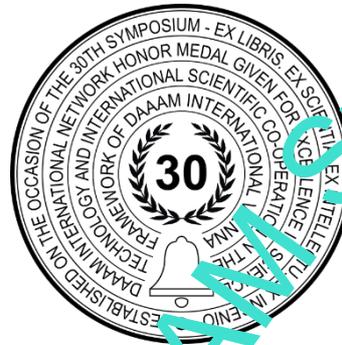


# MARKETING 4.0 – A SYSTEMATIC REVIEW

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## Abstract

Industry 4.0 and the Fourth Industrial Revolution are buzzwords which frequently appear in the discussion about the economy of the future. From the extensions of their principles to the field of marketing the term Marketing 4.0 originated. According to its inventor, Marketing 4.0 should be characterized by the connection of real and virtual world. Nevertheless, unlike Industry 4.0, Marketing 4.0 appears in the current discussion much rarely. The systematic review of professional literature based on the Web of Science and Scopus databases was therefore conducted so as to assess the current state of Marketing 4.0 and to find out how it is understood by the relevant professionals. Relevant papers were analyzed both from the time and geographical perspective and from the perspective of their content. Based on this analysis we can conclude that the use of Marketing 4.0, even if not very frequent, has been slightly growing lately, mostly in the European countries. On the other hand, most of the papers dealing with Marketing 4.0 concentrate mainly on the e-commerce and virtual world, and therefore do not fully implement the definition of Marketing 4.0.

**Keywords:** Big data; Industry 4.0; Marketing 4.0; Online marketing; 5A model;

## 1. Introduction

Marketing has been constantly developing, which is best evidenced by the fact that the American Marketing Association, one of the main authorities in this field, has already updated its definition three times during its existence. From its original definition in 1937, which understood marketing primarily as a tool for optimizing the distribution of goods from producer to customer [1], the meaning of the term has shifted to the current one claiming that “*Marketing is the activity, set of institutions, and processes for creating, communicating, delivering, and exchanging offerings that have value for customers, clients, partners, and society at large.*” [2]. This contemporary definition no longer sees marketing as a narrowly focused field concentrating on optimizing a specific process, but as a much broader concept that brings value not only to the company and its customers, but also to society as a whole - Gundlach & Wilkie [3] speak of the so-called aggregate, inclusive concept of marketing in this context.

Technological progress is undoubtedly one of the major factors influencing the marketing development. The development of information and communication technologies, which first began to be used in internal management, especially in manufacturing companies, in the 1970s, brought about fundamental changes in this respect. This phenomenon was called the “Third Industrial Revolution”, which followed the First Industrial Revolution triggered by the discovery of the steam engine, and the Second Industrial Revolution associated with the development of electrical

power engineering and assembly line production at the turn of the 19th and 20th centuries (for more information see, for example, [4]). However, in the area of consumer goods, which is more relevant in terms of B2C marketing, information and communication technologies have come in more slowly; their massive diffusion in the form of personal computers, the Internet and cell phones has primarily been the matter of the turn of the 20th and 21st centuries.

The development of information and communication technologies has both enabled the development of new products that could not have existed at the lower level of technological development (which, however, is true in principle for any technological shift), and has brought completely new possibilities, especially in the other two components of the marketing mix - promotion and place. The spread of the Internet and devices for its consumption is thus linked to the emergence and development of internet marketing as “*a qualitatively new form of marketing, which can be characterized as the management of the process to satisfy human needs with information, services or goods using the Internet*” [5], and hence the whole concept of e-business. The emergence of widely used social networks and platforms for sharing videos and text in the late 2000s then brought about viral marketing, influencer marketing, etc.

However, the integration of modern information and communication technologies into everyday life and business does not end with the use of smartphones, the Internet, and social networks. On the contrary, the next phase is currently underway, referred to as the “Fourth Industrial Revolution” or the emergence of “Industry 4.0”. The basic ideas of the Industry 4.0 concept first became apparent at the Hannover Fair in 2011, and its pivot is in the close connection of the physical world with the virtual world through smart manufacturing machinery and equipment, as well as final products that will constantly monitor their condition using sensors and communicate with each other via fast mobile networks within the Internet of Things. This interconnection should result in the emergence of cyber-physical systems in which every physical element will have its virtual representative (cf., for example, [6]).

Naturally, modern technologies are not being deployed only in manufacturing, and so there are many studies on the impact of the Fourth Industrial Revolution on agriculture (in this context the “Agriculture 4.0” term is used), transport (“Logistics 4.0”), or healthcare (“Healthcare 4.0”). Therefore, it is not surprising that the term “Marketing 4.0” also appeared shortly after that. Its basic characteristic is the interconnection of the virtual and real worlds - e.g., Rathod et al. [7] define it as follows: “Marketing 4.0 is the confluence of offline and online marketing strategy.” With this proclaimed confluence of online and offline elements, Marketing 4.0 has adopted the idea of Industry 4.0, but at the same time its name follows the three previous development phases of marketing, which Kotler had previously defined as “Marketing 1.0”, “2.0” and “3.0”. Even the authorship of Marketing 4.0 is therefore sometimes (e.g., [8]) mistakenly attributed to Kotler, who indeed published a pivotal book on this topic in 2017. However, in fact, the term of Marketing 4.0 and its basic definition had already been introduced five years earlier by Jara et al. [9], and later attempts to define Marketing 4.0, including the Kotler’s one, already built on their work.

