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## Challenges And Opportunities Of Digital-Based Marketing In The Era Of Industrial Revolution 4.0: Literature Review

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**Abstract;** The purpose of this study is to present findings related to the challenges and opportunities of digital-based marketing in the era of the Industrial Revolution 4.0. The method used in this study is to review the literature or *systematic literature review* (SLR) related to the topic. The data taken is from the Scopus website, where the author comes from the United States, China, Europe, Korea, and Indonesia. The findings of this study suggest that further research should be carried out using variables about the challenges and opportunities of digital marketing in the era of the Industrial Revolution 4.0. Looking at previous research on the challenges and opportunities of digital-based marketing in the era of the Industrial Revolution 4.0, there is still a lack of literature related to digital marketing challenges and digital marketing opportunities in the era of the Industrial Revolution 4.0. This study contributes to the literature on the challenges and opportunities of digital-based marketing in the era of the industrial revolution 4.0, by providing new insights in this regard. This research also has an impact on how an entrepreneur combines digital marketing challenges and opportunities in the era of the Industrial Revolution 4.0. In addition, this research contributes to the development of digital marketing theory and practice in the era of the industrial revolution 4.0, as well as adding contributions to the field of marketing management using the SLR method.

**Keywords:** Digital Marketing Challenges, Digital Marketing Opportunities, Industrial Revolution 4.0

### INTRODUCTION

The Industrial Revolution 4.0 has brought significant changes in various aspects of life, including in the field of marketing. With the widespread use of digital technology, digital-based marketing is becoming increasingly important in the Company's business strategy [1]. Digital-based marketing utilizes various digital platforms, such as social media, email, and search engines, to reach a wider target market and increase the effectiveness of marketing campaigns [2], [3].

The Industrial Revolution 4.0, which is characterized by the integration of digital technology in various aspects of life, has brought major changes in the world of marketing. Digital-based

marketing, which utilizes digital technologies such as social media, email, and search engines, is now an important part of the Company's business strategy [4]. With digital-based marketing, companies can reach a wider target market and conduct marketing campaigns more effectively [5].

Digital-based marketing has become an important milestone in modern marketing strategies. In recent years, digital transformation has significantly affected how brands interact with their consumers [6]. Technological developments and shifts in consumer behavior have created new challenges while opening up great opportunities in the marketing realm. The rapid growth of technology, especially the internet and mobile devices, has triggered major changes in the way companies understand and reach their consumers [7]. Today, consumers have unlimited access to information, products, and brands from around the world using just the device at their fingertips. This creates a highly dynamic and constantly changing marketing environment [8].

However, with these changes comes a big challenge for marketers. They must adapt to the incredible pace of technological innovation, understand the algorithms of digital platform change, and face increasingly fierce competition for consumer attention [9], [10]. In addition, concerns about data privacy, information security, and marketing ethics are also in the spotlight in today's digital environment, on the other hand, digital-based marketing brings great opportunities, and marketers can leverage rich consumer data to create more targeted and effective strategies [11]. The ability to target and personalize messages to consumers also allows companies to build closer relationships with consumers [12]. Not only that, digital-based marketing has also changed the paradigm of consumer interaction. Greater engagement and the ability to get direct feedback from consumers help companies optimize their products, services, and customer experience [13]. This opens up opportunities to create a strong community around the brand and build consumer loyalty [14]. Therefore, understanding the challenges and opportunities of digital-based marketing in the era of the Industrial Revolution 4.0 is very important. By understanding these challenges and opportunities, companies can design more effective marketing strategies and make optimal use of digital technology [15].

Thus, digital-based marketing not only provides new challenges but also brings great opportunities for companies that can adjust their strategies well. In this context, it is important for marketers to continuously understand the dynamics of these changes, keep up with technological developments, and creatively integrate digital elements into their marketing strategies to optimize results and achieve success in this digital age [16]. In addition, the era of the Industrial Revolution 4.0 also brought new opportunities in digital-based marketing. With technologies such as artificial intelligence and big data analytics, companies can better understand consumer behavior and provide more personalized services to consumers [17].

The phenomenon in digital-based marketing includes several aspects that reflect a significant transformation in the way a company interacts with consumers and manages its brand. Social media platforms like Facebook, Instagram, Twitter, and TikTok have become prime places for brands to interact, build communities, and market their products or services [18]. They create new opportunities for direct consumer engagement and strong influence. E-commerce has become a cornerstone for many companies, even those that previously focused on offline sales [19]. This creates fertile ground for marketing strategies focused on online purchasing, user experience, and customer retention [20].

