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Analysis of the Differences in Using Online Marketing Tools for Measuring its Effectiveness in the Segment of Small and Medium-Sized Companies in the Czech Republic

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Emil Velinov[1], Helena Cetlova[2], Andrea Cizku[3], Zdenek Bednarcik[4], Iryna Leroy[5]

Abstract:

Purpose: *The goal of this study is to find a market space for members of the association working in IT services to offer selected online marketing services on the market of small and medium-sized enterprises, especially in Prague and the Central Bohemia region.*
Design/methodology/approach: *The research aimed to find out the use of a wide range of online marketing activities and tools for measuring their effectiveness in the segment of small and medium-sized businesses and self-employed persons. The groups are divided according to the legal form of the business entity, the gender of the owner of the entity and the respondent, and the field of business activity.*
Findings: *The results of the analysis indicate that a statistically significant difference in the use of online marketing between artisans and other firms was confirmed at least at the 5% level of significance, even in all three surveys. Relatively stable results were also achieved for the use of Google Analytics, social networks and measuring effectiveness on social networks.*
Practical implications: *A certain limit to the interpretation of the research results is the fact that the focus of the respondents is from Prague and the Central Bohemian region, which corresponds to the needs of the research sponsor, the Central Bohemian Association of Managers and Businesswomen, to obtain respondents and information in this locality to find out how the self-employed and small and medium-sized entrepreneurs are online in this locality marketing is used and to deduce to which customer segment the members of the association engaged in IT could direct specific IT services.*
Originality/Value: *The need to monitor the use of online marketing communication tools, measure their effectiveness and determine the real usefulness of their use in the segment of*

[1]*PhD, Assistant Prof., Department of Marketing and Management, SKODA AUTO University, Mlada Boleslav, Czech Republic and Department of Business Studies, RISEBA University of Applied Sciences, Riga, Latvia ORCID: 0000-0002-6113-9191, e-mail: emil.velinov@savs.cz;*
[2]*Assistant Prof., Department of Economics and Management, AMBIS University, Prague, Czech Republic, ORCID: 0000-0001-7167-4385, e-mail: helena.cetlova@ambis.cz;*
[3]*PhD, Assistant Prof., the same as in 2, ORCID: 0000-0003-3053-3222, e-mail:andrea.cizku@ambis.cz;*
[4]*PhD, Assistant Prof., the same as in 2, ORCID: 0000-0001-8464-9461, e-mail: zdenek.bednarcik@ambis.cz;*
[5]*Professor of Risk Management and Digital Transportation at Université de Lorraine, France. ORCID: 0000-0003-3299-9149, e-mail: iryna.leroy@worldline.com;*

small and medium-sized businesses will be a current topic for the research team soon at the end of the year 2022, and it will be useful to ask respondents recurring questions and create time series from the answers found. It is advisable to look for answers to the perception of the usefulness of using online marketing in business by the business entities themselves and to expand the research with new current topics. A new perspective can bring about the inclusion of another criterion for the breakdown of respondents, namely their age

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1. Introduction

New information and communication technologies (ITC) have become the impetus for the development of a completely new market, including applications used in the corporate sphere such as e-business and e-commerce, but also in state administration (e-government) and used in the everyday life of citizens. These technologies dynamized further development and enabled the beginning of the changes called Revolution 4.0 (Industry 4.0), which fundamentally began to change the nature of the industry, energy, trade, logistics and other related production and services, but especially began to change man himself and the entire human society (Theintactone, 2022).

According to Hirsch-Kreinsen (2019, p. 3), it is the central theme of international debates about innovation in industry and other fields, about the vision of completely new factories and structures for creating value in society. A qualitative leap is expected in the development of the electronification of production processes thanks to the massive increase in performance and the cheapening of new digital technologies. This offers opportunities to open entirely new areas of technology use within a few years.

Moreover, in the context of new visions, according to Hirsch-Kreinsen (2019, p. 5), the threat of competition from international digital corporations and the development efforts of other countries that have already advanced in digitization to a large extent is growing. There is a danger that large corporations such as Google, but also other especially Chinese and American companies, will gradually start to take a dominant position in the industrial sector thanks to their big data capacities and the development of industrially usable digital technologies.

Industrial enterprises themselves will be downgraded to supply companies. The argument against this trend is not to neglect digitalization, but to adopt the principles of "new marketing" as a form of defence against the inevitability of this development. Realizing all these changes, which have already become a reality and companies are applying them or are still only in the form of thoughts and reflections

about the future world, also requires acquiring completely new knowledge not only for a narrow group of developers of new technologies but to learn them in professional and private life and try to keep up with other developed countries.

Following on from Industry 4.0, Kotler came up with "new marketing" (2021), and the concepts of Marketing 4.0 (Kotler, Kartajaya, and Setiawan, 2016) and Marketing 5.0 (Kotler, Kartajaya, and Setiawan, 2021). They include online marketing and tools to measure their effectiveness.

The need to determine the real use of online marketing tools as one of the areas of the digital world is part of the information for estimating the future development of each economy. It is currently lagging and will affect the future in the short and long term.

Similarly focused research and statistical investigations in the Czech Republic are carried out every year by the Association of Small and Medium Enterprises and Entrepreneurs of the Czech Republic in cooperation with Ipsos). Her research focuses on finding information on the number of hardware and applications related to online marketing from a quantitative perspective used by the population as a whole and to a lesser extent by the small and medium business segment as a whole.

Rarely, research results have been published in a selected specific segment of small and medium-sized businesses such as export, its financing and digitalization (AMSP, 2022), robotization in small and medium-sized enterprises (AMSP, 2022), automation in SMEs (AMSP, 2022) or it concerns of a specific SME segment, e.g., agriculture (AMSP, 2019). These surveys divided the respondents into companies and self-employed persons only. Statistical data is published by some private entities (sitevhrsti.cz, statista.cz) or the Czech Statistical Office. No one tracks the use of online marketing and tools for measuring their effectiveness according to so many criteria and especially according to specific professions.

New technologies have also begun to transform marketing and marketing communication in the business sphere. According to Kotler, Kartajay and Setiawan (2021, pp. 3-8), marketing is evolving in parallel with other ITC technologies. From product-driven Marketing 1.0, through customer-oriented Marketing 2.0 and Marketing 3.0 focused on satisfying emotional and spiritual needs through the brand and on solving social and environmental needs, it gradually developed into a Marketing 4.0 marketing approach: big data marketing and satisfying customer needs with a hybrid (physical and digital) touch points (Kotler, Kartajaya and Setiawan (2021, p. 4).

According to these authors, COVID-19 has accelerated the transition to digital technologies and the emergence of the Marketing 5.0 concept, which Kotler and his co-authors refer to as Technology for Humanity (2021, p. 5). The inspiration for this concept was the initiative of the Japanese government called Society 5.0, or "Super

Smart Society" (Önday, 2019), which already in 2016 presented a fundamental reform of the country based on Japan's strategy to build a sustainable society supported by SMART technologies serving the good of humanity.

Successful company communication today requires not only marketing strategic thinking and the ability to find unique solutions by the business entities themselves and the willingness to follow new trends and master technologies but also to spend resources on these activities based on ascertaining their effectiveness. Only then does the use of new technologies in marketing make sense. Part of this effort is to determine, in the form of marketing research, shifts in the penetration of online marketing and tools for measuring their effectiveness in specific regions and market segments.

Finding out how communication technology is used in the Czech Republic (Prague and Central Bohemia region) by self-employed and small and medium-sized companies is the subject of this article. The general opinion that the majority of Czech business entities, regardless of the field of business, legal form, size of business and gender differences, know about online marketing activities and use them to their advantage, was refuted by research carried out for STAMP, the Central Bohemian Association of Managers and Businesswomen, as the commission of the research, and confirmed the differences based on the subject of its subject's business.

The results of the pilot research from September 2019 were already presented at the Marketing Identity conference (Cetlová and Velinov, 2019) and published in the proceedings. Research carried out for the same client with similar questions from February to April 2020 with a larger sample of 164 respondents also confirmed the hypothesis that there are differences in the management of online marketing activities in the Czech business environment between the business entities in the researched sample.

In addition, in the research, business entities were specified in terms of their size (whether they are individual entrepreneurs or self-employed persons with employees), the field of business, legal form of business and gender factor. The results of this research from January-April 2020 were the content of an article published in the journal SEHS Socioeconomic and Humanistic Studies (Cetlová, Marciník, and Velinov, 2020, pp. 41-54). The authors carried out similar research in September 2020, which was enriched with other questions, especially related to the limitation of personal contact with customers and within the business entity as a result of Covid-19 and the necessity of their substitution by the use of communication technologies for communication, such as Teams, ZOOM. US, Skype, Viber, etc.

At the request of the research sponsor, the correlation between the established websites and their optimization using SEO and the legal form of business, the gender of the business entity and the field of business were investigated. The results of this

research are used together with the results of the research whose data collection ended on February 2022. This research also included several other questions related to determining the benefits of online marketing activities for respondents.

2. Literature Review

The theoretical starting points and knowledge base for the investigation of differences in the use of online marketing and tools for measuring their effectiveness is a search of domestic and foreign publications, textbooks and articles, incl. internet resources of these areas: technologies related to Industry 4.0 and the influence of the human factor in the process of their application, as well as the impact of Industry 4.0 on marketing activities, especially on online marketing communication and tools for measuring their effectiveness, and partly on the impact of the Covid 19 pandemic on their application in practice.