Nevertheless, compared to the impact of the Fourth Industrial Revolution on other industries and processes, the issue of Marketing 4.0 has been given rather marginal attention in the professional literature so far. The Scopus citation database, which aggregates data on scientific papers from recognized journals and conferences, recorded a total of 2,886 papers with “Smart factory” in the title, keywords or abstract, 241 papers containing “Agriculture 4.0”, 156 containing “Logistics 4.0” and 118 with “Healthcare 4.0”, while “Marketing 4.0” was included in the same elements in only 31 papers. The fact that, similar to Industry 4.0 (see [10]), Marketing 4.0 is still, to a certain extent, a buzzword, which is used in different contexts without always being clear what exactly is meant by the term, is also problematic.

Therefore, this paper aims to present the results of the research that attempted to answer the following questions:

1. What is the state of the current professional debate on the issue of Marketing 4.0?
2. Which technologies and topics are currently seen as the core components of Marketing 4.0?

The systematic review of the available literature and the subsequent analysis of its results were chosen to be the research method. The paper is constructed as follows: Chapter 2 defines the exact methodology to conduct the review and the procedure to select the sources. Chapter 3 contains the basic classification of the examined papers, Chapter 4 briefly describes the content of the reviewed articles, and Chapter 5 subsequently analyzes and discusses the content.

## 2. The methodology of systematic review and the selection of sources

The systematic review procedure was based on the methodology introduced by Soni & Kodali [11] and Manoharan & Singal [12], consisting of six sequential steps:

1. Choosing the time frame of the study
2. Selecting source databases
3. Selecting sources - journals, books, and proceedings
4. Selecting specific works
5. Classifying papers
6. More detailed analysis of the classification.

As far as the time span of the study is concerned, it is possible to proceed from the consideration that the issue of the Fourth Industrial Revolution, and thus also Marketing 4.0, has only been studied in the last ten years, and therefore any paper dealing with this topic is still relevant. Therefore, it was not necessary to define any starting date, which would exclude already outdated papers from the set of reviewed papers.

To search for papers, the pair of major citation databases of scientific literature - the Web of Science and Scopus - were chosen.

All types of sources registered in these databases were taken into account, i.e., articles in peer-reviewed journals as well as papers in proceedings and book chapters. Marketing 4.0 was used as a key term for the search and its occurrence was searched in the title of the paper, its keywords and abstract in both databases. The search was restricted to these elements in order to exclude papers that only mention Marketing 4.0 in some context but do not primarily address the topic from the resulting set.

As of February 28, 2022, 31 papers were found in the Scopus database for the given filtering criterion, and 22 papers were found in the Web of Science database. Of these, 15 papers were found in both databases, so a total of 38 unique papers dealing with the topic of Marketing 4.0 were found in both databases.

Of the 38 identified articles, the full text is not available for 8 of them and has not been made available even after the authors' request to do so. The full text of one paper is available only in Chinese. Therefore, these papers were excluded from the selection, thereby reducing the set to 29 papers. However, two of these are not individual scientific papers, but only editorials of special issues of *Frontiers in Psychology*, and in one case it is a critical review. Thus, after excluding these entries, the selected set contained 26 scholarly papers. Furthermore, an article dealing with the education of seniors, which only indirectly addressed the issue of Marketing 4.0, and an article presenting the case study of a specific Portuguese company, which only stated that "in terms of Marketing 4.0, this company is still in the Stone Age" [13], were excluded from the set of papers. Therefore, in total, 24 papers were examined.

### 3. The basic classification of papers

This step involved analyzing the searched papers in terms of their time and geographical distribution. The time distribution and mainly its trend make it possible to assess how the interest in Marketing 4.0 has been developing in the professional community, especially whether this interest has been copying the trend of the growing interest in the Fourth Industrial Revolution as a whole. The geographical distribution of the papers then enables us to identify the countries that are the most advanced in the study of Marketing 4.0, and the countries in which this phenomenon is not yet understood as a topical issue. The distribution of articles related to Marketing 4.0 over time is shown in Fig. 1:

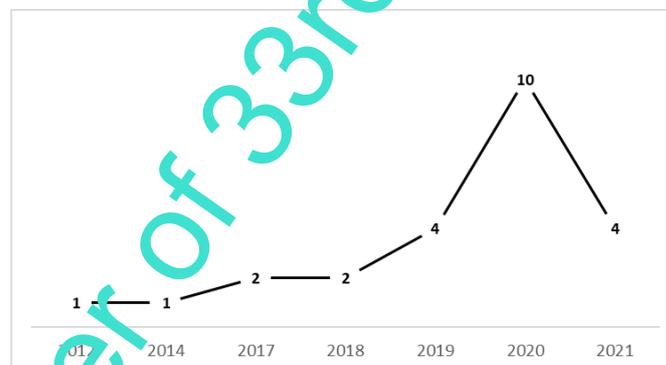


Fig. 1. The time distribution of the existing articles on Marketing 4.0.

As Fig. 1. shows, the first article addressing Marketing 4.0 was published as early as 2012, just one year after the ideas of Industry 4.0 themselves were formulated. However, Fig. 1. also shows that although the first reflection of the Fourth Industrial Revolution in marketing was very quick, the topic clearly did not really resonate much at that time and remained marginalized for the following few years.

