked at basic principles of ML, exploring AI models and technology behind ChatGPT. To deliver the best research results, I also explored the characteristics, challenges, and opportunities of the running market and the selected company, Everyrun.

### **6.1 Research purpose and goals**

The aim of this research is to evaluate the relevance (efficiency and effectiveness) of ChatGPT-4o mini as a content creation tool for sports start-up marketing communications. As mentioned earlier, companies invest vast amounts of money to create unique, useful content for their customers to ensure trust and credibility, resulting in growing recurring purchases and business success. As we can see from the literature review, using AI for marketing is not a new practice. However, the launch of ChatGPT has changed the game. Its simple interface, based on human language processing, allows every marketing person to quickly create large amounts of AI-generated content without previous training or specific knowledge.

To ensure the thesis is as thorough and well-organised as possible, I started with specific research goals in mind:

- Compare the efficiency of ChatGPT-generated content and human-written content.
- Evaluate the overall content effectiveness between AI-generated versus human-written marketing materials for sports start-up marketing communications.
- Evaluate the difference between AI-generated and human-written content in encouraging participation in community running events.

Based on the initial goals, I formulated various research questions to gain insights about the chance of content relevance and quality after implementing AI-powered content writing tools in the marketing department of the sports start-up, as well as to understand the differences between human-written and AI-generated content:

I established the following research questions to compare the impact on marketing department efficiency in sports tech start-ups.

RQ1: How can the use of AI-powered content writing tools impact the productivity of the marketing department in sports start-ups?

RQ2: How can the use of AI-powered content writing tools impact the cost of the marketing department in sports start-ups?

The following three questions are related to content effectiveness. To make sure the research is comprehensive, I first intended to understand the content information quality difference, inspired by the research and framework proposed by Stvilia et al. (2007) :

RQ3: Is there an information quality difference between human-written and AI-generated marketing content?

The next research question is inspired by Thomas et al. (2019), research which proposes a measurement scale to measure the perceived persuasiveness of content:

RQ4: Is there a difference in the perceived persuasiveness between AI-generated and human-written content in the context of sports start-up marketing communications?

Moreover, to complete the comprehensive measurement of content effectiveness, I got inspired by Moran & Muzellec (2017) research on social network content credibility and have created the following research question:

RQ5: Is there a difference in perceived credibility between AI-generated and human-written content in the context of sports start-up marketing communications?

Considering that Everyrun is not only promoting sport but working in the direction of combating loneliness and obesity, I also wanted to learn:

RQ6: Is there a difference in how AI-generated and human-written content encourage users to participate in community running events?

In this way, I investigated whether using ChatGPT-4o mini for content creation is effective and whether users perceive the content as less credible. This information can be helpful for chief marketing officers and start-up founders who are looking to increase their content marketing effectiveness and efficiency.

## **6.2 Methodology and data collection**

The research goal is to systematically investigate CM effectiveness and efficiency differences between human-written and AI-generated content, specifically using ChatGPT-4o mini for AI-generated content and engaging professional copywriters who have been working with Everyrun start-up for an extended period of time to create human-written piece of content. I divided the research into two stages to complete an evaluation of the sports tech start-up's marketing department performance. In the first stage, I evaluated the difference in marketing department effectiveness, and in the second stage, I evaluated the content

efficiency. Combining all the funding will help me assess the overall difference in content marketing relevance and overall quality between the two content creation methods.

#### 6.2.1 Content marketing efficiency analysis methodology

To estimate the difference in productivity and cost between employing a copywriter or using ChatGPT to generate business content, I first defined the content creation workflow and resources needed for content production, such as personnel, equipment, and software (Pharm, 2008). Next, I identified content creation stages that differ for each type of content creation (human-written and AI-generated content). Afterwards, the Technical Task (Appendix 1) for the company website blog post was written and presented to the copywriter, and all the work hours associated with this work were recorded. Afterwards, the same technical task was presented to ChatGPT-4o mini, and all the hours involved in this alternative content creation process were recorded.

After analysing the time spent creating a single piece of content using each method, I observed its impact on the marketing department's efficiency.

To calculate the difference in cost of content production between the two methods, I first collected the wage rates information, listing the hourly rate for each worker involved in the content creation process. Then, I multiplied the previous hourly calculations by the hourly wage rates from Table 1 (HAN, 2012).

As a result of this experiment, I determined the difference in marketing department efficiency in terms of potential hours saved and cost savings when comparing the traditional method of hiring copywriters and ChatGPT use for content creation.

#### 6.2.2 Methodology for evaluating content effectiveness

The methodology for content effectiveness evaluation was inspired by Haase et al. (2018). To compare the content quality of human-written content with AI-generated content from a customer perspective in the context of a sports start-up, I conducted a randomised control trial method (Kendall, 2023). I used two pieces of content created in the Cost evaluation part of this research. The control group was exposed to content written by a professional copywriter, and the test group was exposed to content created by ChatGPT-4o mini. The questionnaire is the best way to assess the quality of user-centric text (Schrivers, 1990). Therefore, each group was offered to answer an identical questionnaire to evaluate the effectiveness of AI-generated content versus human-written content from a customer perspective, assuming that the customer does not know the origin of presented content.

The questionnaire incorporated various types of questions, including open questions, closed questions, and Likert scale assessments, to ensure a robust evaluation:

- The first part was designed to assess the quality of information within the article across the following dimensions: accuracy, clarity, relevance, depth, trustworthiness, and bias. Respondents were asked to rate their perceptions on a scale from 1 to 5, where 1 represents a negative assessment and 5 represents a positive one. This part aimed to discern the intrinsic, contextual, and reputational qualities of information related to sports and running (Stvilia et al., 2007).
- The second part contained three questions. This segment evaluated the persuasiveness of the content regarding participation in running events. Each item is scaled from 1 (not convincing/not effective) to 5 (extremely convincing/effective), measuring how arguments motivate and address potential concerns related to the services or events discussed (Thomas et al., 2019).
- The third part focused on the credibility of the article. Respondents rated the content's credibility, evidence, and reliability on a 5-point scale. This section helps understand the perceived integrity and substantiation of the information presented (Moran & Muzellec, 2017).
- The fourth part explored perceptions about the origin of the content (human vs. AI-generated) and whether knowing the content's origin influences respondent perceptions. This helps assess biases or shifts in attitude upon revealing the nature of the content's creation.
- Part five was dedicated to understanding the article's motivational impact from the perspective of helping the bigger company mission - combating obesity and loneliness. It included questions about the content's relevance to personal health and well-being and motivation to participate in community running events. The responses were rated on a 5-point scale.
- In part six, I gathered essential demographic data such as age, gender, education, location, and running experience. This was essential to provide context to the responses and allow data segmentation. In this section, I also asked about involvement in running communities to understand respondents better.

The full version of the questionnaire can be found in Appendix 4. To ensure the accuracy of findings, I used a post-test-only control group design, randomly allocating participants into either the experimental or control group. Respondents allocated to the experimental group were asked to read and evaluate an article generated by ChatGPT-4o mini. In contrast, the respondents in the control group were exposed to an article written by a professional copywriter. All other variables, including the article's technical task, length, formatting, and survey questions, were controlled to ensure internal validity (Malhotra, 2012).