Digital-based marketing faces several problems including, dependence on technology, data privacy, dependence on data use, and uncertainty in digital security. Addressing these issues requires a holistic approach, including a deeper understanding of consumer behavior, proper use of technology, a strong understanding of data analysis, and a commitment to maintaining ethics in marketing practices. The purpose of this study is to review and analyze some literature related to the challenges and opportunities of digital-based marketing in the era of the Industrial Revolution 4.0.

## LITERATURE REVIEW

### Digital Marketing

Digital-based marketing is a marketing strategy that uses digital technology and online platforms to promote products or services to the target market. Digital-based marketing involves using various digital channels, such as websites, social media, email, search engines, and mobile applications, to reach potential consumers [21]. Digital-based marketing harnesses the power of digital technology to reach a wider target market, interact with consumers directly, and measure the effectiveness of marketing campaigns more accurately. Through digital-based marketing, companies can build brand awareness, increase engagement with consumers, and increase sales [22].

Digital marketing is a marketing or promotion activity of a brand or product using digital media or the internet. It covers a variety of marketing strategies such as social media marketing, search engine optimization (SEO), and email marketing [23]. Compared to traditional marketing methods such as print media, billboards, and TV, digital marketing is fundamentally data-driven. Many popular digital advertising platforms today provide access to campaign reports for comprehensive data analysis. The digital revolution has drastically changed the company's approach to consumers [24]. Thanks to the internet, consumers can analyze prices based on circulating opinions. The development of digital technology has led to the emergence of cyber consumers and cyber businesses. The digital revolution allows the adoption of new models of relationships with consumers, which is a challenge for companies looking to increase their market share [25]. Smartphones and social media have a certain impact on the dynamic development of digital marketing. Therefore, reaching potential clients through mobile phones and social networks is the latest communication channel that can build relationships with customers to increase sales [26].

Digital-based marketing provides flexibility and the ability to better measure results compared to traditional marketing [27]. By utilizing digital technology, companies can effectively reach the target market and increase their presence in the digital world through various channels such as the Internet, social media, mobile phones, and other digital media [28]. With the combined power of the internet and technology, digital marketers can collect and analyze data from different customer behaviors, enabling them to facilitate more personalized content and advertising toward a clearly defined audience for better engagement and results. Digital marketing also allows companies to approach consumers and understand their behavior, as well as provide cost-effective solutions for businesses, local or international [29]. With digital marketing, companies can compete with large companies using highly targeted strategies, without even costing at all to initiate some strategies such as SEO, social media, and content marketing [30].

### Digital Marketing Challenges

Digital-based marketing challenges are obstacles or problems faced by companies in developing and executing digital-based marketing strategies. These challenges can be fierce competition, changes in search engine algorithms, customer data security, changes in trends and technology, as well as budget constraints [31]. Fierce competition occurs because digital-based marketing can be accessed by anyone, so many companies compete to reach the same target market. Changes in the algorithms of search engines like Google can affect a company's website's ranking in search results, so companies must constantly monitor these changes and adjust their marketing strategies to stay relevant [32].

Customer data security is a challenge because digital-based marketing involves collecting customer data, which must be kept safe so as not to be misused. Changing trends and

technologies in digital-based marketing continue to evolve rapidly, so companies must continue to monitor these developments and adjust their marketing strategies to stay relevant [33]. Budget constraints are also a challenge because even though digital-based marketing is more cost-efficient compared to traditional marketing, companies still have to incur costs to develop and run marketing campaigns. Companies must consider their budget constraints and come up with an effective yet affordable marketing strategy [34].

The challenges of digital marketing can be complicated for business people who are just starting their business in the digital world. Some digital marketing challenges that must be considered by business people for optimization of their marketing media, such as choosing technology for the right marketing media, determining the target visitors or customers, building an effective website, increasing consumer dissatisfaction due to bad publicity, distortions in the accuracy of consumer interaction and the message to be conveyed, digital marketing communication patterns are still newly received by consumers and adjust to needs Each product and its highly dynamic nature [35].

The use of digitalization technology in marketing has opened up a tighter and higher business competition space. That's because technology can integrate business channels so that it can be done without the limitations of space and time. In effect, a business can cooperate with other businesses in any part of the world [36]. And of course, a business also gets competitors from various other businesses in any part of the world [37]. If not accompanied by continuous innovation, the business will lag behind competitors. In addition, another challenge that is often encountered when dealing with competitors is how to compete fairly. This is very important to implement. If able to compete healthily, a good climate will be formed in business [38].