Only since 2017, there was a gradual increase in the number of articles dominantly dealing with the issue of Marketing 4.0, which continued until 2020. In 2021, the number of such articles decreased, but it should be kept in mind that there is usually a time lag of several months or even years between writing an article and its publication and, above all, its registration in citation databases. Therefore, the search carried out in February 2022 is unlikely to include all articles from 2021, as some of them will only appear in the citation databases during 2022.

The geographical distribution of the identified articles is shown in Table 2, using the place of work of the main (corresponding) author of each paper as a classification criterion.

Author's place of work	Number of articles
Germany	6
Spain	4

Czech Republic	3
India	2
Indonesia	2
South Korea	2
Poland	2
China	1
Romania	1
Saudi Arabia	1

Table 2. The geographical distribution of existing articles on Marketing 4.0.

Table 2 shows that the topic of Marketing 4.0 is mainly addressed by researchers working in Europe. The largest number of articles comes from Germany, which corresponds to the fact that the ideas of the Fourth Industrial Revolution were first formulated in this country, and also from Spain. The issue of Marketing 4.0 is also given attention in the Czech Republic, as evidenced by three articles of researchers working at Czech universities.

On the other hand, somewhat surprisingly, none of the first authors of the identified articles is active in the US. This absence is all the more surprising because Philip Kotler, one of the world's most reputable authors in the field of marketing working in the USA, published a book titled "*Marketing 4.0: Moving from Traditional to Digital*" back in 2017. However, apparently, other American authors have not adequately reflected on Marketing 4.0 yet.

#### 4. The content of the articles reviewed

As already mentioned in the introduction to this paper, Jara et al. were probably the first to come up with the term "Marketing 4.0" [9]. When defining it, they mainly emphasized the importance of the interaction between the customer and the producer or supplier. To the traditional three dimensions of brand differentiation, which include brand identity, brand image and brand integrity, they have also added the fourth dimension, namely brand interaction, meaning the enhanced interaction with the given product or brand using modern technologies. The authors give examples of using technologies such as NFC, RFID or IoT in retailing in general. For example, these technologies could be used to guide customers to the products of the desired brand using their smartphones already during the shopping process. Once the product has been found, customers could then use their mobile phone to scan the NFC tag or QR code on the product and thus be immediately directed to a website with the detailed description of the product.

Martín-Guait & Cavia [14] perceived Marketing 4.0 mainly in the context of the development of social networks and other new media. In their study, they focused on the impact of technological changes on the role of media agencies and on the media world in general, namely based on the questionnaire survey conducted among representatives of media and advertising agencies, as well as academic institutions. Based on their answers, they have concluded that the development of new technologies in both hardware (smartphones, tablets) and software (social networks, internet TV, etc.) is leading to the fragmentation of the media world and, therefore, marketing channels too. Hence, the product can no longer be promoted in the Marketing 4.0 environment using only a few "main" media (e.g., the most watched TV station or widely visited websites), but an approach using a broad spectrum of media with messages tailored to typical consumers of individual media must be chosen. The authors also highlight the potential of social networks, where existing customers can act as "ambassador" of products purchased by sharing photos or reviews of their use.

The idea that a firm can use the stories that its customers share on social media to promote its own products for free and in an authentic way has subsequently been developed by other authors, including Kotler [15]. According to him, the emergence of social networks has changed the customer journey from the original 4A model (Aware, Attitude, Act, and Act Again) to 5A - Aware, Appeal, Ask, Act, and Advocacy. In other words, after purchasing a product, the customer often further communicates this fact on social media, thereby putting the product in the subconscious of their contacts. In any discussion that may occur under such a social media post, in which some participants naturally inform about alternative products, the customer in question then usually gives reasons for buying that particular product and not one of the suggested alternatives. In doing so, he/she, de facto, unintentionally (and for free) promotes the product - he/she becomes its advocate. As it will become apparent from the summary of other papers reviewed, the 5A concept has been accepted by the professional community shortly after that.

Only a year later, Szymoniuk & Valtari [16] highlighted the importance of the 5A concept in their work, presenting their case study of the Marketing 4.0 use in a rather specific field - a community organic food store. They give the example of the Finnish REKO project, where the focus of communication between consumers and producers, as well as the organization of the store itself takes place on Facebook, always within local (in the geographical sense) groups. In this case, social networks enable the very existence of the business model and also serve as the main marketing channel used in the REKO system. In this case, satisfied customers, who are drawn into the role of "advocates" of the system, and thus help to attract more customers by their activities on social networks, which is in line with the 5A concept, constitute the

main promotional channel that allows the project to develop further. The authors even use the term “Prosumers” for these customers, which is a combination of Producers and consumers.

Hartono et al. [17], who have examined the use of social networks in the Marketing 4.0 environment, highlight the applicability of this concept in startups. They present the specific case study of Chilly Bin, a startup company, in which they have concluded, based on the questionnaire survey and analysis of publicly available sources, that marketing on social networks can be highly effective for a startup company because it allows them to raise awareness of their existence among a large number of their users quickly and at relatively low costs, precisely thanks to the functioning of 5A.