To analyse the data, I first ran a t-test with the null hypothesis stating that there is no significant difference between the means of the two groups being compared. Additionally,

various ANOVA and MANOVA tests were conducted to identify other interesting patterns in the data. The null hypothesis for ANOVA and MANOVA is that there are no significant differences between the means of the compared groups. If the p-value is below 0.05, I can reject the null hypothesis for both the t-test and ANOVA, indicating statistically significant differences (Kent State University, n.d.). The collected data was subsequently analysed and presented using Excel and SPSS.

I published the questionnaire invite across multiple platforms, including various Facebook pages, Reddit groups, and LinkedIn. This outreach helped me gather a substantial number of responses (85). I utilised SmartSurvey ([app.smartsurvey.co.uk](https://www.smartsurvey.co.uk)) for the creation, distribution, and data collection of the questionnaire, which can be accessed via this link: <https://www.smartsurvey.co.uk/s/AIvsHuman/>. I selected SmartSurvey due to its user-friendly interface and the possibility of running randomisation, making it suitable for my research. The questionnaire contained 14 questions about the text and 7 demographic questions.

Texts written by professional copywriters contained 598 words, and the text generated by ChatGPT contained 448 words, resulting in an average of 5 minutes of reading and 10 minutes to answer questions. So, together, the questionnaire participation took about 15 minutes to complete. The questionnaire invite link was published on 14.08.2024 and was available for eight days. It was closed on 22.08.2024. The minimum required sample size was set to 50 respondents. However, I expected to exceed that number.

## **6.3 Results**

Next, I will describe the findings of the empirical part of the study. First, I will discuss the findings related to content efficiency. Then, I will discuss the questionnaire results, compare the content effectiveness of the two content pieces, and discuss the research limitations. Finally, I will discuss any other interesting patterns that I identified.

### **6.3.1 Content efficiency comparison findings**

First, I addressed the research question concerning the difference in content marketing efficiency and marketing department productivity between human-written content and AI-generated content (Table 1).

The copywriter spent 1 hour and 40 minutes creating the initial version of the text. However, due to normal workflow, the first draft was delivered three working days after the Technical Task (Appendix 1) was assigned. The first blog post version exceeded the requested word count, containing 715 words, and included headers for each paragraph. Consequently, the Marketing Manager spent 30 minutes reviewing the text and providing feedback to shorten it, remove the headers, and adapt the language to British English to align with Everyrun's

communication style. The copywriter took an additional 26 minutes to implement these revisions, but the final version (Appendix 3) was delivered after two working days. In total, the process required 2 hours and 6 minutes of the copywriter's time and 26 minutes of the Marketing Manager's time. A detailed breakdown of the time spent on each stage of content production is shown in Table 1, with the differences between methods highlighted in bold.

*Table 1: Comparative analysis of time spent on each content creation stage*

Number	Stage Name	Copywriter					Chat GPT				
		Stage workflow	Position	Software	Work time, hours	Days in backlog	Stage workflow	Position	Software	Work time, hours	Days in backlog
1	Content Planning	The Marketing Manager defines the content strategy, selects the topic, and sets the objectives for the blog post	Marketing Manager	Google Sheets	1	0	Defining the content strategy, selecting the topic, and setting the objectives for the blog post.	Marketing Manager	Google Sheets	1	0
2	Technical Task Creation	The Marketing Manager creates a detailed brief or technical task for the outsourced copywriter.	Marketing Manager	Google Docs	0.5	0	The Marketing Manager creates a detailed brief or technical task for the required content.	Marketing Manager	Google Docs	0.5	0
3	Copywriting	<b>The outsourced copywriter writes the blog post based on the provided technical task.</b>	<b>Copywriter</b>	<b>Fibery</b>	<b>1.7</b>	<b>3</b>	<b>Inputting the technical task into ChatGPT to generate the initial draft of the blog post.</b>	<b>Marketing Manager</b>	<b>ChatGPT</b>	<b>0.05</b>	<b>0</b>
4	Review and Approval	Reviewing the draft, identifying necessary revisions, and making initial adjustments.	Marketing Manager	Google Docs	0.5	1	Reviewing the AI-generated draft, making initial edits for clarity, coherence, and alignment with the content plan.	Marketing Manager	Google Docs	0.5	0
5	Revisions by Copywriter	Implementing revisions and adjustments based on feedback from the Marketing Manager.	Copywriter	Fibery	0.43	2	Refining the prompt and re-running it through ChatGPT for specific sections or improvements.	Marketing Manager	ChatGPT	0.03	0
6	Final Review and Approval	Conducting a final review and making any last adjustments before publishing.	Marketing Manager	Google Docs	0.33	1	Conducting a final review and making any last adjustments before publishing.	Marketing Manager	Google Docs	0.33	0
7	Publishing	The Marketing Manager uploads and publishes the content on the startup's blog or website.	Marketing Manager	WordPress	1	0	Promoting the published blog post through various channels such as social media and email newsletters.	Marketing Manager	WordPress	1	0
8	Promotion and Distribution	The Marketing Manager promotes the published blog post through various channels such as social media and email newsletters.	Marketing Manager	Mailchimp	3	0	Uploading and publishing the content on the startup's blog or website.	Marketing Manager	Mailchimp	3	0
9	Performance Monitoring and Analysis	The Marketing Manager tracks the blog post's performance using analytics tools and evaluates its effectiveness.	Marketing Manager	Google Analytics	1.5	0	Tracking the blog post's performance using analytics tools and evaluating its effectiveness.	Marketing Manager	Google Analytics	1.5	0
		TOTAL			<b>9.96</b>	<b>7</b>				<b>7.91</b>	<b>0</b>

*Source: Own work.*

In contrast, using ChatGPT required only 5 minutes of the Marketing Manager's time (Table 1) to obtain the final version. The Technical Task (Appendix 1) was inserted into the dialogue window of the free version of ChatGPT-4o mini, and the first draft was generated within seconds. Although the Technical Task specified a required length of 500-600 words, the initial draft contained 647 words and included two references to external sources. One of these links was broken, and the other led to an irrelevant page. The Marketing Manager then requested a revision to shorten the text to the specified length and fix the links. The second draft was reduced to 485 words, but the new external links were also non-functional and were subsequently removed. The final version generated by ChatGPT is included in Appendix 2.

I found that several stages of the content creation process were significantly affected by switching to ChatGPT. Regarding time efficiency, the initial article took 1 hour and 40 minutes for the copywriter but only 3 minutes for ChatGPT, resulting in a 97% reduction in time. Additionally, both versions required revisions; for the copywriter, this took 26 minutes, while for ChatGPT, it took only 2 minutes, yielding a 92% reduction in time. Overall, the total time saved by using ChatGPT was 2.05 hours. However, the experiment also revealed a human factor in the traditional method. Delays in communication between the Marketing Manager and the Copywriter due to normal workflow and competing tasks resulted in 7 working days delay in delivering the final version of content, compared to the rapid turnaround time with ChatGPT.

To address the second research question, which focuses on the cost differences, I first gathered data on the hourly wages of each team member involved in the content creation process. The Marketing Manager is employed full-time with a monthly salary of €3,000. For simplification, the hourly rate was calculated based on an average of 21.67 working days per month, accounting for weekends and holidays. Consequently, the Marketing Manager's hourly wage is €19.77, while the Copywriter's hourly wage is €25.00.