The reason for this focus of the theoretical part is to describe the technologies that are currently being used or in the near future, it is assumed that people will have to adopt them in the production sphere, but also in other areas such as marketing. There, these technologies take on different forms, incl. specific online tools. A number of them have been used for many years for communication inside and outside organizations, others represent their developed form or a completely new principle and specific use, such as measuring effectiveness.

The search for basic definitions and explanations of the concepts of online tools to communicate with customers and to measure their effectiveness follows from the marketing research carried out. The survey of opinions on the impact of Covid-19 is then tied to the evaluation of the speed of implementation of these tools in practice in the segment of small and medium-sized businesses and the self-employed in the Czech Republic.

Technologies related to Industry 4.0 and the influence of the human factor in this process:
The concept of Industry 4.0 is based on the full use of interconnected cyber-physical systems, which are equipped with elements of artificial intelligence, and which will autonomously ensure a whole range of activities that were previously performed by people in the production process. It is a relatively long process of gradual changes.

Many countries started preparing for the 4th industrial revolution about 10 years ago, and the first initiatives at the level of governments and large corporations were being created. The Industry 4.0 concept was first presented at Hannover Messe in 2011. The first strategic document was published in 2013. In other countries, similar activities with different names Smart Manufacturing Leadership Coalition (USA), Industrial Internet Consortium (USA), Industrial Value Chain Initiative (Japan) or the Industry 4.0 Initiative in the Czech Republic 2015 (Podivínský and Ehler, 2016,

online). The preparedness of individual countries has been measured by various institutions using indices since around 2014 (Vrchota and Pech, 2019).

According to the "2014 Global technology report" (Word economic forum, 2014), the Czech Republic was not the best with a value of "Networked readiness index" of 4.49, it was in 42nd place in the world (the best result in readiness for Industry 4.0 at that time was Finland (6,04). This readiness does not mean only digitization. It is a necessary prerequisite and condition for the implementation of systemic cyber principles and the implementation of intelligent production systems and services.

There are many types of research and reports on the readiness of individual countries for Industry 4.0. According to the research prepared by a sample of 105 enterprises (Rolínek *et al.,* 2015, pp. 360-377), 62% feel influenced by Industry 4.0 and 65.7% of companies have already started implementation and see the future in it. In the same year in Germany, according to Sommer (2015), research was conducted on a sample of 247 businesses and 82% of them felt ready for digitization. Research on the use of technology was also carried out by KPMG (2018). The ability of companies to adapt to changes by proactively mastering new technologies is a condition for their possible survival.

In foreign and domestic publications and articles, it can be seen that the principles on which this concept is based can be linked both to industrial production and to the provision of services, to decision-making and management, but also to marketing, including customer care and its influencing him, persuasion and shopping itself, but also management and administration (Pašek). The technical approach is supported by, for example, Pabbathi (2018), who defines Industry 4.0 as the 4th industrial revolution, which brings an intelligent industry focused on the production of intelligent devices implemented using intelligent processes.

According to him, it is about the combination and aggregation (grouping) of various IT technologies, processes and machines to ensure the speed of operations and thereby reduce time and redundant work, as well as more effective decision-making. The technological approach can also be seen in Schwab and Davis (2018). These authors understand Industry 4.0 as a set of ongoing and transforming processes in the systems that surround people in society and are caused by the growing availability and involvement of a set of exceptional technologies that build on the results of previous revolutions.

Also, Frison (2015) claims that Industry 4.0 is the interconnection of everything using Cyber-Physical Systems (CPS), enabling mutual communication, influencing their surroundings, ensuring the collection of data through sensors, storing information on clouds, and then analyzing it by data mining and then use for optimization. In the USA, the term Industrial Internet of Things (IIoT) is used, which other authors understand as connecting devices via the Internet aimed at the transmission, management and control of information.

This approach was preceded in the USA by digitization as a tool to stop the decline in production. The Manufacturing USA initiative and program were developed (Wilkins, 2019). The essence of Industry 4.0 from the technical point of view is the replacement of existing M2M (Machine to Machine) communication with an IoT architecture, i.e., the Internet of Things (Taberner, 2022). The Internet of Things (or the Industrial Internet in the terminology of OECD, 2008) represents mutual communication through various sensors, cameras, transmitters, machines or code readers and to some extent enables production to be controlled. It can take the form of the Internet of Services or the Internet of People and at the level of the Internet of Everything (Xia, 2012), which enables automation, decentralization of management, individualization of products, etc.

According to the server Technodat (2019) the main elements of the Industry 4.0 process. in addition to those already mentioned, there are autonomous robots, simulation and virtualization, augmented reality, artificial intelligence - automation of production processes and self-learning algorithms for eliminating system errors, development and use of biometrics, psychotechnics, clouds - more and more companies are choosing the path of remote storage with a cloud solution, whether already for its flexibility or also thanks to savings on physical installations.

Big data, its reuse and effective recycling of knowledge also play a big role in this information revolution. There are thoughts about the creation of a "Single source of truth" - for all company processes. It will be protected know-how and controlled work-flow. This will also include drawing-free manufacturing – coupled with a single source of truth. Digital models will remain native throughout the entire production process thanks to data linking, reverse engineering – 3D scanning of a product and its conversion from a real image to a 3D model, and additive manufacturing – which will support the "end to end" vision of Industry 4.0 and belong here even the production of prototypes thanks to 3D printing and additive manufacturing.

The reality is "smart factories", where precisely set pre-production processes and their digitization enable companies to run a perfect automated factory ready to handle various digital inputs. Other changes that will probably occur are the chipping of all products, machines, and also some rooms. Thanks to chips, most activities can be controlled and operated via the Internet. "Smart warehouses" will be introduced with automatic reporting of outgoing stocks.

Other authors support not only a technical approach but also perceive changes as social and societal. Add a foreign author and state what he says According to Mařík *et al.* (2016, p. 15) the fourth industrial revolution embodies cybernetic-physical-social changes and, according to him, the problem cannot be reduced only to digitization, automation and robotization. These processes are part of the Industry 4.0 concept, but the social dimension is also important, i.e. the influence on the

change of sectors other than industry and basically the whole society, lifestyle and also the concept of ownership of several properties.

The form of many services such as banking will change to a mobile form (Xu *et al.*, 2021). According to Mařík in the article by Holanová (2015,) *"Changes must occur, especially in education, and systemic and interdisciplinary thinking must be brought up throughout society, in all types of schools, including non-technical ones"*.

Some authors such as Bai *et al.* (2020) present their broader perception of Industry 4.0. This approach can also be seen in the Czech Republic e.g., Holoubek (2017) attaches more importance to the next dimension than the technologies themselves, namely changes in people's thinking with social impacts. A new reorganization of the human workforce and the use of data as "raw material" is assumed. Also, according to the Ministry of Industry and Trade of the Czech Republic (2016, online), the core of the entire concept is networking and communication in the broadest sense of the word, i.e., communication within the company, with customers, suppliers, partners and interested institutions, incl. state administration.

These different approaches are justified because the issue of Industry 4.0 raises many questions about the new framework of technological convergence involving the unprecedented interconnection of digital, physical and biological technologies, about the ways of providing, distributing and consuming products and services, about mobilizing or replacing the workforce, about the role of education and the socialization of the individual and his literacy as well as the norms and rules that will regulate and direct this "revolution".

It is not entirely clear which of all the listed changes will be a "dead end". Industry 4.0, if the whole society is ready, will bring positive effects on productivity, income distribution, the quality of life of people and society as a whole, as well as the environment, as was the case with previous industrial revolutions. These impacts will affect all industries, all types of activities and all aspects of life. Given the breadth of these impacts, each country and its companies must try to understand these technological and social changes and be prepared for potential risks. Industry 4.0 is becoming a new "philosophy" that permeates the thinking of the entire company (MPO, 2016).

In the last thirty years, studies began to appear that, without being related to Industry 4.0, pointed to the importance of the human factor as capital for economic development (Lucas, 1988; 2015; Romer, 1990; Mankin, Romer and Weil 1992). According to them, a higher level of people's education is related, among other things, to higher labour productivity, but especially to the ability to use modern technology.

The term human capital refers to a person's innate or acquired abilities, skills and knowledge (Becker, 1993). Even though conflicting views on the role of human

capital have appeared in the new theory of economic growth, since the 1990s, the views that Lucas (1988) and Romer (1990) began to promote regarding the key role of human capital for long-term sustainable economic growth have prevailed. The opinion that increasing the level of human capital has a positive and demonstrable effect on the economic growth of a given country is also supported by the conclusions of the study by the authors Cohen and Soto (2007).

The OECD study (2013) also confirms that specialization in technologically demanding fields transforms human capital into the main source of economic growth in developed countries. According to Siberhornová (SEHS, 1/2020, p. 35), there is a relationship between human capital and a country's industrial specialization (Teixeira and Queirós, 2016).

Teixeira and Querós' model combines supply-side variables and demand-side variables with the structural specialization of individual countries with endogenous growth theory. The model was examined in the two periods 1960-2011 and 1990-2011 on the data of 30 countries and evaluates, in addition to the direct and indirect influence of capital on economic growth, the mutual connection of human capital with the industrial specialization of states.