The issue of the relationship between social networks and customer journey in the 5A model was also addressed by Hwang & Kim [18], who focused their research on the specific environment of tourism, or, more precisely, restaurant services. Based on their questionnaire survey, they have concluded that social networks (and social interaction in general) are important when choosing a restaurant, especially in the Ask phase, i.e., when customers decide whether they will actually go to a particular restaurant that has attracted their attention in the previous phases. Therefore, communication and promotion of restaurants on social media should aim to capture their attention exactly at that phase so that customers are convinced by the information they have found they really want to visit the restaurant.

A situation where a group of tourism-focused businesses attempted to use Marketing 4.0 tools with the explicit aim of using the 5A concept was also examined in the case study of 14 small and medium-sized enterprises from a specific village in Bali by Karta et al. [19]. Those enterprises faced a substantial decline in sales volume in 2020 caused by the Covid-19 pandemic. They attempted to counter that decline by greater differentiation of their products and services, which they subsequently tried to promote through digital marketing. The intended aim was to first generate their potential customers' interest in their products through online marketing and social media (the Aware and Appeal phases), get them to visit the village, and then use those satisfied customers as advocates to further promote their products and services (differentiated from their competitors). However, based on the data collected, the authors concluded that this strategy has not proven to be successful. They failed to elicit customers' behaviour corresponding to the complete 5A cycle, and the decline in sales has not been stopped.

The issue of the customer journey, possible communication channels, and points of contact with customers in the context of Marketing 4.0 and the 5A model was also investigated by Székely et al. [20], but they focused on industrial marketing, where the combination of a questionnaire survey, interviews with salespeople and buyers, and long-term observations was used to examine the degree of use and effectiveness of individual communication channels. Their research has shown that, despite the increasing use of digital marketing in recent years, the greatest emphasis in industrial marketing is still placed on face-to-face contacts between salespeople and buyers, and that this communication channel is also the most preferred one by buyers. Therefore, they have concluded that the digitization of marketing (and thus the advent of Marketing 4.0) is delayed in industrial marketing compared to B2C, but they expect a further development in this area in the future.

Upamannyu et al. [21], addressing the interdependence of brand and company image, customer loyalty, and Word of Mouth (WOM), also implicitly (although not explicitly mentioned in the paper) draw on the 5A concept. Based on the analysis of questionnaire data with 272 respondents, they have documented the positive dependence of customer loyalty on brand and firm image, and also the positive dependence of spreading the WOM advertising on customer loyalty. Thus, the authors have concluded that the better the brand and company image, the more loyal the customer buying the product will be and the more intensively they will promote the product among their contacts at the same time. The authors emphasize the importance of WOM in the context of the existence of social networks and Marketing 4.0 in general.

Opresnik has been dealing with the issue of Marketing 4.0 for a long time and is represented in our review by 5 papers in total. In them, he views Marketing 4.0 from different perspectives, paying the most attention to the use of social networks. He is of the opinion that the emergence of social networks has fundamentally and irreversibly changed the paradigm of marketing communication from the “bowling” concept to the “pinball” concept [22]. While in the traditional “bowling” concept, marketing communication goes like a bowling ball directly from the company that represents the players to the bowling pins – the customers, the world of social networks is more like pinball, where the original marketing message, once sent out into space, is “bounced” between individual customers in different ways completely without the company's control.

In his paper [23], he discussed the differences between creating a “regular” marketing plan and a digital marketing plan, which is focused on social networks. To create a digital marketing plan, he suggests a six-step process in which he places great emphasis on both auditing the existing use of social networks, selecting appropriate social networks for further marketing efforts, and on the individual use of each of those networks. According to Opresnik, in the course of digital marketing planning, companies should define a specific mission for each social network used, expressing what is to be achieved using that network.

In his article [24], he then discussed the possibilities of using modern technologies for marketing research purposes, mentioning, for example, the possibility to track the movement of customers around the store using the RFID technology or to evaluate the customer's brain reactions to stimuli using neuroscience tools. However, the greatest attention in his work is given to the possibilities of online marketing research, where he sees its main advantage in the possibility of fast and inexpensive collection of large amounts of data, whether through web questionnaires or by analyzing data from social networks, metadata from the browsers of individual visitors to company websites, etc. This topic was followed up with another paper [25], where he addressed the issue of effective marketing on the Internet in the Web 3.0 environment, again

emphasizing the use of data from cookies and other metadata from the browser of website visitors in order to build a personalized web presentation for the given customer.

In this paper [26], he then addressed opportunities that the development of IoT offers to marketing, especially in cooperation with social networks. He sees the potential of using IoT and social networks primarily in marketing research, where the combination of data obtained from sensors of individual products that are part of the IoT, and data mined from social networks should allow a much more detailed analysis of the customer journey of every customer, leading to the purchase of other products. He also sees the further potential of smart products in the fact that thanks to IoT it will be possible to gather detailed data on their use by customers and to use these data in the design of new products or their functions.

The issue of using IoT in Marketing 4.0 has also been addressed by Rathod et al. [7], who, just as Črepnik, see the potential in using data from smart devices to segment the market better and to target specific customers more precisely with specific products. However, they also point out that some IoT elements, e.g., in the form of wearable devices or home assistants, collect large amounts of data about their users, often of a very intimate nature, and therefore they warn against both their unethical use and the risk of data leakage.