As indicated in Table 2, the cost difference between the traditional method of outsourcing work to a copywriter and utilising ChatGPT for the Everyrun start-up content creation shows a cost reduction of 24.8%, with ChatGPT being €51.67 cheaper per single piece of content. According to the content strategy of Everyrun, which involves publishing an average of four articles per month, the potential cost savings amount to €206.68 per month or €2,480.16 annually.

*Table 2: Cost difference calculation: human-written vs. AI-generated content*

Number	Stage Name	Copywriter		ChatGPT	
		Hours	Cost, EUR	Hours	Cost, EUR
1	Content Planning	1	€19.77	1	€19.77
2	Technical Task Creation	0.5	€9.89	0.5	€9.89
3	<b>Copywriting</b>	<b>1.7</b>	<b>€42.50</b>	<b>0.05</b>	<b>€0.99</b>
4	Review and Approval	0.5	€9.89	0.5	€9.89
5	<b>Revisions by Copywriter</b>	<b>0.43</b>	<b>€10.75</b>	<b>0.03</b>	<b>€0.59</b>
6	Final Review and Approval	0.33	€6.52	0.33	€6.52
7	Publishing	1	€19.77	1	€19.77
8	Promotion and Distribution	3	€59.31	3	€59.31
9	Performance Monitoring and Analysis	1.5	€29.66	1.5	€29.66
	<b>TOTAL</b>	<b>9.96</b>	<b>€208.05</b>	<b>7.91</b>	<b>€156.38</b>

*Source: Own work.*

### 6.3.2 Online survey findings in content effectiveness and quality

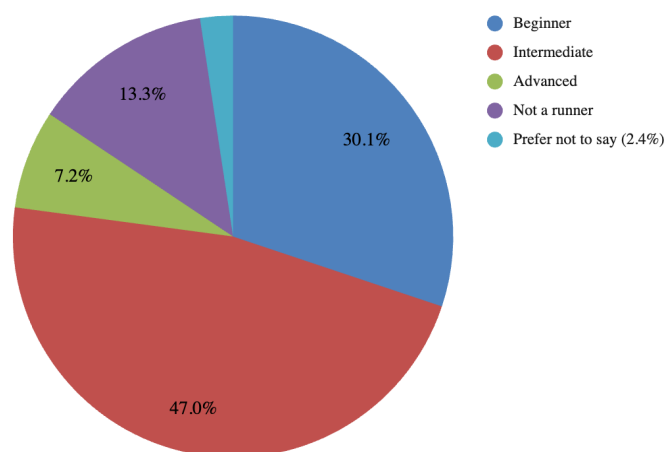
In this section, I will first describe the sample, highlighting the main patterns found and any differences between the two groups of respondents - the experimental group and the control group. I will then describe the findings regarding the effectiveness of both pieces of content and other interesting patterns I observed in the data.

I collected 120 responses to the survey. However, 35 of them were not complete, so there were only 85 eligible responses. The respondents were from 17 countries, with 48% currently located in the UK, 15% in Ukraine, and 11% in Colombia.

Participants were randomly assigned to read and evaluate human-written or AI-generated text. Because some respondents did not complete the survey, I got 35 responses evaluating human-written content and 50 completed responses evaluating ChatGPT-generated content. I used SmartSurvey to collect responses, and I will now present the findings.

As seen in Figure 6, in terms of running experience, the respondents can be categorised as follows: the most significant group comprises individuals with an intermediate level of running experience (47%). These respondents engage in regular running but do not participate in competitive events. The next largest group consists of beginners (30.1%) who have little to no experience with running. A smaller portion of the sample (13.3%) are not runners. Finally, the smallest group is represented by advanced runners (7.5%) who regularly participate in competitive races.

*Figure 6: Respondents running experience*



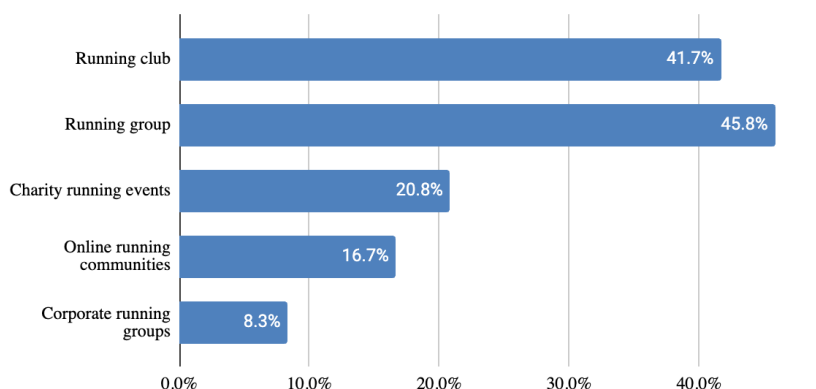
*Source: Own work.*

57.6% of respondents were male, and 37.6% were female. 4.7% chose the other option or preferred not to say. Regarding involvement in running communities, 72.3% of respondents indicated they are not involved in any running communities. In comparison, 25.3% indicated they are members of various running communities.



This suggests that a significant portion of the sample engages in running independently, without formal or organised participation in running groups or clubs. In Figure 7, we can see in which types of running communities the 25.3% of respondents are involved: running groups being the most common (45.8%), followed by running clubs (41.7%).

*Figure 7: Involvement in running communities*



*Source: Own work.*

Most respondents have a high level of education, with the largest group holding a Master's degree, making up 42.2% of the sample. The next largest group, 28.9%, has completed a Bachelor's degree, indicating a solid undergraduate education. A smaller portion, 18.1%, holds a Doctoral degree or higher. A minority, 9.6%, have only completed secondary education or high school. A very small fraction, 1.2%, chose to keep their educational level private.

The prevailing age among the respondents was 30-39 (45.9%), and the second most common was 20-29 (24.4%). However, many respondents were aged 40-49 (12.9%). The other age groups - 18-20, 50-59, and 60 or older - were smaller, 3.5% each.

While analysing demographic information, results showed no statistically significant differences between the two groups for most variables, including age, gender, education level, running experience, and involvement in running communities, with p-values of 0.94, 0.30, 0.73, 0.37, and 0.38, respectively. Although the responses regarding participants' current location presented a lower p-value of 0.09, they still did not reach statistical significance. These findings indicate that for all the questions in the Demographic section, there was no statistically significant difference between the characteristics of the respondents of both types of texts; therefore, the difference observed in the following analyses should be explained by the different texts seen by participants and not by pre-existing characteristics.

Table 3 shows the results for various content effectiveness metrics. First, to address the third research question, respondents were asked five questions to measure Information Quality. Only one of them was statistically significant. Therefore, with a confidence level of 99.1%

( $p=0.009$ ), I can conclude that from the respondents' perspective, the text generated by ChatGPT is more precise and consistent. Except for this one variable, there are no other differences in information quality between the two pieces of content.