To overcome these challenges, business people can look for the right solution, such as choosing the right technology for marketing media, determining clear target visitors or customers, creating interesting and quality content, and building an effective website. In addition, business people can also take advantage of social media and other social networks to promote their products.

### **Digital Marketing Opportunities**

Digital-based marketing opportunities are opportunities or potentials that can be utilized by companies in developing and executing digital-based marketing strategies. These opportunities can be in the form of the ability to reach a wider target market, increase interaction with customers, increase cost efficiency, and improve customer experience [1].

In digital-based marketing, companies can reach a wider target market because the internet can be accessed by anyone around the world. This allows the company to reach potential customers in different regions and countries [39]. Digital-based marketing also allows companies to increase interaction with customers through social media, email, and websites. Companies can leverage social media to interact with customers, answer questions, and receive feedback [40]. Email can also be used to send information and promotions to customers directly. The company's website can also be used to provide information about products and services, as well as facilitate online transactions [41].

Digital marketing offers a wide array of opportunities for professionals looking for a career in this field. With the widespread use of the internet and social media, digital marketing is becoming a more effective means to reach the target audience quickly and efficiently. Digital marketing opportunities also include the ability to use analytics data to see where audiences are coming from, their behavior on digital platforms, and more tailored strategies to attract audiences, making it easier to create campaigns that appeal to audiences [42].

In addition, digital marketing allows for more relevant content personalization for customers, direct interaction with customers through social media, and more precise targeting capabilities. Thus, digital marketing opportunities encompass various aspects that allow professionals to utilize digital technologies to achieve specific marketing goals [43].



**METHODOLOGISTS**

This research uses qualitative methods by reviewing the literature on challenges and opportunities in digital-based marketing. The research process has the following steps. The first step is to determine the topic to be discussed, namely challenges and opportunities in digital-based marketing in the era of the Industrial Revolution 4.0. The next step is to set research goals and questions that will be answered through a literature review. As referred to earlier, the purpose of this study is to understand the extent to which current studies have progressed as well as identify avenues for future research.

Research literature on challenges, opportunities, and digital-based marketing in the era of the Industrial Revolution 4.0, several studies conclude that challenges and opportunities in digital-based marketing significantly produce a digital-based marketing style that succeeds in the Industrial Revolution 4.0. In this case, we conducted a review using a *systematic literature review* (SLR). This study contributes to the development of literature related to challenges and opportunities in digital-based marketing in the era of the Industrial Revolution 4.0. In addition, the study contributes methodology to conducting SLR in the field of marketing management.

This study collects articles to be reviewed from the Scopus database on the topic of challenges and opportunities in digital-based marketing in the era of the Industrial Revolution 4.0. This research uses articles from 2013 to 2022, which fall into the categories of business, management, and accounting. In the next step, this study applies several criteria to select articles to be analyzed further. That is accessibility, universality, publication quality, and relevance. In the first period, the definition of challenge is distortion in the accuracy of consumer interactions and the message to be conveyed, opportunities are the ability to use data analytics to see the origin of the audience. While digital-based marketing is a marketing or promotional activity using digital media or the internet. To minimize the number of documents that cannot be found or downloaded, this study is limited to published journal articles. Universality means that articles are written in an international language, namely English. For publication quality criteria, this study uses journal rankings provided by Scimago on its website. The final number of articles to be analyzed is 75.

**RESULTS AND DISCUSSION**

**Distribution of Article Frequency by Year and Publication Quality**

Presentation of the frequency distribution of articles about challenges and opportunities in digital-based marketing in the era of the Industrial Revolution 4.0 which is reviewed based on year and publication quality. The collection of this article will take place in October 2023. The number of articles reviewed as preliminary is 2013. The distribution of articles by year can be seen as follows:

**Table 1: Article Distribution by Year**

Year	Sum	Percentage
	Article	%
2013	3	4%
2014	5	6,6%
2015	6	8%
2016	6	8%



2017	7	9,3%
2018	9	12%
2019	7	9,3%
2020	9	12%
2021	12	16%
2022	11	14,6%
<b>Sum</b>	<b>75</b>	<b>100%</b>

The table above explains the number of articles each year. The highest number of articles appeared in 2021, which was 12 or 16% of the total. The lowest number of articles was in 2013, which was as much as 3 or 4%

Of all the articles reviewed, 33 articles or 44%) were published in high-quality journals, indexed as Q1 by Scimago (SJR). A total of 33 articles or 44% of articles are in medium-quality journals, indexed in Q2 and Q3. In addition, only 9 articles, or 12% came from journals indexed as Q4. Here is the distribution of article frequency based on quality:

**Table 2: Article Distribution Based on Publication Quality**

Publication Quality	Year			Total	Percentage (%)
	2013-2015	2016-2019	2020-2022		
Scimago Q1	5	10	18	33	44%
Q2	4	6	11	21	28%
Q3	3	4	5	12	16%
Q4	2	3	4	9	12%

## 4.2 Article frequency distribution by country

The most popular country in the study of challenges and opportunities in digital-based marketing in the era of the Industrial Revolution 4.0 is the United States (US) which accounts for 33.33% (25 out of 75 articles). Next is Europe as much as 25.33% (19 out of 75 articles), China as much as 24% (18 out of 75 articles), Indonesia and Korea as much as 17.33% (13 out of 75 articles).

**Table 3: Article Distribution by Country**

Country	Year			Total	Percentage (%)
	2013-2015	2016-2019	2020-2022		
United States	5	8	12	25	33,33%
Chinese	3	5	10	18	24%
Europe	4	6	9	19	25,33%
Korean	1	2	4	7	9,33%
Indonesian	-	1	5	6	8%

### 4.3 Article Frequency Distribution Based on Citations

The collection of citations from the Scopus journal is on October 19, 2023, with as many as 4,451. While the citations most referenced by researchers were Q1 as much as 1,557.85 (35%), Q2 as much as 1,335.3 (30%), Q3 as much as 1,027.23 (23%), and Q4 as much as 534.12 (12%).

**Table 3: Distribution of Articles by Citation**

Publication Quality	Year			Total	Percentage (%)
	2013-2015	2016-2019	2020-2022		
Scimago					
Q1	389,46	545,25	623,14	1.557,85	35%
Q2	333,83	467,36	534,12	1.335,3	30%
Q3	255,93	358,31	409,49	1.023,73	23%
Q4	133,53	186,94	213,65	534,12	12%

Data retrieved October 19, 2023

### Discussion

The challenges and opportunities of digital-based marketing in the era of the Industrial Revolution 4.0 are a series of marketing strategies that use digital platforms, the internet, and mobile devices to achieve digitalbased marketing goals in the era of the Industrial Revolution 4.0. Digital-based marketing offers many opportunities for businesses to market their products and services digitally. In Indonesia, digital marketing has become increasingly popular, including the use of social media, online advertising, and marketing content. But even though the digital marketing opportunities in Indonesia are huge, there are still challenges that must be faced. One of them is the low digital literacy among Indonesian people. Therefore, business people must pay attention to digital literacy aspects in designing their digital marketing strategies. In addition, competition in digital marketing in Indonesia is also getting tighter. Many businesses already have a presence on online platforms and use various digital marketing strategies to reach the global market.

Therefore, business people must be able to create added value that is unique and different from their competitors to compete. Other challenges in digital marketing include changing the algorithms of social media platforms, combating privacy concerns, relying on technology development, and building reputations.

### CONCLUSIONS AND RECOMMENDATIONS

Previous research has shown that shifting consumer behavior that is increasingly inclined to use digital technology as a source of information and a way to shop, as well as the emergence of various social media and ecommerce platforms provide great opportunities for businesses to expand reach and increase sales. However, it also poses new challenges in managing brand reputation and maintaining consumer trust in an era where information can be easily spread widely and quickly. Therefore, businesses need to develop effective and efficient digital-based marketing strategies by utilizing data and analytics to optimize marketing campaigns

In addition, the importance of business adaptation to technology and changes in consumer behavior. Businesses that can adapt quickly and keep up with technological trends will have an edge in winning the competition in the market. In the era of the Industrial Revolution 4.0, digital-based marketing is no longer an option, but a necessity for businesses to remain relevant and competitive in an increasingly competitive market. Therefore, businesses must continue to innovate and adapt to technological changes and consumer trends to seize opportunities and overcome challenges in digital-based marketing.

Recommendation: The findings of this study suggest that further research be conducted using several variables including: Studies on artificial intelligence (artificial intelligence) on digital-based marketing, the influence of the Internet of Things (IoT) on digital-based marketing, the influence of social media on the formation of brand image and consumer trust, the influence of regulation and data privacy on digital-based marketing and studies on the influence of new technologies on consumer behavior.

By conducting these studies, we can deepen our understanding of digital-based marketing in the era of the Industrial Revolution 4.0 and develop more effective and efficient marketing strategies.

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