Dash et al. [27] build on the aforementioned Marketing 4.0 model by Jara et al. [9], trying to identify the relationships between the individual elements of the model (Brand Identity, Brand Image, Brand Integrity, and Brand Interaction), their influence on customer satisfaction (Customer Satisfaction), and the customer's intention to buy a certain product (Purchase Intention). These elements are used to construct a conceptual model in which the relationships between the elements are described by hypotheses, which are subsequently tested by the authors based on the analysis of the data obtained from the questionnaire survey. Having analyzed the data, the authors conclude that while Brand Identity and Brand Image have a significant positive impact on customer satisfaction, this impact is not found to be statistically significant for the other two components of the Marketing 4.0 model. The same conclusions have also been drawn from the analysis of the relationship between the individual components of Marketing 4.0 and the customer's intention to buy the given product. Also, the hypothesis of the positive relationship between customer satisfaction and customer purchase intention has been accepted. Thus, according to Dash et al [27], marketers should primarily focus on building Brand Identity and Brand Image, as these are the elements that bring the greater practical business effect.

Härting et al. [28] analyzed the possible use of modern technologies in online marketing. They have defined 6 modern technologies and approaches (artificial intelligence, data-driven marketing, dynamic product pricing, mobile marketing, the use of the latest Google services, and algorithm-driven ad publishing) and asked 102 experts in the field about their applicability in online marketing. Based on the statistical analysis of their responses, they have concluded that both the use of mobile marketing and data-driven decision making positively influence online marketing results. On the other hand, the use of the other technologies defined does not bring a significant positive effect in online marketing, according to the experts surveyed.

Online marketing was also addressed by Wang [29], who investigated the phenomenon of Live Broadcast Marketing (LBM). The author illustrates the phenomenal growth of this promotional method over the last few years, aided by the rapid growth in popularity of TikTok, a social network for sharing short videos. Nevertheless, the article also uses a number of examples to highlight the fact that the success of LBM promotional campaigns is not automatically guaranteed, even if marketers manage to enlist a well-known celebrity for the campaign. The author stresses that influencers must be chosen with regard to the product promoted so that the entire message is believable to content consumers.

Kolářová & Kolářová [30] investigated the use of Marketing 4.0 in the specific sector of microbreweries in the Czech Republic. Their questionnaire survey among microbreweries in the Capital City of Prague has confirmed the hypothesis that more than 80% of microbreweries use Marketing 4.0 tools to manage customer relationships, mainly through their activity on social networks, especially Facebook and Instagram. The majority of the microbreweries surveyed also try to utilize their websites for marketing outside of social networks, both using SEO to drive more visitor traffic and by analyzing data on visitor behavior on their website through Google Analytics. By contrast, the possibility of involving customers in the process of new product development (i.e., the possibility for customers to come up with new types of brewed beer) is, according to the survey, not used by any of the microbreweries surveyed, despite the fact that it is theoretically one of the related phenomena of Industry 4.0, which could be technically feasible in the environment of craft breweries brewing small batches of beer.

The potential benefits of customer involvement in the product design process that can be achieved in the Marketing 4.0 environment are also highlighted by Rubio et al. [31]. For these purposes, they primarily suggest using the analysis of big data from social networks, with the help of which firms can obtain accurate information about customers' opinions on existing products or their requirements for new products in a non-intrusive and inexpensive way.

The issue of using Marketing 4.0 tools in the Czech economy was addressed by Petrů & Zich [32], who first focused on family businesses. Using a questionnaire survey among 109 mostly small family businesses, they tried to answer the question of whether these businesses are ready to use modern technologies in marketing. In addition to the questions on the use of modern technologies, the questionnaire also contained questions on marketing in general, where the authors reasoned that in order to be able to use modern technologies in marketing effectively, a business must first have a good grasp of "traditional" marketing. However, the questionnaire has shown that marketing in Czech family businesses is generally not at a very high level, with the use of modern technologies being one of the worst-rated indicators within this unsatisfactory level.

Petrů et al. [33] then followed up this work with a longer-term study, where they examined the development of marketing and the extent of using modern marketing tools by Czech businesses between 2016 and 2019 through semi-structured research interviews. Again, the authors primarily focused on the segment of small businesses, but in this case, they added other enterprises to family businesses for the purpose of comparison. The data obtained from the study confirm the conclusion of the previous article, i.e., the general level of marketing activities of Czech businesses was relatively low in the observed years. Moreover, activities consisting in the use of modern technologies were used rather less compared to other activities, especially by family businesses. Furthermore, the trend to use modern technologies for marketing by family businesses was also decreasing over the years, however, it should be noted that the set of respondents varied significantly between the individual years, so the trend comparison is not entirely conclusive. In any case, the research by Petrů et al. [33] has shown that the use of Marketing 4.0 tools is not widespread yet among small Czech enterprises.

Blazquez-Resino et al. [34] discuss another phenomenon associated with the Fourth Industrial Revolution, namely the emergence of the so-called “Consumer 4.0”. This “new kind of consumer” should be characterized by a desire for technological innovations, a desire not to be merely a passive recipient of a product, service, or information, but to actively participate in its development and inform other customers. This change from a passive recipient of information to an active propagator of information, especially through social networks, is also linked to another term, that is “netizen”, or “citizen of the net”. Blazquez-Resino et al. point out that this active collaboration and two-way communication between businesses and customers will require significant changes in the way businesses operate and work, and that it will therefore be necessary to first train all relevant employees for these new conditions.