*Table 3: Content effectiveness findings*

Name	Question	ChatGPT-generated			Human-written			p-value
		Number	Mean	Standard daviation	Number	Mean	Standard daviation	
Information Quality	How accurate do you find the information presented in the article?	50	3.75	0.913	35	3.40	0.946	0.093
	To what extent do you believe the information in the article is presented clearly and concisely?	50	3.80	0.775	35	3.31	0.900	0.009
	How relevant is the information provided in the article to your interests in sports and running?	50	3.22	1.045	35	3.09	1.245	0.602
	Does the article provide sufficient depth of information to be useful for making decisions about participating in sports events?	50	2.94	1.028	35	2.80	1.106	0.546
	Do you perceive the article as being unbiased in the presentation of information?	50	3.24	0.992	35	3.11	1.132	0.601
Perceived content persuasiveness	How convincing do you find the arguments presented in the article regarding participating in running events?	50	2.78	0.932	35	2.89	1.02	0.62
	To what extent does the content motivate you to engage with the brand or service promoted?	50	2.56	1.110	35	2.34	1.11	0.38
	How effectively does the article address potential concerns or objections about the services or events discussed?	50	2.54	1.034	35	2.37	1.09	0.47
Perceived content credibility	Does the article provide evidence or endorsements that enhance its credibility?	50	2.44	0.993	35	2.35	1.12	0.71
	How confident are you in the reliability of the information presented?	50	3.12	0.849	35	2.88	1.12	0.27
Ability to encourage participation in community running events	How relevant is the content of the article to your own health and wellbeing?	50	2.9	1.314	35	3.42	1.28	0.15
	How motivated do you feel to participate in community running events after reading the article?	50	2.58	1.144	35	2.38	1.10	0.43

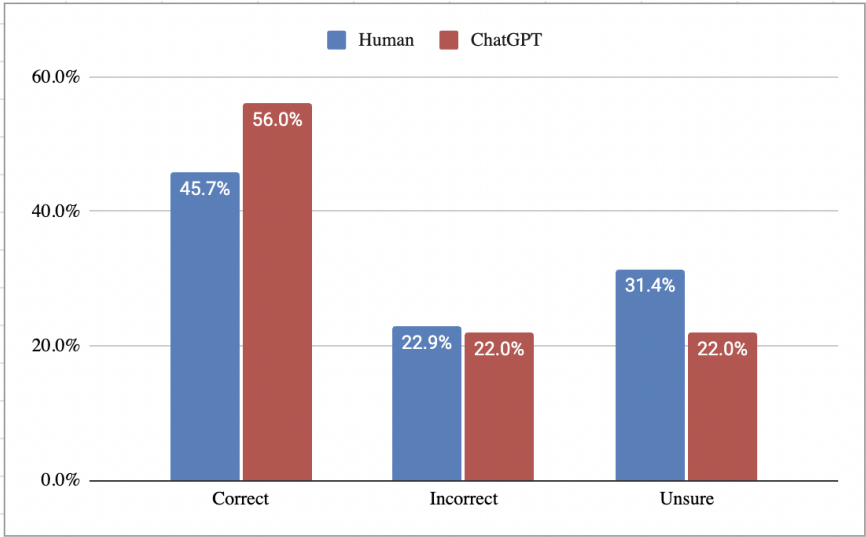
*Source: Own work.*

Then, I compared the level of Perceived Content Persuasiveness of each piece of content. The collected data shows no statistically significant difference between human-written and AI-generated content (Table 3). The means for both versions of the text were mediocre. For instance, when evaluating how convincing the respondents find arguments presented in the article regarding participating in running events, the mean of human-written content was 2.89, and for ChatGPT, it was 2.78. The results are also similar for the other questions measuring content persuasiveness. This means that both ChatGPT and human-written content have a big margin for improvement. Therefore, hiring a better copywriter who can outperform this version of ChatGPT is possible. On the other hand, it is also true that a more advanced version of ChatGPT may perform better in this area than this copywriter.

A similar situation can be observed in the fifth and sixth research questions regarding Content Credibility and the Ability of Content to Encourage participants to participate in community running events (Table 3). The null hypotheses cannot be rejected in both cases. Therefore, there is no significant difference in perceived credibility and ability to encourage runners to participate in community running events between ChatGPT-generated and

human-written content. The means in both cases are mediocre, identifying that there is room for improvement for each of the content pieces presented in the research.

Figure 8: Perceived content origin



Source: Own work.

In the survey, I also asked participants what they thought the presented content's origin was (Figure 8). Interestingly, the number of respondents who guessed incorrectly about the origin of content for both groups is very similar. The same dynamics were observed for the correct guess, although ChatGPT seemed easier to spot. However, it's important to note that in both groups of respondents, the majority guessed the origin of the content correctly.

To assess participants' ability to correctly identify the text's origin, collected responses were divided into two categories: those who correctly identified the source and those who did not (including incorrect guesses and "not sure" responses). A t-test was conducted with 50 responses for the ChatGPT-generated text, showing a mean accuracy of 0.43 with a standard deviation of 0.502, and 35 responses for the human-written text, showing a mean accuracy of 0.53 with a standard deviation of 0.364. The resulting p-value of 0.364 indicates no significant difference in the ability of participants to correctly identify the origin of the text, whether it was human-written or AI-generated.

Following inquiries about the perceived origin of the content, respondents were also asked whether their previous evaluations of the presented text would change if they were informed that the content's origin was contrary to their initial assumption. Among those who believed the content was generated by ChatGPT, 17.1% indicated they would revise their earlier evaluations upon learning the content was human-written. Conversely, 19.23% of those who initially thought the content was human-written reported they would alter their evaluation criteria if they discovered the content was AI-generated. Nonetheless, the majority of respondents would keep their evaluations the same based on this new information.

### 6.3.3 Additional findings by subgroups

In this chapter, I will discuss any additional findings I have discovered using SPSS software. I run multiple analyses, dividing participants into groups based on demographic data, like age, gender, education level, and running experience, to see if there are any significant differences between the groups from the research or if I can find any interesting patterns in the groups.

*Table 4: Influence of age on content origin guess*

Origin of content guess		B	Std. Error	Wald	df	Sig.	Exp(B)	95% Confidence Interval for Exp(B) Lower Bound
ChatGPT	Intercept	0.884	1.196	0.546	1	0.46		
	Source	-0.551	0.542	1.031	1	0.31	0.576	0.199
	Age	0.054	0.37	0.021	1	0.885	1.055	0.511
Not Sure	Intercept	2.772	1.306	4.503	1	0.034		
	Source	-0.708	0.605	1.369	1	0.242	0.493	0.151
	Age	-1.049	0.446	5.529	1	0.019	0.35	0.146

*Source: Own work.*

One of the interesting findings was the influence of age on uncertainty about the origin of content (Table 4). Specifically, the coefficient for age when guessing that the origin is uncertain is -1.049, with a p-value of 0.019. This indicates that as age increases, the likelihood of participants being unsure about the content's origin decreases. The Exp(B) value for age in this category is 0.350, suggesting that the odds of being unsure for each additional decade of age decreased by 65% (0.350). This pattern highlights a clear demographic trend: younger participants are significantly more likely to express uncertainty in deciding whether content is written by humans or generated by AI.

Furthermore, I explored how the source of an article and the reader's age impact respondents' perception of the content's relevance to personal health and well-being and their motivation to participate in community running events (Table 5).