The work of Teixeira and Querós (2016) evaluates three established hypotheses, namely that countries with higher levels of human capital tend to grow faster than others. Furthermore, countries that experience a change in their productive structure and increase the share of technologically and knowledge-intensive activities will tend to have higher economic growth. Their third hypothesis was that the impact of human capital on a country's economic growth is greater the more the economy is specialized in activities with high technological demand.

The first two hypotheses are confirmed in both the long and short run and confirm that countries with a higher level of education among adults achieve faster economic growth. At the same time, the share of specialized industries in a given economy that requires a high level of knowledge and skills of individuals is also important.

The last hypothesis is confirmed only in the long term and in developed OECD countries. The work of Teixeira and Querós (2016) confirms that increasing specialization in knowledge-technologically intensive sectors accelerates the economic growth of countries. The results confirm the positive effect in the developed and transitive economies that were examined.

A person's ability to master new technologies can therefore be considered a significant competitive advantage of the business segment. Although online marketing technologies are only one small component of it, their knowledge and ability to use them, nevertheless, show the potential to keep up with technologies that will only begin to gain ground in business practice shortly, and will understand and learn to use them.

Impacts of Industry 4.0 on marketing and marketing communication:
Industry 4.0 and within it the development of ITC and its gradual implementation in practice significantly influence the existing applied marketing concepts into a prevailing holistic concept and, to varying extents, the content and form of all traditional tools of the marketing mix.

According to Cetlová (2019), the changes concern the sphere of product development and innovation, but also customer orientation based on the use of data collection results from product use. This then enables greater customization of products and services according to the needs and creativity of customers. Biometrics entered customer identification. Virtuality will enable the modelling of the production process and its tuning before the launch itself and will lead to time and cost savings and, as a result, to the impact on marketing in the price of products.

Production will begin to flexibly respond to customer requirements on a larger scale, and the entire process will become more dynamic in smart factories (Collection of authors, 2017). Due to customer orientation and further strengthening of the customer's role in the value chain, it is possible to talk about Industry 4.0 as a new type of marketing concept. During the Covid 19 pandemic, the importance of all links in the value chain, including relationships with suppliers, became apparent.

The marketing model in distribution also began to change. This is already happening on a global scale in the form of multi-channel distribution, and the introduction of internet sales, but new concepts of distribution and sale of unpackaged food are beginning to be applied, moreover linked to the concept of the circular economy (e.g., the gradually implemented MIWA project (2018). Technologies already enable the application of Omnichannel Marketing (Retail Sumit, 2019). Changes in marketing communication are already partially implemented by a whole range of online technologies, which are the subject of research and their description is in the following

Several of the mentioned changes and impacts can be seen as an already underway process, for some, it is just a vision of the future. The behaviour and decision-making of companies and customers are beginning to be strongly influenced by legislative pressure on sustainable development consisting of strict regulation of the negative effects of the use of all technologies on the environment and people in it, and on the promotion of "green" marketing in organizations to achieve a sustainable society consisting among other things, in limiting individual consumption and the use of the sharing economy for a whole range of products and services that have been purchased individually up until now (Cetlová, 2019).

All of these new mentioned tendencies, and many others, are not yet precisely estimable today, which Kotler *et al.* (2013) named Marketing 4.0, require changing established marketing thinking. Kotler talks about changing vertical, exclusive and individual power into horizontal, inclusive and social power. Already now,

organizations providing products, services and ideas, as well as those that are their partners, and cooperating companies, must begin to analyze their marketing and communication decisions in much more detail in terms of changes in the macro environment, i.e., known factors - political, economic, social, technological, legislative and environmental.

An example can be the political decisions and the situations that have arisen in which the automotive industry has found itself as a result of the effects of the Covid 19 pandemic, e.g., Škoda Auto Česká Republika. Also, the tendency to separate marketing as a business concept and marketing communication as a separate creative field looking for the most original ways of communication between companies and customers and the general public, began to gain ground in the 90s of the last century, needs to be reversed into a comprehensive holistic view of the company's offer as a whole towards each specific customer, including all communication with him.

According to Kotler (2007), marketing communication cannot work by itself if the product is incorrectly selected, distribution does not work, or the price is not set correctly. Checking the correctness of any marketing decision in an organization is a measurement that shows if this entity is going in the right direction or deviating from its goal. This also applies to marketing communications.

The American Marketing Association (AMA) defines marketing accountability for results as "the systematic management of marketing resources and processes to achieve measurable gains in marketing return on investment (ROI) and increase marketing effectiveness while maintaining quality and increasing company value." This applies to offline marketing, but also online marketing. Individual activities falling under online marketing have different goals and therefore also different forms of their measurement (Cook, 2018).

Online marketing and tools for measuring its effectiveness:
From the point of view of theory and actual implementation, marketing communication has undergone dramatic development since the 1990s. The very name of this tool has changed from "Promotion" to "Marketing Communication". Koichi Shimizu already introduced this term in 1973 (published later in a publication from 1989 (p. 63-102) in his 4 C model. The use of new technologies built mainly on the Internet brought new communication possibilities in the years 2005-8 and gradually the spectrum of online communication tools has expanded significantly.

According to Kotler, Kartajay and Setiawan (2016, pp. 12-20), online marketing has become the standard of communication strategies of successful global companies, but they continue to use a traditional offline communication mix that is not financially affordable for small business entities of a local nature in various specific forms of advertising (TV, radio, large-screen advertising, etc.), public relations, sales support, but also personal selling and classic direct marketing (sending letters, flyers to mailboxes).

Offline advertising is still used on the global market, mainly by large global companies when promoting products, services, and events (Samsung, SuperBall, Reader Cup etc.).

Online marketing and basic concepts used:
The concept of digital marketing emerged in 1990. According to Monnapp (2022) "*Digital* marketing is the promotion of products over the Internet or any form of electronic media". Elsewhere, Monnappa writes that "Digital marketing is the use of digital channels to promote or sell products and services to targeted consumers and businesses." The development of the digital era was conditioned by the expansion of the Internet. This Web 1.0 concept allowed users to find the information they wanted, but it did not allow them to share that information over the Web. Until then, marketers around the world were still unsure about this trend.

In 1993, the first clickable banner was launched, after which HotWired purchased several banner ads for its advertising. This, according to Monnapp (2022), marked the beginning of the transition to the digital era of marketing. In 1994 new technologies entered the digital market and Yahoo was launched. In its first year of operation, it recorded over 1 million hits. This has sparked changes in the digital marketing space and companies have started optimizing their websites to achieve higher search engine rankings. In 1996, several other search engines and tools such as HotBot, LookSmart and Alexa were launched.

In 1998, Google was created, Microsoft launched the MSN search engine, and Yahoo launched Yahoo Web Search. Two years later, the internet bubble burst and all the smaller search engines fell behind or left the digital space. The world of digital marketing saw its first spike in 2006 when search engine traffic grew to approximately $6.4 billion in a single month. Web 2.0 began to gain traction; people have already become more active users. Web 2.0 enabled interaction with other users and businesses.

According to Monnapp (2022), the Internet began to be labelled the "super superhighway" because the volumes of information flow, including the channels used by digital marketers, increased many times over, and by 2004, Internet advertising and marketing brought in approximately $2.9 billion in the US alone. Social networks began to be used, the first network was MySpace, followed by Facebook.

Networks have become a new opportunity for business. It required adopting a new approach to promoting and monetizing brands. Gradually, other networks were launched - LinkedIn, Twitter, Instagram, and others. Cookies were another important milestone in the digital marketing industry. Advertisers began looking for other ways to monetize the fledgling technology and began tracking the common browsing habits and usage patterns of frequent Internet users to tailor promotional and marketing activities to their tastes.

The first cookie was designed to record user habits. The use of cookies has changed over the years and today cookies are coded to offer marketers different ways to collect user data. Smart Search Engines allowing optimization started to be used. As the digital market continued to develop, Google began to expand and introduced products such as AdWords, which are 3-line ads that appear at the top or right of search engine results, and AdSense, which is a cost-per-click advertising scheme, and a stage came that enables more accurate measurement of advertising activities. Over time, Google realized the value of content analysis, which allows targeting of advertising messages.

In connection with online marketing, it is necessary to mention that some terms used are still not precisely defined and their content may differ in different publications – e-business, e-commerce, electronic trading, incl. internet banking and trading on financial markets, internet communication, digital marketing, online communication, e-marketing, etc. Although most of the basic terms were anchored in European Commission documents and accepted as generally valid terminology (European Commission, 2008; 2009; 2010) already in the first decade of the 21st century, over time some terms have experienced a content shift based on their practical use.

The content of some terms may be understood and used differently by IT and marketing specialists, and a shift in the content of the terms can be expected with their further development. Under the term e-commerce, some authors, according to Semerádová and Weinlich (2022), distinguish a broader and a narrower concept of this term and include, in addition to sales on the Internet in the form of e-hops, to varying degrees, other activities such as Internet banking, electronic trading, credit card operations, but and affiliate marketing and online advertising. Other sources, e.g., idealab.cz (2022) defines this term somewhat more narrowly. There are many ways and metrics for each marketing channel to measure the effectiveness of online marketing.

In AdWords, Sklik, Google Analytics, email systems, etc., it is the "click" or number of visits that measures how many customers have come to the site. Another key metric is the bounce rate, or “last click conversion,” which measures how many conversions a particular visitor to a marketing channel has generated. Also, the concept of Internet marketing or marketing on the Internet or online marketing is defined in various ways in Czech specialist books. Sometimes internet marketing is referred to as e-marketing or electronic marketing. Similar confusion surrounds the concept of digital marketing.