The specifics of Consumers 4.0 and the two-way communication with them through the Marketing 4.0 tools were also addressed by Wereda & Wozniak [8] in their research focused on the specifics of Polish economy. The results of their survey among marketing managers of 100 companies show that companies understand the importance of active communication with Consumers 4.0 and try to develop it actively. At the same time, however, the research has shown that the companies surveyed still mostly use older forms of communication, such as phone calls and emails, for this communication. Conversely, more modern communication tools, mainly social networks, or chat on company websites, are still used by Polish companies to a lesser extent.

Kim & Kim [35] dealt with a somewhat different topic compared to the other papers reviewed. While other authors have mainly addressed the world of social media and online marketing in the context of Marketing 4.0, Kim & Kim have focused on the impact of Marketing 4.0 on the physical layout of shopping malls. They argue that the layout of shopping malls must reflect the interests of the new kind of consumers (although they do not explicitly mention the Consumer 4.0 term) who want to share the shopping process with the others both physically and online through social networks. Thus, according to these authors, shopping malls in the Marketing 4.0 environment should not only be space for shopping, but for sharing experiences in a broader sense. They give the specific case study of the shopping mall in Seoul as an example of such changes.

## 5. Discussion

As the detailed analysis of the papers reviewed in the previous chapter clearly has shown, the vast majority of authors focus on online marketing, or more precisely e-commerce in general, when researching the issue of Marketing 4.0. Out of the 24 papers reviewed, only Kim & Kim [35], who dealt with the physical layout of the shopping mall (although they also emphasized the necessity of linking the physical world with the online one at the theoretical level), and Jarra et al. [9], who looked into the possibilities of using IoT in the process of physical shopping, had a different focus.

As for the specific topics and technologies related to Marketing 4.0 that have been discussed in the papers reviewed, their frequency of occurrence is shown in Table 3.

Topic	Frequency of occurrence
Social networks and media	14
5A Concept	5
IoT	4
Consumer 4.0	2
Big data	1
Artificial intelligence	1
Virtual reality	1

Table 3. The specific topics of Marketing 4.0 examined in the papers reviewed.

Table 3 shows that the largest number of authors dealing with Marketing 4.0 focuses mainly on the world of social media and networks and the possibility of using them to promote products or services. The second most frequently occurring topic is also related to social networks and the so-called C2C marketing in the form of the Kotler’s 5A concept describing the customer journey. In five of the papers reviewed, this model and the ability of social networks to serve as

an effective medium for the Advocate step were explicitly highlighted, while in several other papers the same logic was mentioned without direct reference to the Kotler's concept. The concept of Consumer 4.0, which was examined in two papers, is then related to the issue of social networks and the role of existing customers in product promotion to a certain extent.

Quite surprisingly, the issue of augmented reality, the use of which has been gaining importance in the field of marketing lately (see e.g. the summarizing paper [36]), was not seriously discussed in any of the reviewed studies. In other words, although the technology of augmented reality definitely is a part of Industry 4.0 and at the same time has its use in marketing, it is probably not understood as the part of Marketing 4.0 in its present state of art.

Based on the conducted systematic review, it can therefore be concluded that although the theoretical definition of Marketing 4.0 emphasizes the necessity of interconnecting the virtual world with the physical one, the papers published so far addressing Marketing 4.0 have clearly focused primarily on the virtual world. Thus, the concept of Marketing 4.0 has not been approached in its entirety and its definition has not been completely fulfilled.

Of course, it is necessary to bear on mind the limitations of the chosen research approach. Firstly, the review focused only on the academic papers, which means, that it only describes the state of art of the Marketing 4.0 concept as it is understood by the academic professionals. The opinion of business professionals on this topic can be different, though. Finding out, how the business professionals understand the Marketing 4.0 concept, is therefore interesting topic for further study. The other limitation is connected to the choice of scientific databases, which were used as a source of reviewed articles. Although we believe that the two main citation databases of the scientific literature provide complex overview of relevant academic literature, some uncited papers, which deal with the topic of Marketing 4.0, may have therefore been deliberately omitted from the review. Again, the review based on the full-text search through journals and proceedings not indexed in these databases is potential direction of further research.

## 6. Conclusion

The idea of Marketing 4.0 emerged as early as 2012, not long after the emergence of the more general concept of Industry 4.0. These concepts are related to a large extent, their common element being the emphasis placed on the connection of the real and virtual worlds using modern technologies. However, the systematic review of the available professional literature, the results of which have been presented in this article, shows that so far, Marketing 4.0 has been given considerably less attention in the literature than Industry 4.0 and the growing interest in this issue can be observed only in recent years. Based on the content analysis of the existing papers dealing with this topic, it can also be concluded that the majority of researchers still associate Marketing 4.0 mainly with social networks and e-commerce in general, despite the fact that, according to its theoretical definitions, the main characteristic of Marketing 4.0 should be the interconnection and overlapping of the virtual world and the real one. Therefore, it is the interconnection of the real and virtual worlds for marketing purposes where there is undoubtedly a research gap that presents an opportunity for further research in this field.