The article's source has a modest but notable influence on the combined measures of relevance and motivation. Specifically, the source accounts for about 9.6% of the variance in these perceptions, indicating that the article's origin can slightly affect how the content is received. Regarding relevance to personal health and well-being, human-written content was rated higher, with a mean score of 3.282, compared to 2.934 for ChatGPT. But, regarding the ability to motivate individuals to participate in community running events, ChatGPT slightly outperforms human-written content, with means being 2.609 and 2.406, respectively.

However, when looking at the relevance and motivation separately, neither age nor the combination of source and age significantly affect the level of encouragement to participate in community running events.

*Table 5: Encouragement to participate in community running events, multivariate test*

Effect		Value	F	Hypothesis df	Error df	Sig.	Partial Eta Squared
<b>Intercept</b>	Pillai's Trace	0.883	282.343b	2	75	<.001	0.883
	Wilks' Lambda	0.117	282.343b	2	75	<.001	0.883
	Hotelling's Trace	7.529	282.343b	2	75	<.001	0.883
	Roy's Largest Root	7.529	282.343b	2	75	<.001	0.883
<b>Source</b>	Pillai's Trace	0.096	3.967b	2	75	0.023	0.096
	Wilks' Lambda	0.904	3.967b	2	75	0.023	0.096
	Hotelling's Trace	0.106	3.967b	2	75	0.023	0.096
	Roy's Largest Root	0.106	3.967b	2	75	0.023	0.096
<b>Age</b>	Pillai's Trace	0.092	1.823	4	152	0.127	0.046
	Wilks' Lambda	0.908	1.843b	4	150	0.123	0.047
	Hotelling's Trace	0.101	1.863	4	148	0.12	0.048
	Roy's Largest Root	0.1	3.813c	2	76	0.026	0.091
<b>Source * Age</b>	Pillai's Trace	0.028	0.544	4	152	0.704	0.014
	Wilks' Lambda	0.972	.539b	4	150	0.708	0.014
	Hotelling's Trace	0.029	0.533	4	148	0.711	0.014
	Roy's Largest Root	0.024	.925c	2	76	0.401	0.024

*Source: Own work.*

This suggests that while content origin may slightly affect audience response to the content, demographic variables are irrelevant. Marketers might focus more on other factors, like the appeal of the content and content topics, rather than heavily tailoring it based on the audience's age.

Next, I analysed how the content origin and participants' educational level influenced how respondents perceived the credibility of each piece of content (Table 6). The source of the article did not show a statistically significant effect on the perception of credibility ( $p = 0.385$ ) or the confidence in the reliability of the information ( $p = 0.884$ ), explaining only a small portion of the variance (partial eta squared = 0.025). On the other hand, education level significantly impacts credibility perceptions. Participants with doctoral degrees gave the lowest credibility ratings (mean score of 1.917), indicating higher scepticism. In contrast, those with only secondary education provided the highest ratings (mean score of 3.500), showing less critical engagement.

The effect of education on credibility was statistically significant ( $p = 0.015$ ) and explained 13% of the variance (partial eta squared = 0.130). These findings are logical, as higher education is usually related to a higher level of critical thinking.

Table 6: Effect of education level on content credibility

Effect		Value	F	Hypothesis df	Error df	Sig.	Partial Eta Squared
<b>Intercept</b>	Pillai's Trace	0.889	296.938b	2	74	<.001	0.889
	Wilks' Lambda	0.111	296.938b	2	74	<.001	0.889
	Hotelling's Trace	8.025	296.938b	2	74	<.001	0.889
	Roy's Largest Root	8.025	296.938b	2	74	<.001	0.889
<b>Source</b>	Pillai's Trace	0.025	.968b	2	74	0.385	0.025
	Wilks' Lambda	0.975	.968b	2	74	0.385	0.025
	Hotelling's Trace	0.026	.968b	2	74	0.385	0.025
	Roy's Largest Root	0.026	.968b	2	74	0.385	0.025
<b>Education</b>	Pillai's Trace	0.131	1.754	6	150	0.112	0.066
	Wilks' Lambda	0.869	1.793b	6	148	0.104	0.068
	Hotelling's Trace	0.15	1.831	6	146	0.097	0.07
	Roy's Largest Root	0.149	3.730c	3	75	0.015	0.13
<b>Source * Education</b>	Pillai's Trace	0.114	1.507	6	150	0.179	0.057
	Wilks' Lambda	0.887	1.528b	6	148	0.173	0.058
	Hotelling's Trace	0.127	1.548	6	146	0.166	0.06
	Roy's Largest Root	0.123	3.082c	3	75	0.032	0.11

Source: Own work.

Overall, by running other multiple ANOVA tests with the collected data, mostly comparing how the article source (human-written or AI-generated), in combination with the demographic variables, affects how respondents rate the different aspects of article quality, I could not find significant differences and reject the null hypothesis in most of the cases. It may suggest that there is no significant difference in quality between human-written and ChatGPT-generated articles.

Table 7: Effect of running experience motivation to participate in running events

Source		df	Mean Square	F	Sig.
<b>Corrected Model</b>	10.148a	7	1.45	1.176	0.327
	267.426	1	267.426	216.852	<.001
	3.144	1	3.144	2.549	0.115
	3.097	3	1.032	0.837	0.478
<b>Source * Run experience</b>	4.93	3	1.643	1.333	0.27
	90.025	73	1.233		
	619	81			
	100.173	80			

Source: Own work.

One example would be the analyses of how the source of an article and a participant's running experience affect their motivation to participate in community running events (Table

7). The main outcome of this test showed that neither the source of the article nor the participant's running experience significantly impacted their motivation, as indicated by the p-values (0.115 for the source, 0.478 for the running experience, and 0.270 for the interaction between the two). The data suggest that factors other than the source of the article and running experience may need to be considered to increase motivation among participants.

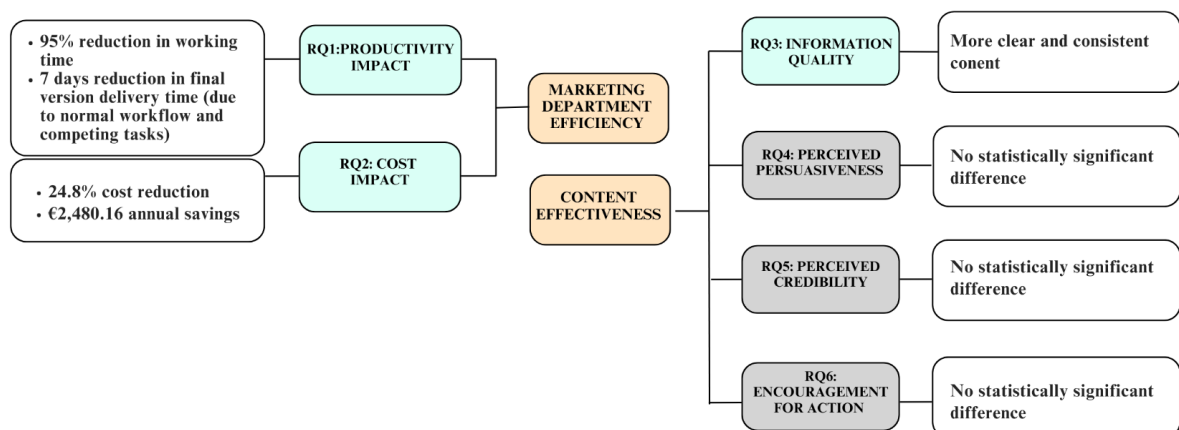
## 7 DISCUSSION

After comparing content generated by ChatGPT with human-written content, I discovered that the content relevance of both of them is pretty similar, with the ChatGPT-generated text even outperforming in some aspects. From the literature review, I also identified several critical factors that start-up founders should consider when integrating AI technologies into their business processes. In this chapter, I present the key insights derived from the theoretical framework and survey results, discuss their managerial implications, and suggest directions for future research.