For example, Chaffey and Smith (2013, p. 14-15) subordinates it to the concept of e-commerce. According to these authors, the task of digital marketing is to get closer to the customer through clear "user friendly" websites, to enable him to decide on the product, and the task of e-commerce is to sell the product.

The following activities belong to the main activities of online marketing that were the subject of a questionnaire survey:

- WEB (web pages) are the basic oldest service of the Internet (www - word wide web) in the form of a data file displayed by a browser (Berners-Lee, 2010). Nowadays, it is possible to have a computer version or a mobile version adapted for a smart phone.
- E-shop is a website that offers the possibility of ordering goods online. (It-slovník.cz).
- A chatbot (chat robot) is a computer program simulating a human conversation through artificial intelligence. It is used for customer support of e-shops, in call centres, etc. (It-slovník.cz).
- SEO (Search Engine Optimization) is a set of methods and techniques that aim to improve the position of a website or e-shop in search engines and thus bring more visitors. SEO is focused on full-text search. SEO optimization needs to be done directly on the website, SEO costs are usually one-time and the effects are long-term. (Shoplet.cz, 2017).
- SEM (Search Engine Marketing) is a form of internet marketing that, according to Adaptic.cz (2017), also increases the visibility of pages in search engine results with the help of optimization and marketing support. However, website visibility is achieved through paid advertising systems. An example of paid advertising on the Internet used as part of SEM is PPC systems. (Adaptic.cz, 2017).
- CRM (client relationship management) is a term for systems to create and maintain relationships with customers. It is a database of past, present and potential contacts, records realized contacts with the customer and is a superstructure of accounting software (It-slovník.cz).

Another group in online marketing consists of tools that enable measuring effectiveness on the Internet. Including:

Google Analytics is a service of Google. It allows website owners to monitor their traffic and provides statistics and reports according to various parameters (It-slovník.cz). PPC stands for Pay-Per-Click and is related to SEM. The high efficiency is reflected in the relatively low price of this advertisement, but also the really precise targeting of specific customers (Marketing PPC, 2017). Among the main advantages of PPC systems are easy measurement and relatively simple campaign management. By connecting, for example, with Google Analytics or the Collab program, the success and targeting of PPC campaigns can be continuously evaluated.

Other models of payment for advertising are payment for the number of views (PPV – pay per view, CPM – cost per mile, or CPT – cost per thousand, (Invesomania.cz), CPI – cost per impression) and a fixed price per impression in a given time at a given place (flat-rate) (ManagementMania.com), but also with more complicated models, such as payment for a specific action or even a sale made thanks to

advertising (CPA - cost per acquisition/action, CPL - cost per lead, CPS - cost per sale (InsideWhale, 2019).

Other payment models on the Internet (i.e., not only payments for advertising and marketing) include Pay as you go (aggregate payment for searches, views, clicks, file downloads, etc. within one user entry, e.g., to a paid database, etc.), Pay per day (payment per day, e.g., for the use of a service or obtaining an advantage within this service, for example, an artificial increase in the website's position in the search results of a search engine for one day), Pay per post (payment for an advertising post or article, i.e., not an order within the system). Google AdWords (Ads.google.com, 2018) is one of the systems for working with advertising on the Internet. is an online advertising program by Google.

Through this service, it is possible to create and manage online advertisements and reach the public at the moment when they are interested in specific products or services. It is used to promote the sale of products or services, increase awareness and increase website traffic. The impression value indicates how often the ad is displayed. An impression is counted each time an ad appears on a search results page or another site in the Google network. The following systems work similarly: Microsoft Bing Ads and Yandex Direct.

In the Czech Republic, in addition to Google Adwords, the Sklik system displays advertisements in search results on Seznam.cz and in its sections Novinky.cz, Super.cz, Proženy.cz, Sport.cz, etc. The essence is the same as with Google AdWords and Sklik. There are other similar systems, such as e-Target, which started offering its services on the Czech Internet, and the AdFox system from Centrum.cz.

E-business is another term that is used in connection with e-marketing, and its definitions differ slightly over the years (Petrtýl, 2017). E-business is a business activity that takes place through information technology and includes digital online communication, online research, but also online marketing (Kurniawati *et al.*, 2020). Also, mobile marketing is a new, dynamic marketing communication tool based on advertisements or sales promotion activities carried out via mobile devices.

Online marketing effectiveness measurement tools:
There are several ways and metrics for each marketing channel to measure the effectiveness of online marketing. In AdWords, Sklik, Google Analytics, email systems, etc., it is the "click" or number of visits that measures how many customers have come to the site. Another key metric is the bounce rate, or “last click conversion,” which measures how many conversions a particular visitor to a marketing channel has generated.

Conversions can take the form of macro conversions, i.e., purchases, registrations, actual inquiries, or micro conversions such as signing up for a newsletter. For paid online channels, costs are tracked, i.e., how much the channel costs for a certain

period, what is the total cost and cost per conversion, as well as the price per share ratio. There are additional metrics for each marketing channel separately. E.g., SEO for improving search engine rankings can be measured with Google Analytics data, but also with specialized tools. It also measures how many sessions came from Google and how many sessions came from Seznam.cz. There are other metrics in Google Search Console, such as impressions, clicks received, and average position.

Position measurement is done using external tools such as Collabim, Marketing Miner or SEMOR, and the shift in the number of keywords is measured. There are also different metrics for PPC campaigns. To evaluate email marketing, an email tool is usually used to communicate with customers, but also through it to implement campaigns. It measures the size of the email database, the rate of opening emails and the click-through rate, or the number of new subscribers in the last month, etc.

Measuring the results of content marketing also has its specifics. It must always be based on clearly measurable goals. Such a clearly measurable goal is overall increased traffic on the website, traffic to the content section, number of visits from social networks, but mainly conversion or turnover, number of e-mail contacts, higher position in search engines, number of new customers. The objectives must also be based on the choice of tools for the measurement itself.

Among the most frequently used tools are Google Analytics, various commercial and individually programmed email tools, social statistics, CRM, invoicing systems, content management systems or other tools. Several metrics are used for Facebook, Instagram, Twitter and paid and unpaid communication methods. The quality of visitors (target group) is also measured according to various criteria such as gender, and age. interests, activity, (Krutiš, 2018).

Pandemic Covid 19 and Industry 4.0:
Some of the areas of ICT that belong to the concept of change under the term Industry 4.0 have already become real, while other changes in the external business environment and within companies and on a global scale are still unrealized but expected. The segment of the self-employed and small and medium-sized businesses, especially in the field of online marketing, is already in this process of changes in the role of providers and consumers/users.

How this segment is already able to use technological innovations in online marketing can give an image of its ability to be an active co-creator of the 4.0 revolution or its brake or even its victim, whose business will not survive due to insufficient IT literacy and the impossibility of using new technology.

The Covid 19 pandemic caused in several countries including the necessity of the Czech Republic to implement widespread measures to isolate people by limiting part of the production and a whole range of services provided, such as disease prevention and quarantine of people where there is increased contact between people and the

transmission of disease or the introduction of home offices, etc. The negative consequences of the Covid-19 pandemic on the economy of each affected country are to a different extent, and nowhere have they been precisely calculated due to the lack of a specific methodology and represent estimates.

However, it accelerated the use of new technologies and applications for communication between companies, customers and within companies between employees in several business fields. The impact of the CoVID-19 pandemic on the global economy is being studied around the world by several major consulting companies and research institutions, which are trying to analyse the current situation, but also to find ways and guidelines for entrepreneurs to survive the crisis and become competitive again.

The consulting company McKinsey (2020) in Cetlová, Marciník, Velinov (SEHS, 2020, p. 41-54) announced on October 7, 2020 that the downturn in the global economy due to COVID-19 has already surpassed the financial crisis of 2008-2009. From spring to mid-October 2020, in connection with the pandemic, McKinsey carried out several targeted researches in approximately 25 countries.

One of them showed that only those businesses that use new technologies to deal with the changing work environment were able to adapt and remain competitive. Another global survey found that organizations facing the Covid crisis successfully are those that deployed more advanced technology, digital products and technology talent to accelerate innovation immediately after the outbreak.

According to McKinsey research, the managers of these companies expect most of these measures to ensure that they survive the pandemic. Another new survey of theirs reveals the extent of disruption to business practices and behaviour in the context of the COVID-19 crisis. As a result, a third of the companies surveyed accelerated the digitization of their supply chains, half accelerated the digitization of their customer channels, and two-thirds accelerated the adoption of artificial intelligence and automation (McKinsey, 2020, online).

The above-mentioned results of research by the McKinsey consulting company only confirm that the way out of the global economic crisis caused by the COVID-19 pandemic is the acceleration of the use of new technologies, including online communication. Also, a study was prepared in March 2020 by the Association of Chartered Certified Accountants (ACCA, 2020) on the impact of COVID-19 on the global economy and the road to its recovery.

According to this study, the impact is particularly dire for the small business segment and will consist of a drop in labour productivity and loss of income. The study was prepared based on research carried out among its more than 10,000 members operating in various organizations and fields in April 2020. Based on its results, it is assumed that almost 40% of small and medium-sized companies do not

even have a plan for ensuring business continuity in crisis conditions. A significant drop in annual turnover across continents is expected for 85 % of companies with up to 200 employees, and 86 % also anticipate a significant loss. Companies will have to replace these losses by intensifying communication with the market and using online marketing.