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## 8. References

- [1] Thomas, J. (2020). Marketing Concept: Examining AMA Definitions, Evolution, Influences, Proceedings of the 17<sup>th</sup> AIMS International Conference on Management, January 2-4 2020, Kozhikode, ISBN 978-1-943295-14-2, Omprakash, G. & Shivprakash, A. (Eds.), pp. 957-964, AIMS International, Kozhikode
- [2] <https://www.ama.org/the-definition-of-marketing-what-is-marketing/>, (2017). American Marketing Association, Accessed on: 2022-06-25
- [3] Grundlach, G. T. & Vitkie, W. L. (2009). The American Marketing Association's New Definition of Marketing: Perspective and Commentary on the 2007 Revision. *Journal of Public Policy & Marketing*, Vol. 28, No. 2, pp. 259-264, ISSN 0743-9156
- [4] Rojko, A. (2017). Industry 4.0 Concept – Background and Overview, *International Journal of Interactive Mobile Technologies*, Vol. 11, No. 5, pp. 77-90, ISSN 1865-7923
- [5] Nondek, L. & Růčková, L. (2000). *Internet a jeho komerční využití*, Grada Publishing a.s., ISBN 80-7169-933-0, Praha
- [6] Vaidya, S.; Ambad, P. & Bhosle, S. (2018). Industry 4.0 – A Glimpse, *Procedia Manufacturing*, Vol. 20, pp. 233-238, ISSN 2351-9789
- [7] Pramod, A. Y., Panday, S. & Doshi, N. (2020). IoT and Modern Marketing: Its Social Implications, Proceedings of ICACT 2020, 16-19 February 2020, Phoenix Park, ISSN 1738-9445, pp. 407-413, IEEE, DOI: 10.23919/ICACT48636.2020.9061210
- [8] Wereda, W. & Wozniak, J. (2019). Building Relationships with Customer 4.0 in the Era of Marketing 4.0: The Case Study of Innovative Enterprises in Poland. *Social Sciences*, Vol. 8, No. 6, pp. 1-27, ISSN 2076-0760

- [9] Jara, A. J., Parra, M. C. & Skarmeta, A.F. (2012). Marketing 4.0: A new value added to the Marketing through the Internet of Things, Proceedings of Sixth International Conference on Innovative Mobile and Internet Services in Ubiquitous Computing, 4-6 July 2012, Palermo, ISBN 978-0-7695-4684-1, IIsun, Y. et al. (Eds.), pp. 852-857, IEEE, DOI: 10.1109/IMIS.2012.203
- [10] Inkermann, D.; Schneider, D.; Martin, N.L.; Lembeck, H.; Zhang, J. & Thiede, S. (2019). A framework to classify Industry 4.0 technologies across production and product development, *Procedia CIRP*, Vol. 84, pp. 973-978, ISSN 2212-8271, DOI: 10.1016/j.procir.2019.04.218
- [11] Soni, G. & Kodali, R. (2011). A critical analysis of supply chain management content in empirical research. *Business Process Management Journal*, Vol. 17, No. 2, pp. 238-266, ISSN 1463-7154, DOI: 10.1108/1463715111122338
- [12] Manoharan, A. & Singal, M. (2017). A systematic literature review of research on diversity and diversity management in the hospitality literature. *International Journal of Hospitality Management*, Vol. 65, pp. 77-91, ISSN 0278-4319, DOI: 10.1016/j.ijhm.2017.07.002
- [13] Morreira, T. D., Brandao, A. M. P. C. & Novais, R. A. (2018). Peeble in the shoe? Content marketing made in Portugal, Proceedings of 11th Annual Conference of the EuroMed Academy of Business, 12-14 September 2018, Valetta, ISBN 978-9963-711-67-3, Vrontis, D., Weber, Y. & Tsoukatos, E. (Eds.), pp. 1622-1624, EuroMed Press
- [14] Martín-Guart, R. F. & Cavia, J. F. (2014). Advertising and media agencies in the face of the change in the media ecosystem. *Cuadernos.info*, Vol. 34, pp. 13-25, ISSN 0719-3661, DOI: 10.7764/cdi.34.5/2
- [15] Kotler, P., Kartajaya, H. & Setiawan, I. (2017). *Marketing 4.0: Moving from Traditional to Digital*, John Wiley & Sons Inc., ISBN 978-1-119-34120-8, Hoboken
- [16] Szymoniuk, B. & Valtari, H. (2018). The REKO System in Finland: A New Model of a Sustainable Marketing Channel. *Problems of Sustainable Development*, Vol. 13, No. 2, pp. 105-111, ISSN 1895-6912
- [17] Hartono, B. D., Yusuf, B. P. & Arifiati, A. (2020). Implementation of Digital Marketing Strategies through Social Media Marketing, Supply Chain Management and Online Sales of Bill Chilly Product. *International Journal of Supply Chain Management*, Vol. 9, No. 4, pp. 348-354, ISSN 2050-7399
- [18] Hwang, J. & Kim, J. (2020). Food tourists' connectivity through the 5A Journey and advocacy: comparison between generations Y and X. *Asia Pacific Journal of Tourism Research*, Vol. 25, No. 1, pp. 27-38, ISSN 1094-1665, DOI: 10.1080/10941665.2019.1580756
- [19] Karta, N. L. P. A., Wardani, R. K. & Suarhana, J. J. P. (2021). Differentiation and the Five As Concept in Digital Marketing of Small and Medium Enterprises During the Covid-19 Pandemic (a Study in Cepaka Village, Kediri Tabanan), Proceedings of International Conference on Entrepreneurship (ICOEN), virtual, pp. 566-578, Universitas Ciputra
- [20] Székely, S., Csata, Z., Cioca, L. I. & Benedek, A. (2020). Industrial Marketing 4.0 – Upgrading the Industrial Customers' Path to The Digital Economy. *Polish Journal of Management Studies*, Vol. 22, No. 2, pp. 535-548, ISSN 2081-7452, DOI: 10.17512/pjms.2020.22.2.5
- [21] Upamannyu, N. K., Rajput, S. & Bhakar, S. S. (2011). Antecedents of Customer Loyalty and Word of Mouth: A Study on Consumer Durables in Emerging Economies. *FIIB Business Review*, Vol. 10, pp. 1-20, ISSN 2319-7145, DOI: 10.1177/23197145211053398
- [22] Opresnik, M. O. (2017). From Bowling to Pinball: Understanding How Social Media Changes the Generation of Value for Consumers and Companies. In: *Social Computing and Social Media*, Meiselwitz, G. (Ed.), pp. 190-199, Springer International Publishing AG, ISBN 978-3-319-58558-1
- [23] Opresnik, M. O. (2018). Effective Social Media Marketing Planning – How to Develop a Digital Marketing Plan. In: *Social Computing and Social Media*, Meiselwitz, G. (Ed.), pp. 333-341, Springer International Publishing AG, ISBN 978-3-319-91520-3
- [24] Opresnik, M. O. (2019). Digital Marketing Research – How to Effectively Utilize Online Research Methods. In: *Social Computing and Social Media*, Meiselwitz, G. (Ed.), pp. 444-451, Springer International Publishing AG, ISBN 978-3-030-21904-8
- [25] Opresnik, M. O. (2020). Effective Online Advertising Strategy. In: *HCI International 2020 – Late Breaking Papers*, Stephanidis, C., Salvendy, G., Wei, J. et al. (Eds.), pp. 418-424, Springer International Publishing AG, ISBN 978-3-030-60151-5
- [26] Opresnik, M. O. (2021). Effective Social Media Marketing Through Customer Journey Mapping. In: *Social Computing and Social Media*, Meiselwitz, G. (Ed.), pp. 461-469, Springer International Publishing AG, ISBN 978-3-030-77625-1
- [27] Dash, G., Kierulff, K. & Paul, J. (2021). Marketing-to-Millennials: Marketing 4.0, customer satisfaction and purchase intention. *Journal of Business Research*, Vol. 122, pp. 608-620, ISSN 0148-2963, DOI: 10.1016/j.jbusres.2020.10.016
- [28] Häring, R. Ch., Reichstein, Ch. & Müller, A. (2019). Potential Benefits of New Online Marketing Approaches. In: *Business Information Systems*, Abramowicz, W. & Corchuelo, R. (Eds.), pp. 109-120, Springer International Publishing AG, ISBN 978-3-030-20481-5
- [29] Wang, Z. (2020). Analysis of The Problems Existing in Network Live Broadcast. *E3S Web of Conferences*, No. 218, pp. 1-4, ISSN 2267-1242, DOI: 10.1051/e3sconf/202021801025