### 7.1 Interpretation of research results

In this thesis, I evaluated the efficiency and effectiveness of ChatGPT-4o mini as a content creation tool for sports start-up marketing communications. The research was guided by multiple questions concerning changes in marketing department efficiency when using ChatGPT-4o mini for content production, as well as changes in content effectiveness: information quality, persuasiveness, credibility, and its influence on the willingness to participate in community running events. An overview of the main findings is presented in Figure 9.

*Figure 9: Comparative findings on content relevance*



*Source: Own work.*

In terms of marketing department efficiency, the introduction of ChatGPT into the content creation process can lead to significant cost reductions. The use of ChatGPT helps decrease



the cost of a single piece of content by 24.8%, translating into potential annual savings of €2,480.16 for the Everyrun start-up. ChatGPT is a relatively new technology, so I could not find previous studies comparing cost production; therefore, I believe this study represents an important contribution to the academic understanding of the technology. However, cost reduction is one of the main priorities for most businesses, especially in marketing departments, as it leads to greater business flexibility and profitability (Dahan & Srinivasan, 2011).

Using ChatGPT in the content creation process can reduce content creation time by 97% and content revision time by 92%. Additionally, during my research, I observed the impact of the human factor. In the case of Everyrun, a Marketing Manager is responsible for writing the technical task, sending it to the copywriter, and reviewing the final version of the content. Due to standard workflow and competing tasks, neither individual would begin working on the task immediately upon receiving it. As a result, when two people are involved in the process, it takes seven working days to deliver the final piece of content. By switching to ChatGPT, this delay can be avoided, as there is no need to communicate with a Copywriter. These findings align with the previous study by Adwan (2024), which states that adopting AI tools is proving to be a game-changer by significantly improving content relevance and the speed at which content is produced. Simultaneously, it corroborates concerns raised by Micu et al. regarding job displacement as a result of task automation (Micu et al., 2018).

Moving on to content effectiveness variables: the content generated by ChatGPT was perceived as clearer and more consistent, with statistical significance, indicating a slightly higher Information Quality of AI-generated content. Interestingly, previously conducted linguistic analyses indicate that human-authored content typically exhibits a broader range of sentence structures, more complex grammatical constructions, and a higher level of emotional engagement. Conversely, texts produced by AI are characterised by the use of a more objective tone and a higher frequency of pronouns (Muñoz-Ortiz et al., 2023). Therefore, there is a possibility that a more complex text structure may not be a great fit for sports industry articles.

Neither the content source nor the interaction of the source with the reader's age significantly influenced the motivation to participate in community running events, suggesting that other factors may play a more pivotal role in this regard.

There were no statistically significant differences in persuasiveness and credibility between human-written and ChatGPT-generated content, suggesting that both sources perform similarly. However, it is important to note that the results for both types of texts were mediocre, indicating significant room for improvement. Additionally, respondents with higher education levels demonstrated more critical engagement, influencing their text credibility ratings, with participants holding doctoral degrees being the most critical. These findings on text persuasiveness and credibility align with earlier research, indicating that readers generally attribute similar levels of credibility to AI and human-authored texts



(Martin Huschens et al., 2023). Conversely, other researchers have reported different results where human-written content was perceived as higher quality and more readable (Graefe & Bohlken, 2020).

Graefe & Bohlken (2020) suggested that readers tend to rate articles higher when informed they are human-written, raising ethical concerns about disclosure in automated journalism. Additionally, participants often struggle to differentiate accurately between AI-generated and human-written texts, exhibiting overconfidence in their judgments (Gunser et al., 2022). Interestingly, in my study, I observed consistent results, where approximately 50% of respondents could correctly identify the text's origin, and most stated they would not alter their previous text evaluations if informed that the text's origin was opposite from what they had assumed. Furthermore, older participants were less likely to be uncertain about the content's origin, suggesting age-related differences in content perception. This may be attributed to the younger generation being more exposed to AI-generated content and consequently being more critical and uncertain about its origin.

I could not identify any other statistically significant differences between the two pieces of content, which leads me to the conclusion that they are otherwise similar.

## **7.2 Managerial implications**

These findings offer valuable insights for sports start-ups aiming to integrate AI tools into their marketing strategies. By introducing ChatGPT-generated content, start-ups can reduce the cost of a single piece of content by 24.8%, decrease content creation time by 95%, and significantly shorten content delivery times. From the perspective of start-ups, which typically operate with limited budgets and need to establish a strong online presence from scratch, this can be a compelling tool. Additionally, small start-ups often operate with a small, efficient team. Extending the time before hiring a full-time copywriter can be crucial for managing resources and fostering gradual, sustainable growth.

The overall content effectiveness analysis revealed that ChatGPT-generated and human-written content exhibited few statistically significant differences, with each delivering mediocre results. This can be attributed to the fact that Everyrun is an early-stage start-up that operates on a tight budget and cannot afford an expensive, high-quality copywriter. In this scenario, transitioning to ChatGPT-generated content would not compromise content quality. Notably, ChatGPT-generated content was perceived as clearer and more consistent in terms of information quality. Furthermore, the collected data was carefully analysed, revealing no statistically significant differences in content performance between the two versions concerning demographic data. This suggests that marketing managers should prioritise other variables in crafting content for sports start-up communications, such as content topics, length, delivery channels, and content appearance.

In terms of consumer perceptions of content origin, a substantial proportion of respondents could correctly identify the origin of the content, and only 20% would alter their opinions about content quality upon learning that the origin was the opposite of what they initially believed. This finding helps mitigate concerns regarding the use of AI-generated content from a business perspective. However, when considering implementing AI tools into start-up content production processes, addressing the ethical aspects and implementing appropriate business processes and practices is crucial.

First of all, many researchers highlight that AI-generated content often lacks creativity, understanding of emotions, humour, and ethical considerations (Advan, 2024). Therefore, while ChatGPT-generated content may be a suitable solution during the early stages of a start-up's journey, founders and marketing managers should ensure that all content is proofread and moderated by humans before publishing in the short term. In the long term, employing a skilled copywriter who can ensure excellent content quality while still leveraging AI tools to speed up the process is crucial.

Another ethical consideration highlighted by Shaikh and Mhaske is the risk of job loss associated with the automation of tasks traditionally performed by human professionals due to advancements in generative AI (Shaikh & Mhaske, 2023). It is true that generative AI can significantly automate processes and consequently offer a substantial competitive advantage. Start-up founders should take this into account when building their teams. Ensuring inclusivity and fostering a multidisciplinary approach are essential for maintaining team strengths in the long term.