Also in the Czech Republic, despite several government measures to stabilize the business environment, there has not yet been a full recovery of the business. The spread of COVID-19 has changed working conditions, the educational process and consumer behaviour. As a result, many customers have developed new habits in purchasing and consuming products and services that are likely to be used for a long time or may remain forever.

3. Methodology

The procedure for the preparation, implementation and evaluation of the results was based on the general scheme of the research process according to Linhart and Smolová (2016, p. 65)

Table 1. *Scheme of the research process*

The problem to be solved – determining the research objective – will determine the information requirements
Approaches to research – choosing a research method based on predefined hypotheses and research questions.
Data collection – the process of obtaining responses from respondents using a chosen data collection method based on a selection and sampling plan
Questionnaire proposal - formulation of questions
Preliminary testing - data collection, data analysis
Presentation and implementation of conclusions

Source: *Own elaboration based on Linhart, Z, Smolova, H. Marketing research, VŠEM University of Economics and Management 2016.*

The first step was the collection of information sources on published research on online marketing tools used and tools in the segment of small and medium-sized businesses in the Czech Republic and abroad, and research on the impact of the Covid 19 pandemic on their use. and the structure of the research procedure was drawn up. Information sources were taken from professional literature and online sources (Web of science, Scopus, Research Gate) allowing access to foreign information.

The research aimed to find out the use of a wide range of online marketing activities and tools for measuring their effectiveness in the segment of small and medium-sized businesses and self-employed persons divided according to the legal form of the business entity, the gender of the owner of the entity and the respondent, and the field of business activity, to what shifts against previous research into the use of online marketing tools occurred and also found a correlation between the use of

particularly technically demanding tools used to measure the effectiveness of online marketing activities and the respondent's field of business. In this regard, the conducted research was a continuation of the previous three marketing research conducted in 2019 with the same goal. Questions investigating the benefits of online marketing for business were newly included among the research questions.

The main method used was primary quantitative research, data analysis and Pearson's correlation coefficient. Data collection was carried out between December 2021 and February 2022.

Non-probability sampling was used to select the sample. This selection is also known as chance sampling and is dependent on the voluntary willingness of respondents to participate and is based on logical judgment rather than mathematical probability. Therefore, we cannot speak of a random selection that would generalize the conclusions to a wider population (Disman, 2011, pp. 111-113).

The total number of respondents was: 234. Respondents were men (58.5 %) and women (45.5 %) operating in the small and medium business segment and were in the position of owner/co-owner of a limited liability company (22.6 %), or its employee in a regular position (25.6 %), a self-employed person with or without employees (14.1 %) (26.1 %). Other respondents were owners/co-owners of other legal forms belonging to the small and medium business segment and employees in higher positions (11.6 %).

4. Data Collection

The data obtained from the questionnaire survey were processed into contingency and summary tables documenting the obtained results. For questions that specify some findings in more detail (e.g., website optimization), percentages were calculated from the number of respondents with websites. The same was the case with the questions measuring marketing activities on social networks, which were based on the number of respondents who promote their business on social networks. For recurring questions, the research results were compared with previous research results and the differences were quantified. Due to the different numbers of respondents in individual research, percentages of the total number of respondents were calculated.

In the next step, the correlation between the selected online marketing tools was sought and the Pearson correlation coefficient method was used. It is one of several types of correlation analysis that allows quantifying and evaluating the relationship of two or more continuous random variables. Pearson's correlation coefficient R(x,y) characterizes only a linear relationship, i.e., the variability of a linear trend. The coefficient takes on values in the interval (-1, +1). R(x,y) is positive when higher values of the random variable x are related to higher values of the variable y.

Conversely, it is negative when lower values of the random variable x are associated with higher values of y. Pearson's correlation coefficient is defined as follows:

$$R(x,y)=\frac{\sum_{i=1}^{n}(x_i-\bar{x})\cdot(y_i-\bar{y})}{\sqrt{\sum_{i=1}^{n}(x_i-\bar{x})^2}\cdot\sqrt{\sum_{i=1}^{n}(y_i-\bar{y})^2}}$$

where: x_i….measured values of the first variable
y_i…..measured values of the second variable
$\bar{x}$…..arithmetic mean of the first variable
$\bar{y}$…..arithmetic mean of the second variable.

Statistical analysis of the use of online marketing tools:
The statistical analysis analyzed the following questions posed to the respondents:

1) Are you aware of what online marketing means?
2) Do you have a functional website set up for business activities?
3) Is your website adapted for mobile phones (so-called responsive website)?
4) Do you have an e-shop?
5) Does your website have a built-in contact form for the visitor to communicate with the company (sales department, etc.)?
6) Does your website have a built-in chatbot for communication with website visitors?
7) Do you use Google Analytics or a similar tool to track traffic to your website?
8) Do you use the SEO (Search Engine Optimization) website optimization principle?
9) Do you use the principle of SEM (Search Engine Marketing)?
10) Do you use a special emailing tool for communication (including bulk) with your (potential) customers?
11) Do you use any of the CRM applications to collect information about customers?
12) Do you present your business on social networks?
13) Do you measure the effectiveness of marketing activities on social networks?
14) Have you used the opportunity to promote your products and services on the Internet using PPC (Pay Per Click) advertising or similar?

The first question sought awareness of what online marketing is. The second question regarding functional websites was key to further analysis. If the company does not have a functioning website, it cannot use a whole range of other online marketing tools. Traditional and time-tested online marketing tools are emailing tools. However, social networks are currently becoming an important online marketing tool.

The answers to the mentioned questions were determined in the form of an online questionnaire survey, which was implemented several times within a certain time

interval from 2019 2022. The obtained data, therefore, enable not only a cross-sectional analysis, but also an examination of dynamics over time. The first survey was carried out in September 2019 (it was a pilot survey), the second in the first half of 2020, the third in the 4th quarter of 2020 and the last, fourth survey was carried out from December 2021 to February 2022.

Attention was mainly focused on the following question: "To what extent the use of selected online marketing tools differs among small entrepreneurs in traditional crafts compared to other business fields in the Czech Republic, especially in Prague and the Central Bohemian region." The initial hypothesis was that small craftsmen use online marketing tools in their business activities to a much lesser extent than other types of companies. The reason may be:

(1) ignorance and unwillingness to educate oneself in the field of these modern technologies,
(2) financial costs related to the implementation of online marketing tools,
(3) relatively little competition in the market in which small artisans operate.

The stated hypothesis was statistically tested using the chi-square test of independence of two categorical variables within the analysis of contingency tables. The goal of the statistical analysis was also the investigation of dynamic changes over time.

The research question was also how the use of online marketing tools by small craftsmen and other companies changes and develops over time. The formulated hypothesis was that in the area of using online marketing tools, the differences between small entrepreneurs in traditional crafts and other business entities in other fields of business are increasing. Even in periods with restrictive coronavirus measures, traditional craftsmen still used online marketing tools to a very small extent, and the use of online marketing activities in other companies is gaining more and more importance.

Chi-square test of independence in a pivot table:
In the previous paragraph, research questions were formulated, which were formulated exactly as statistical hypotheses and tested with rigorous statistical tests. Specifically, the chi-square test of independence was used in the contingency table, which is described, for example, by Chráska (2006, pp. 91-94). Consider the following illustrative example:

1) Does the awareness of online marketing depend on whether it is a small craftsman or another type of business?
In mathematical statistics, a null and an alternative hypothesis are always formulated. The statistical hypothesis corresponding to the stated research question can be formulated as follows:

H_0: *Awareness of online marketing does not depend on whether it is a small craftsman or another type of business.*
H_1: *There is a dependency between the mentioned two categorical variables.*
Statistical hypotheses are tested using test statistics. In this case, the chi-square test statistic is used, which is calculated based on the following contingency Table 2:

Table 2. *Contingency table for a type of a firm and awareness of online margeting.*

Obs. frequences		Are you aware of online marketing?		Total
		Ne	Ano	
Type of firm	craftsman	P_{11}	P_{12}	$P_{1\bullet} = P_{11} + P_{12}$
	others	P_{21}	P_{22}	$P_{2\bullet} = P_{21} + P_{22}$
Total		$P_{\bullet 1} = P_{11} + P_{21}$	$P_{\bullet 2} = P_{12} + P_{22}$	$n = \sum_{i=1}^{2}\sum_{j=1}^{2} P_{ij}$

Source: *Authors' own calculations.*

Variable P_{11} expresses the number of craftsmen who are not aware of online marketing. Similarly, variable P_{12} expresses the number of craftsmen who are aware of online marketing. Other variables in the table have a similar interpretation.
The chi-square test statistic is generally calculated as follows:

$$\chi^2 = \sum_{i=1}^{r}\sum_{j=1}^{s}\left[\frac{\left(P_{ij} - O_{ij}\right)^2}{O_{ij}}\right], \tag{1}$$

where r is the number of rows and s represents the number of columns of the pivot table, P_{ij} represents the observed frequencies in the i-th row and j-th column of the contingency table, O_{ij} are the expected frequencies in the i-th row and j-th column of the contingency table, which are determined based on the following relationship:

$$O_{ij} = \frac{P_{i\bullet} \cdot P_{\bullet j}}{n}, \tag{2}$$

where $P_{i\bullet} = \sum_{j=1}^{s} P_{ij}$ is total number of frequencies in the *i*-th row,
$P_{\bullet j} = \sum_{i=1}^{r} P_{ij}$ represents observed frequencies in the *j*-th column,
$n = \sum_{i=1}^{r}\sum_{j=1}^{s} P_{ij}$ denotes the total number of observations.