- [30] Kolářová, V. & Kolářová, E. (2020). An analysis of the use of marketing 4.0 principles for the managing customers relationships in microbreweries in the capital city of Prague. *Potravinárstvo Slovak Journal of Food Science*, Vol. 14, pp. 336-342, ISSN 1337-0960, DOI: 10.5219/1261
- [31] Rubio, N., Villasenor, N. & Yagüe, M. J. (2020). Value Co-creation in Third-Party Managed Virtual Communities and Brand Equity. *Frontiers in Psychology*, ISSN 1664-1078, DOI: 10.3389/fpsyg.2020.00927
- [32] Petrů, N. & Zich, F. (2017). Evaluation of Family Business Marketing Activities. In: *MARKETING IDENTITY – Online rules – part II*, Petranová, D., Čábyová, L. & Bezáková, Z. (Eds.), pp. 397-409, Faculty of Mass Media Communication, University of Ss. Cyril and Methodius in Trnava, ISBN 978-80-8105-918-6, Trnava
- [33] Petrů, N., Kramoliš, J. & Stuchlík, P. (2020). Marketing tools in the era of digitization and their use in practice by family and other businesses. *E+M Economics & Management*, Vol. 23, No. 1, pp. 199-214, ISSN 1335-5064, DOI 10.15240/tul/001/2020-1-014
- [34] Blazquez-Resino, J. J., Gutiérrez-Broncano, S., Ruiz-Palomino, P. & Jimenez-Estevés P. (2020). Dealing With Human Resources in the Age of Consumer 4.0: Aiming to Improve Service Delivery. *Frontiers in Psychology*, ISSN 1664-1078, DOI: 10.3389/fpsyg.2019.03058
- [35] Kim, I. S. & Kim, Y. O. (2019). Emergence of a New Type of Consumption Space in an Era of Marketing 4.0: Change in Merchandising Strategy with Focus on Spatial Configuration & User Behavior. *Proceedings of the 12th Space Syntax Symposium*, 8-13 July 2019, Beijing, pp. 154-170, Beijing Jiao Tong University
- [36] Mitrovic, K., Novakovic, N., Spajic, J. & Cosic, I. (2021). Augmented Reality in Marketing – State of Art, *Proceedings of the 32nd DAAAM International Symposium*, pp.0566-0575, B. Katalinic (Ed.), Published by DAAAM International, ISBN 978-3-902734-33-4, ISSN 1726-579, Vienna, Austria DOI: 10.2507/32nd.daaam.proceedings.081