Since generative AI is still a relatively new technology, it remains largely unregulated (Zhang et al., 2023b). Therefore, start-up founders should closely monitor new legislation concerning AI-generated content and consider the ethical challenges involved to ensure that the benefits of AI are realised without compromising customer trust (Hsu & Liou, 2021). As a business, it is crucial to establish a strong level of systematisation and communicate transparently about the use of AI in the company's products (Pavone et al., 2023). For instance, Google has implemented internal ethical frameworks and review processes to ensure ongoing monitoring and accountability of its AI systems.

### **7.3 Limitations and recommendations for further research**

This chapter addresses several limitations encountered in this master's thesis research and highlights potential areas for improvement in future studies. The most significant limitation of this study is the sample size. For robust statistical power, a larger number of respondents is necessary, particularly for evaluating human-written content. Additionally, the method of selecting respondents could be improved. For the Everyrun start-up, extending the survey duration and collecting responses from all website blog visitors would be beneficial. A considerable number of respondents did not complete the survey, likely due to the extensive

number of questions. Notably, completing the survey, including reading the associated text, required only 15 minutes.

Further limitations were identified while conducting additional analyses in SPSS. One of these was the uneven group size, as I could not gather an equal number of responses for each group. Respondents who chose "prefer not to say" were removed from the dataset, which, in some cases, further reduced the sample size.

It is essential to keep in mind that the findings are based on responses to a specific article on a specific topic, limiting their scalability to other subjects. Additionally, the respondents self-assessed certain variables, such as "running experience" and "motivation to participate in running events," which may introduce bias. The ability to generalise the study's findings is also constrained by unaccounted confounding variables, such as participants' familiarity with AI, which could affect their ability to discern the origins of the content.

Another limitation was the restricted scope of content evaluated due to limited resources. The study reviewed only one article, written by a professional copywriter who has worked with the start-up for an extended period and one article generated by ChatGPT-4 mini. A broader range of article topics, content from different copywriters, and various versions of ChatGPT would yield more comprehensive results.

This study also falls short of fully measuring and comparing the performance of both texts. While I successfully measured the effectiveness of both texts, adding information about their performance in real-world settings (for example, through the number of likes and comments on social media) would provide a more comprehensive understanding of content quality.

Future research could be conducted on a larger scale to test content produced by different versions of ChatGPT and copywriters with varying levels of experience. Expanding the study to include other topics, writing styles, and more layers of text quality assessment would help draw more comprehensive conclusions that could be applied to a broader range of fields and industries.

## **8 CONCLUSION**

This study aimed to evaluate the efficiency and effectiveness of ChatGPT-4o mini as a content creation tool for sports start-up marketing communications. Initially, the concept of content marketing was introduced, followed by a discussion of various methods for evaluating content marketing performance. Subsequently, the definition of AI and its application in marketing were addressed. The discussion then shifted to the running market, with a specific focus on Everyrun's unique positioning within this sector.

The research assessed the difference in content marketing efficiency between employing a copywriter to create content and using ChatGPT to generate business content, concluding

that using ChatGPT allows marketing departments to reduce costs significantly and enhance productivity, as it eliminates the need for manager-copywriter interactions.

A survey was also conducted to compare the effectiveness of content marketing in the two text versions (human-written vs. ChatGPT-generated) from the customer's perspective. After thorough analysis, I concluded that the two had no significant difference in quality. It is important to note that the experiment was conducted for a specific start-up that has limited resources and can only afford a mediocre copywriter. In such a case, ChatGPT could temporarily replace human copywriters, helping to reduce costs and increase productivity.

However, using AI-generated content raises serious ethical considerations that must be addressed if such strategy is implemented, as it could impact consumer responses. Data from the study indicate that approximately 20% of respondents would change their opinion about content quality if they discovered the content's origin differed from what they had initially believed.

The study had certain limitations: the data comparison was based on one article from a single copywriter and a specific version of ChatGPT. Having more text versions from both sources and a larger sample of responses could have provided more comprehensive insights.

In conclusion, ChatGPT-generated content offers a viable alternative to hiring copywriters for small sports start-ups marketing department. It could reduce marketing department costs and improve productivity without significantly compromising on content quality.

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## **APPENDICES**



## **Appendix 1: Technical task for article creation**

Technical task for copywriter: Blog post on Sustainable Fitness for Everyrun website

Objective: Create an informative and engaging blog post on the topic of sustainable fitness for the Everyrun website. The article should educate readers on the importance of sustainability in their fitness routines, provide practical tips, and highlight the benefits of adopting a sustainable approach to fitness.

Title: "Embrace Sustainable Fitness: How to Make Your Running Routine Eco-Friendly"

Suggested key points:

- Introduction to sustainable fitness
- Benefits of sustainable fitness
- Eco-friendly running practices
- Creating a sustainable running routine
- Community and social aspects
- Future of sustainable fitness

Call to action: Participate in virtual events available on the Everyrun platform and be part of the community in a sustainable way.

Everyrun brand tone and style:

- Informative yet engaging
- Use a friendly and conversational tone

Length: 500 - 600 words.

Additional Requirements:

- Include external links to credible sources where necessary (studies, expert interviews, etc.).
- The post should be well-researched, fact-checked, and free of grammatical errors.

Deadline: August 12, 2024

## Appendix 2: Blog post, generated by ChatGPT-4o mini

Title: Embrace Sustainable Fitness: How to Make Your Running Routine Eco-Friendly

Sustainability is a growing priority in every aspect of life, and fitness is no exception. Embracing sustainable fitness means adopting practices that are kind to the planet while enhancing your well-being. This approach not only helps reduce your environmental footprint but also supports a healthier lifestyle.

Sustainable fitness benefits go beyond environmental impact. By choosing eco-friendly practices, you contribute to waste reduction and a lower carbon footprint, while also enjoying enhanced mental well-being and motivation. Studies have shown that sustainable practices can boost your commitment to fitness and foster a deeper connection with nature.

### Eco-Friendly Running Practices

1. **Choose Sustainable Gear:** Opt for running shoes and apparel made from recycled or eco-friendly materials. Many brands now offer products designed with the environment in mind, such as shoes made from recycled plastics. (Source: Eco-Friendly Running Shoes: A Buyer's Guide)
2. **Reduce Single-Use Plastics:** Use a reusable water bottle instead of single-use plastics. Hydration packs and collapsible cups are also great options to minimise waste during your runs.
3. **Support Green Brands:** When buying running gear or supplements, select companies that prioritize sustainability. These brands often have transparent environmental practices that align with your eco-friendly goals.
4. **Recycle and Donate:** Recycle old gear properly and donate usable items to local charities or running clubs. This helps reduce waste and supports those in need.

To make your running routine more sustainable:

- **Plan Your Routes:** Choose nearby trails or parks that you can reach by walking or biking, reducing car travel and emissions.
- **Practice Leave No Trace:** Follow the Leave No Trace principles by picking up after yourself, staying on designated paths, and avoiding wildlife disturbances.
- **Use Technology Wisely:** Opt for energy-efficient fitness trackers and sync your data less frequently to conserve battery life and reduce electronic waste.

Joining a community focused on sustainable fitness can enhance your motivation. Participate in virtual events on the Everyrun platform to connect with others who share your commitment to eco-friendly practices. Building a network of like-minded individuals amplifies your impact and keeps you engaged.

The future of sustainable fitness is promising, with innovations in eco-friendly materials and growing awareness of environmental issues. As more people embrace green practices, we

can expect a surge in eco-friendly options and community-driven initiatives that support both the planet and personal health.