Assuming the validity of the null hypothesis, the chi-square statistic has chi-squared probability distribution with $(r-1)\cdot(s-1)$ degrees of freedom. If the calculated

value of the test statistic lies in the so-called critical range, then the null hypothesis is rejected in favor of the alternative hypothesis. Otherwise, the null hypothesis is not rejected. The critical region of the chi-square test is generally defined by the following interval:

$$\left\langle \chi^2_{1-\alpha}(k); \infty \right), \tag{3}$$

where is $\chi^2_{1-\alpha}(k)$ is $(1-\alpha)\cdot 100\%$ quantile of the chi-squared distribution and α is the chosen level of statistical significance.

The level of statistical significance is usually chosen to be 5% or 1%, i.e., $\alpha = 0.05$, or $\alpha = 0.01$. In the case of a 5 % significance level, the lower limit of the critical domain is determined by the 95 % quantile. When choosing a 1 % level of statistical significance, the lower limit of the critical domain would be given by the 99 % quantile.

Alternatively, testing can be based on the so-called P-value, which is calculated by statistical software based on the calculated chi-square test statistic. In such a case, the statistical hypothesis test is carried out as follows. If the calculated P-value becomes smaller than the chosen level of significance (usually 0.05 or 0.01), then the null hypothesis is rejected. Otherwise, it is not rejected.

5. Results

This paragraph discusses empirical results of the chi-square test. A chi-square test of the independence of the type of business (small artisan x others) on the use of selected online marketing tools was performed for all the above 14 questions. The null and alternative hypotheses always took the form:

H_0: *The use of a given online marketing tool does not depend on whether it is a small craftsman or another type of business.*
H_1: *There is a dependency between the mentioned two categorical variables.*
The obtained results are summarized in the following Table 3:[3]

Table 3. *Chi-squared test of statistical independence between type of a business and variables associated to questions 1-14.*

Number of Question	**1**	**2**	**3**	**4**	**5**	**6**	**7**

[3] *Symbols ***, **, * mark statistical significance on 1%, 5%, 10% level of significance, respectively.*

P-value 1. research	0.001 ***	0.031 **	0.109	0.078 *	0.003 ***	0.195	0.066 *
P-value 2. research	0.000 ***	0.000 ***	0.004 ***	0.283	0.000 ***	0.030 **	0.002 ***
P-value 3. research	0.001 ***	0.001 ***	0.003 ***	0.509	0.494	0.290	0.004 ***

Number of Question	8	9	10	11	12	13	14
P-value 1. research	0.025 **	0.012 **	0.013 **	0.006 ***	0.029 **	0.013 **	0.167
P-value 2. research	0.152	0.206	0.000 ***	0.001 ***	0.000 ***	0.003 ***	0.071 *
P-value 3. research	0.672	0.527	0.007 ***	0.024 **	0.086 *	0.074 *	0.108

Source: *Authors' own calculations.*
Legend:

1. online marketing awareness
2. website
3. mobile application
4. e-shop
5. contact form
6. chat box
7. Google Analytics
8. SEO
9. SEM
10. emailing tool
11. CRM
12. social networks
13. effectiveness on social networks
14. PPC

The null hypothesis that the degree of use of online marketing tools is independent of whether it is a small craftsman, or another type of business is rejected at the 10 % level of significance for each of the 14 questions in at least one study. The statistically significant difference in the use of selected online marketing tools between craftsmen and other companies was statistically confirmed.

The results obtained are relatively stable and unchanging over time for some questions. These are mainly questions numbered 1, 2, 10 and 11 regarding awareness of online marketing, the existence of a company website, use of email tools and CRM. For all these questions, a statistically significant difference in the use of online marketing between artisans and other firms was confirmed at least at the 5% level of significance, even in all three surveys. Relatively stable results were also achieved for questions numbered 7, 12 and 13 regarding the use of Google Analytics, social networks and measuring effectiveness on social networks.

For these questions, the difference between artisans and other firms was confirmed in all three studies at least at the 10 % level of significance.

For questions 4, 8 and 9 regarding the use of e-shop, SEO and SEM, a certain trend is characteristic, where in the first research carried out in the first half of 2020, a statistically significant difference between craftsmen (small companies) and other

companies was found, but this difference over time in further research it became increasingly weak. The opposite trend can be seen in question number 3 examining the use of mobile applications. In the first survey, the use of these applications was more or less comparable between craftsmen and other firms, while in subsequent surveys statistically, significant differences were increasing.

Dynamic analysis of changes over time:
The issue of using online marketing tools can also be looked at from another point of view, and it is possible to examine the share of companies that answered "yes" to the given question. The results of this analysis are summarized in the following graphs, separately for small craftsmen and separately for other companies.

Figure 1 illustrates that the share of companies with the answer "Yes" is in the majority of cases lower for small craftsmen than for other companies. The only two exceptions are the answers with the numbers 6 and 8 in the last 3rd survey. The lower rate of use of online marketing tools by small craftsmen is therefore a rather robust result, both in cross-sectional analysis (various online marketing tools) and in time analysis. Figure 2 documents the dynamic changes in the use of online marketing tools over time, again, especially for craftsmen and other companies.

Among craftsmen (traditional crafts), a growing trend can be observed in the use of mobile applications (3), e-shops (4), contact forms (5), chat boxes (6), SEO (8) and emailing tools (10). Craftsmen use CRM systems (11) the least, which are already redundant and financially expensive for their needs. Craftsmen use the website (2), mobile applications (3), contact forms (5) and social networks (12) the most.

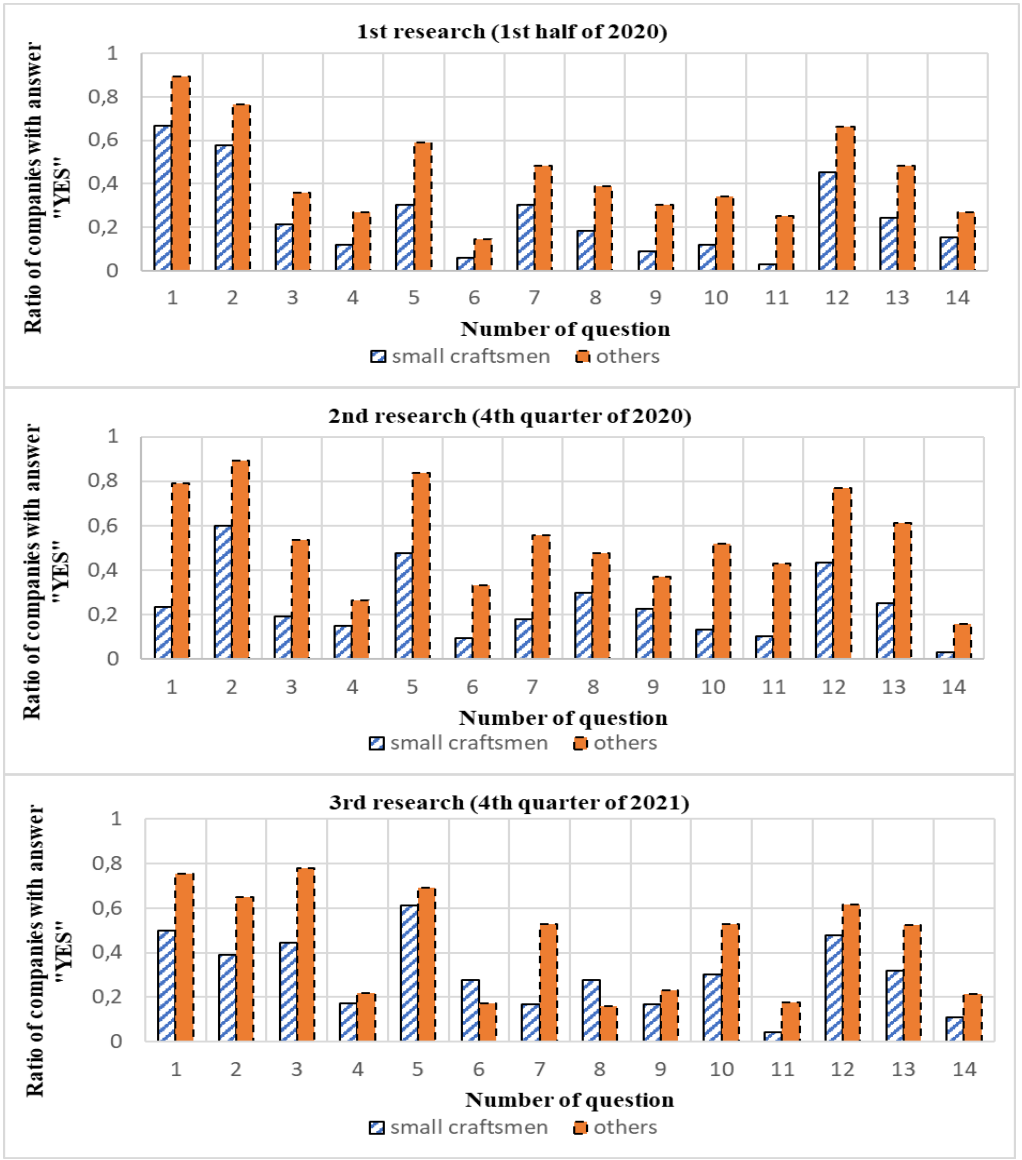
In the case of other companies, the growing trend is most clearly visible in the use of mobile applications (3) and then also in emailing tools (10). Other companies use e-shop (4), chat box (6) and PPC (14) at least. As with craftsmen, the most used tools are websites (2), mobile applications (3), contact forms (5) and social networks (12).

6. Discussion

In connection with the conducted research, it is necessary to consider certain facts, which to a certain extent prevent the research results from being considered generally valid. A limiting factor is, for example, the fact that the statistical analysis of the data is based on a questionnaire survey. Considering the number of respondents to the research, only two categories were created in terms of the profession of the respondents – traditional crafts and others.

For other categories, e.g., profession (the focus of the company) on IT services, their frequencies in the contingency table were too small. The content of the statistical data analysis was to test the hypothesis of whether traditional craftsmen use online marketing tools less than other businesses. This hypothesis was tested using a contingency table-based chi-square test. This hypothesis was confirmed.

Figure 1. *Ratio of companies with answer "YES" to questions 1-14: individually for all three researches.*

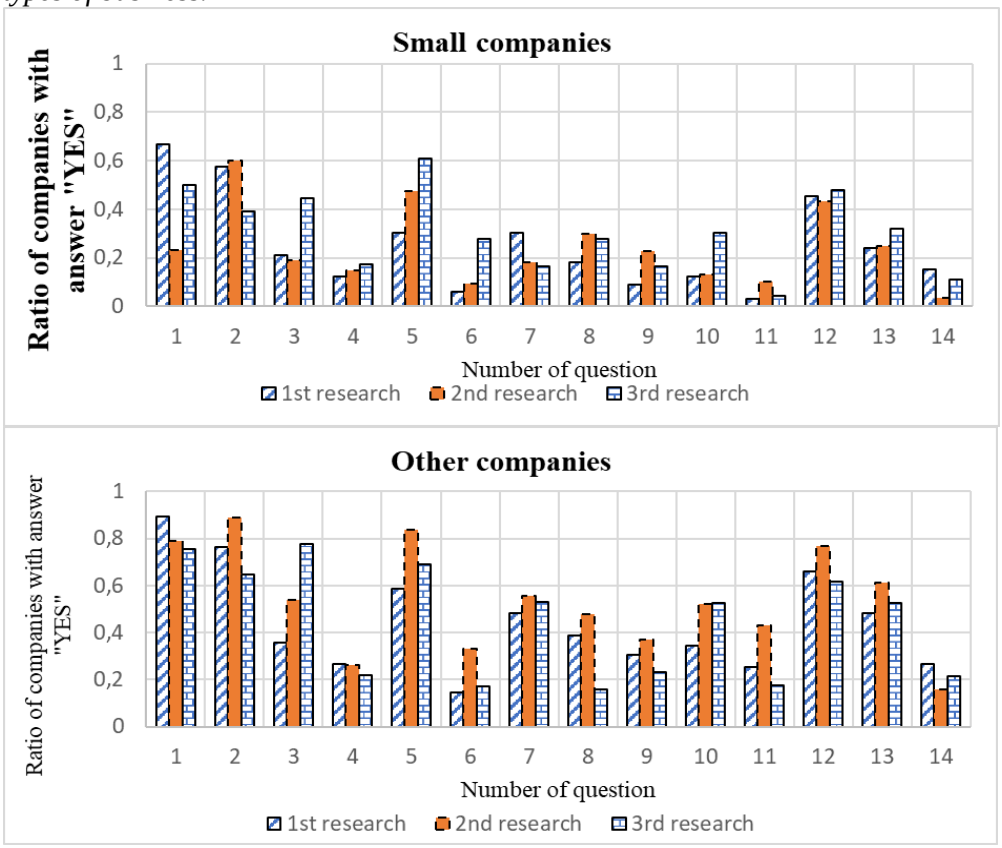


Source: *Authors' own calculations.*

Legend:

1. online marketing awareness
2. website
3. mobile application
4. e-shop
5. contact form
6. chat box
7. Google Analytics
8. SEO
9. SEM
10. emailing tool
11. CRM
12. social networks
13. effectiveness on social networks
14. PPC

Figure 2. *Ratio of companies with answer "YES" to questions 1-14: individually for types of business.*



Source: *authors' own calculations.*

Legend:

1. online marketing awareness
2. website
3. mobile application
4. e-shop
5. contact form
6. chat box
7. Google Analytics
8. SEO
9. SEM
10. emailing tool
11. CRM
12. social networks
13. effectiveness on social networks
14. PPC

However, the same analysis could also be done for the hypothesis, of whether women use online marketing tools more than men, etc. However, according to the first test calculations, this hypothesis was not confirmed.

A certain limit to the interpretation of the research results is the fact that the focus of the respondents is from Prague and the Central Bohemian region, which corresponds to the needs of the research sponsor, the Central Bohemian Association of Managers and Businesswomen, to obtain respondents and information in this locality to find out how the self-employed and small and medium-sized entrepreneurs are online in

this locality marketing is used and to deduce to which customer segment the members of the association engaged in IT could direct specific IT services, such as the creation of websites, their optimization using SEO and SEM, tailor-made creation or implementation of "purchased" CRM systems, or emailing tools for sending bulk mail, but also advertisements on the Internet and social networks, incl. measuring services and evaluating their effectiveness.

Due to the character of City of Prague and the Central Bohemian Region (population/1 km2, average wage, number of university students, etc.) the results of the research can only be partially generalized for the entire Czech Republic. Another problem is that the number of respondents in an individual already implemented research differs, as well as the location, so it is not possible to identify a shift in specific respondents.

The need to monitor the use of online marketing communication tools, measure their effectiveness and determine the real usefulness of their use in the segment of small and medium-sized businesses will be a current topic for the research team soon at the end of the year 2022, and it will be useful to ask respondents recurring questions and create time series from the answers found. It is advisable to look for answers to the perception of the usefulness of using online marketing in business by the business entities themselves and to expand the research with new current topics.

A new perspective can bring about the inclusion of another criterion for the breakdown of respondents, namely their age. Evaluation of respondents' answers concerning their classification into the 5 age categories described by Kotler, Kartajaya and Setiawan (2021, p. 18-34) in terms of their relationship to new technologies and their ability to use them in marketing. The division according to age would have two levels - division into the mentioned 5 categories and within them, the age groups are divided into five-year intervals.

Some questions that were part of all research and the results of which are close to 100% use will then no longer be repeated. It is up for discussion to conduct similar research in one of the countries of the European Union, which is similar in size to the Czech Republic.

7. Summary

The conducted research aimed to follow up on previous research and quantify the shift in the use of online marketing and to confirm the assumption about the still low use of online marketing by a specific group of entrepreneurs in traditional trades.

The use of online marketing tools represents a significant competitive advantage. Failure to use modern online marketing tools leads to lagging behind the competition. Currently, after the restrictive coronavirus measures, this statement is truer than ever. Business entities should adapt their marketing strategies to this, be

flexible, optimize all types of costs, and events, change the direction of activities and move distribution and most marketing communication to an online form.

References:

ACCA Global Covid-19 Global Survey: Inside business – impact and responses [online]. Association of Chartered Certified Accountants. Available at: https://www.accaglobal.com/gb/en/professional-insights/global-economics/Covid-19_A-Global-Survey.html

Adaptic, C.Z. 2017a. SEM- Search engine marketing. Available at: http://www.adaptic.cz/znalosti/slovnicek/sem/

Adaptic, C.Z. 2017b. Fulltextové vyhledávání. Available at: http://www.adaptic.cz/znalosti/slovnicek/fulltext/

Adaptic, C.Z. 2017c. Kontextová reklama. Available at: http://www.adaptic.cz/vyhledavani/?q=Kontextov%C3%A1+reklama&cmd=OK.

AMA.org Responsability marketers. American Marketing Association. Available at: www.ama.org

APRA.cz. Advertainment. Available at: http://www.apra.cz/cs/pro_pr_profesionaly/knihovna/slovnicek_pojmu.html.

AMSP.cz Asociace malých a středních podniků a živnostníků ČR. 1994. Průzkum AMSP ČR: Export malých a středních firem, jeho financování a digitalizace. Available at: https://amsp.cz/category/pruzkumy/.

Becker, G.S. 1993. Human Capital: A Theoretical and Empirical Analysis, with Special Reference to Education. Chicago: The University of Chicago Press, vol. 3, 390.

Bai, C., Dallasega, P., Orzes, G., Sarkis, J. 2020. Industry 4.0 technologies assessment: A sustainability perspective. International journal of production economics, 229, 107776.

Barro, R.J., Lee, J.W. 2013. A new data set of educational attainment in the world, 1950-2010. Journal of Development Economics, 104(C), 184-198.

Bledowski, K. 2015. The Internet of Things: Industrie 4.0 vs. The Industrial Internet. Available at: https://mapifoundation.org/economic/2015/7/23/the-internet-of-things-industrie-40-vs-theindustrial-internet.

Berners-Lee, T. 2010. Long Live the Web: A Call for Continued Open Standards and Neutrality. Scientific American, 1, 12.