Ready to make a difference? Join virtual events on the Everyrun platform and be part of a community dedicated to sustainable fitness. Start your journey today and inspire others to adopt eco-friendly practices in their running routines!

By adopting these sustainable practices, you'll contribute to a healthier planet and a more fulfilling fitness routine. Let's run towards a greener future together!

### **Appendix 3: Blog post written by a professional copywriter**

#### **Embrace Sustainable Fitness: How to Make Your Running Routine Eco-Friendly**

In the modern world, trends have become an inevitable part of our lives in almost all areas. So it's no surprise that physical health and proper nutrition have also acquired their own tendencies. Unfortunately, they are often aimed at quick results, which, of course, each of us wants. But isn't health much more important?

There is nothing wrong with expecting results from sports. However, some ways will be beneficial to your physical and mental well-being and even to our one and only home, planet Earth.

You may have already guessed that we will talk about sustainable fitness, but did you know its benefits?

#### **Introduction to sustainable fitness**

Sustainable fitness is about the balance between mind and body, exertion and rest, and the necessity and enjoyment of sport. It allows you to not only make your workouts regular but also careful, environmentally friendly, and truly beneficial for each individual.

Of course, sustainable fitness has several advantages, including:

**Low injury risk:** this practice involves listening to your body and well-being and the ability to stop in time and not harm your own health.

**Consistently engaging:** you will have the opportunity to create your own schedule of classes, taking into account your free time and energy, and increase the workload when you are ready, not when it is supposedly needed.

**Focus on long-term health and preventive healthcare:** Sustainable fitness is a marathon, not a short distance. It's about changing your lifestyle, not just doing something temporary for a quick goal.

**Leaves you feeling strong and accomplished:** By fulfilling your goals, you will experience not only physical changes but also moral ones - joy from training, constant motivation, and self-confidence. After all, big dreams come true in small steps!

And much more!

Sustainable fitness practices can also be applied to your running routine. In addition, this outlook on sports also includes an ecological part, which allows you to combine your activities with caring for nature.

For example, you can jog outdoors or in a park instead of the gym, which will help you reduce your carbon footprint.

Or you can try a new trend among runners – plogging. In this practice, athletes also pick up trash from the street while jogging, so everyone wins – you feel better, and your city becomes cleaner.

Remember that even if you're new to running, you can still practice sustainable fitness and create your own training plan.

To begin with, define your goal explicitly: what distance do you plan to conquer, and in what time? Next, determine your fitness level and, accordingly, the intensity and frequency of your training.

And, of course, don't forget about rest days. You can also come up with some kind of reward for yourself for each new distance you cover. It can be a delicious dinner or a visit to the cinema.

Given that running is a very social sport, you can use this advantage. Find a group of like-minded people or a running friend to train with. Nothing motivates a person more than another motivated person! This will also help you stick to your plan and even enjoy it.

You can also join sustainable fitness initiatives, gather at like-minded events, make friends, and all with the benefit of your physical and mental health.

It is safe to say that sustainable fitness is the future for any sport because you no longer have to compromise on environmental sustainability in your quest for a healthy lifestyle.

Participate in virtual events available on the Everyrun platform and be part of the community in a sustainable way!

## **Appendix 4: Blog post content evaluation questionnaire**

Instructions: You will be presented with an article. Please read it and then answer the following questions.

Article: randomly assigned text of either the AI-generated article or the human-written article

### **Part 1: Information quality**

1. How accurate do you find the information presented in the article? (1 = Completely inaccurate / 2 = Mostly inaccurate / 3 = Somewhat accurate / 4 = Mostly accurate / 5 = Completely accurate)
2. To what extent do you believe the information in the article is presented clearly and concisely? (1 = Not clear at all / 2 = Slightly clear / 3 = Moderately clear / 4 = Very clear / 5 = Extremely clear)
3. How relevant is the information provided in the article to your interests in sports and running? (1 = Not relevant at all / 2 = Slightly relevant / 3 = Moderately relevant / 4 = Very relevant / 5 = Extremely relevant)
4. Does the article provide sufficient depth of information to be useful for making decisions about participating in sports events? (1 = Not sufficient at all / 2 = Slightly sufficient / 3 = Moderately sufficient / 4 = Very sufficient / 5 = Extremely sufficient)
5. Do you perceive the article as being unbiased in the presentation of information? (1 = Highly biased / 2 = Somewhat biased / 3 = Neutral / 4 = Somewhat unbiased / 5 = Completely unbiased)

### **Part 2: Content persuasiveness**

6. How convincing do you find the arguments presented in the article regarding participating in running events? (1 = Not convincing at all / 2 = Slightly convincing / 3 = Moderately convincing / 4 = Very convincing / 5 = Extremely convincing)
7. To what extent does the content motivate you to engage with the brand or service promoted? (1 = Not motivated at all / 2 = Slightly motivated / 3 = Moderately motivated / 4 = Very motivated / 5 = Extremely motivated)
8. How effectively does the article address potential concerns or objections about the services or events discussed? (1 = Not effectively at all / 2 = Slightly effectively / 3 = Moderately effectively / 4 = Very effectively / 5 = Extremely effectively)

### **Part 3: Content credibility**

9. Does the article provide evidence or endorsements that enhance its credibility? (1 = Does not enhance at all / 2 = Slightly enhances / 3 = Moderately enhances / 4 = Very much enhances / 5 = Greatly enhances)



10. How confident are you in the reliability of the information presented? (1 = Not confident at all / 2 = Slightly confident / 3 = Moderately confident / 4 = Very confident / 5 = Extremely confident)

#### **Part 4: Encouragement to participate in community running events**

11. How relevant is the content of the article to your own health and wellbeing? (1 = Not relevant at all / 2 = Slightly relevant / 3 = Moderately relevant / 4 = Very relevant / 5 = Extremely relevant)
12. How motivated do you feel to participate in community running events after reading the article? (1 = Not motivated at all / 2 = Slightly motivated / 3 = Moderately motivated / 4 = Very motivated / 5 = Extremely motivated)

#### **Part 5: Perceptions and impact of content origin**

13. How do you perceive the origin of this text? (Human-written / AI-generated / Unsure)
14. If you discovered that the text had the opposite origin from what you initially thought, would it affect any of your previous responses? (Yes / No / Not sure)

#### **Part 6: Demographic information**

15. What is your age? (17 or younger / 18-20 / 21-29 / 30-39 / 40-49 / 50-59 / 60 or older / Prefer not to say)
16. What is your gender? (Male / Female / Non-binary / Third gender / Prefer not to say)
17. What is the highest level of education you have completed? (No formal education / Primary education / Secondary education or high school / Bachelor's degree / Master's degree / Doctoral degree or higher / Prefer not to say)
18. What is your current location? (Country)
19. What is your running experience (Beginner I have little to no experience with running / Intermediate (I run regularly but not competitively) / Advanced (I participate in races and run competitively) / Not a runner / Prefer not to say)
20. Are you involved in any running communities? (Yes / No / Prefer not to say)
21. If yes, which type of running community are you involved in? (Please check all that apply): (Running club / Running group / Charity running events / Online running communities / Corporate running groups / Other (please specify))