Cetlová, H., Velinov, E. 2019. Online Marketing activities and Marketing Communication Tools in Czech small and medium-sizes Enterprices. In: Conference Marketing Identity 2019: Offline is the new Online, 5th-6th November, Univerzita sv. Cyrila a Metoda at Trnava, Slovakia.

Cetlová, H. 2019. The Impacts of the Revolution 4.0 to Marketing and Marketing Communication. In: Professional Publishing 2019. Conference Proceedings from the International Scientific Conference Creative Strategy/Strategy of Creativity: Trends in creative marketing communication, April 25, University of Creative Communication, Czech Republic.

Cetlová, H. 2019. Studijní opora Moderní marketingové přístupy II. Kapitola 4, AMBIS. Available at: https://is.ambis.cz/auth/el/ambis/leto2019/MKEM_KMMP/um/Kapi_4_Prumysl_4.0.pdf.

Cetlová, H., Marciník, R., Velinov, E. 2020. Research into online marketing activities and

tools for Measuring their efficiency by entrepreneurs in the Czech Republic. SEHS, 1/2020, vol. 11, published at AMBIS University.
Cohen, D., Soto, M. 2007. Growth and Human Capital: Good Data, Good Results. Journal of Economic Growth, vol. 12, 51-76.
Cole, T. 2015. Digitale Transformation. Warum die deutsche Industrie gerade die digitale Zukunft verschläft und was jetzt getan werden muss. München: Carl Hanser.
Das, Debebrata, Kumar, Sandhadip et Amit Somwanski. Industry 4.0 and SMEs, November.
Disman, M. 2011. Jak se vyrábí sociologická znalost. Karolinum, 4. ISBN 978-80-246-2619.
European Commission. 2010. ICT and e-Business for an Innovative and Sustainable Economy-7th Synthesis Report of the Sectoral e-Business Watch. Luxembourg.
European Commission. 2009. Europe's Digital Competitiveness Report – Main achievements of the i2010 strategy 2005-2009. Luxembourg: Publications Office of the European Union.
European Commission. 2008a. An Economic Assessment of ICT Adoption and its Impact on Innovation and Performance. Berlin/Brussels.
European Commission. 2008b. eBusiness Guide for SMEs – eBusiness Software and Services in the European Market. Stuttgart.
Frison, A. 2015. Impact of Industry 4.0 on Lean Methods: and the Business of German and Chinese Manufacturer in China. Amazon Kindle Production.
Hirsch-Kreinsen, Hartmut, Industrie 4.0. 2021. Chapter September. DOI: 10.1007/978-3-658-17668-6_53. Springer Fachmedien Wiesbaden GmbH, ein Teil von Springer Nature 2020 B. Blättel-Mink et al. (Hrsg.), Handbuch Innovationsforschung.
Holanová, T. 2015. Nová průmyslová revoluce. Nezaspěte nástup Práce 4.0. Aktuálně.cz. Available at: https://zpravy.aktualne.cz/ekonomika/nova-prumyslova-revoluce-nezaspete-nastup-prace-40/r~97fa2490353311e593f4002590604f2e/?redirected=1550414243.
Holoubek, J. 2017. Prezentace na konferenci Ctvrtarevoluce.cz, 18.10.2017. Available at: https://www.beacentrum.cz/jedinecna-ctvrtarevoluce-cz-v-bea-campusu-olomouc-aktuality-180.html.
Chaffey, D., Smith, P.R. 2013. E-marketing Excellence: Planning and Optimizing Your Digital Marketing. Oxon Routledge.
Idealab.cz. E-commerce. Available at: https://idealab.cz/slovnik/e-commerce.
Janouch, V. 2014. Internetový marketing. 2. vydání, Brno: Computer Press.
InsightWhale. CPM, CPC, CPL, CPA, and CPI: What's the Difference? 2019. Available at: https://insightwhale.com/cpm-cpc-cpl-cpa-and-cpi-whats-the-difference/.
Investopedia.com. PPT. 2022. Available at: https://www.investopeIdia.com/terms/c/cpm.asp.
It-slovnik.cz. e-shop. 2022. Available at: https://it-slovnik.cz/pojem/eshop.
Kolektiv autorů Československá konfederace odborových svazů. 2017. Člověk a stroj: metodická příručka. Praha: Sondy, 71p.
Kotler, P. 2007. Moderní marketing. 4. evropské vydání. 1. vyd. Překlad Jana Langerová, Vladimír Nový. Praha: Grada, 1041.
Kotler, P., et al., 2017. Marketing 4.0. Moving from Traditional to Digital. Wiley.
Kotler, P., Kartajaya, H., Setiawan, I. 2021. Marketing 5.0. Technology for Humanity. New Jersey: John Wiley and Sons,. ISBN 9781119668510.
Kotler, P., Kartajaya, H., Setiawan, I. 2016. Marketing 4.0: Moving from traditional to digital. New Jersey: John Wiley and Sons.
Kotler, P., Keller, L.K. 2007. Marketing management. 12. vyd., Praha: Grada, ISBN 978-80-247-1359-5.

KPMG. 2018. The Road to Opportunity September 2018. Available at: https://home.kpmg/content/dam/kpmg/uk/pdf/2018/09/kpmg-global-proptech-survey.pdf.

Kozel, R., Mynářová, L., Svobodová, H. 2011. Moderní metody a techniky marketingového výzkumu. Praha: Graha Publishing. 2011. ISBN 978-80-247-3527-6.

Krutiš, M. 2019. Ucelený přístup k online marketingu. Available at: https://www.krutis.com/strategie/.

Kuchař, V. 2019. Jak a proč měřit efektivitu marketingu. Available at: https://www.marketingova-kancelar.cz/jak-proc-merit-efektivitu-marketingu.

Kurniawati, E., Siddiq, A., Huda, I. 2020. E-commerce opportunities in the 4.0 era innovative entrepreneurship management development. Polish Journal of Management Studies, 21.

Lasi, H., Fettke, P., Kemper, H.G., Feld, T., Hofmann, M. 2014 Industry 4.0. Wirtschaftsinformatik, vol 6, 239-242. Springer Fachmedien Wiesbaden.

Linhart, Z, Smolová, H. 2016. Marketingový výzkum. VŠEM Vysoká škola ekonomie a management.

Löwit, H. 2018. Globalizace a její vliv na dodavatelské řetězce. Příspěvek na Constraction Maecroeconomics Conference CTU, Praha.

Lucas, R.E., Jr. 2015. Human Capital and Growth. American Economic Review, 105(5), 85-88. DOI: 10.1257/aer. P 20151065.

Mankiw, G., Romer, D., Weil, D. 1992. A contribution to the empirics of economic growth. Quarterly Journal of Economics, 107(2), 402-437.

Mařík, V. 2016. Průmysl 4.0: výzva pro Českou republiku. Praha: Management Press, ISBN 978-80-7261-440-0.

Marketing Identity. 2019. Offline is New online. Faculty of Mass Media Communication University of Ss. Cyril and Methodius in Trnava, Slovakia.

ManagementMania.com. 2016. E-business. Available at: https://managementmania.com/cs/e-business.

ManagementMania.com. 2022. Pay per view. Available at: https://managementmania.com/cs/ppv-pay-per-view.

Marketing PPC. 2022. Pay per Clic. Available at: https://www.marketingppc.cz/uvod-do-ppc-marketingu/.

MediaGuru.cz. CATI. 2022. Available at: https://www.mediaguru.cz/slovnik-a-mediatypy/slovnik/klicova-slova/cati-computer-assisted-telephone-interviewing/.

MioWeb.cz. 2018. Online marketing. Available at: https://www.mioweb.cz/slovnicek/online-marketing/.

MIWA. 2020. Minimum Waste, distribuční a prodejní koncept. Available at: http://www.miwa.eu/cs/how-it-works.

Monnappa, Avantika, The History and Evolution of Digital Marketing. Available at: https://www.simplilearn.com/history-and-evolution-of-digital-marketing-article.

MPO ČR. 2011. Státní politika v elektronických komunikacích – Digitální Česko. Ministerstvo průmyslu a obchodu České republiky. Strategické dokumenty informační politiky ČR.

MPO. 2015. Iniciativa Průmysl 4.0 na 20016-2020. Available at: https://www.mpo.cz/assets/dokumenty/53723/64358/658713/priloha001.pdf.

MPO. 2016. Průmysl 4.0 má v Česku své místo. Available at: https://www.mpo.cz/cz/prumysl/zpracovatelsky-prumysl/prumysl-4-0-ma-v-cesku-sve-misto--176055/.

OECD. 2010. News in the Internet Age – New Trends in News Publishing. Paris: OECD

Publishing.
OECD. 2013. Skills Outlook: First Results from the Survey of Adult Skills. OECD Publishing.
Őnday, Ö. 2019. Japan's Society 5.0: Going Beyond Industry 4.0.
Kotler, F. 2021. Marketing Strategy 2021. Available at: https://www.youtube.com/watch?v=ghFwpoH71NM.
Pabbathi, K.K. 2018. Quick Start Guide to Industry 4.0: One-stop reference guide for Industry 4.0. Scotts Valley: CreateSpace Independent Publishing Platform.
Pašek, R. 2022. Průmysl 4.0 Kde se vzal a co to je? Available at: https://slideplayer.cz/slide/11888949/.
Petrtýl, J. 2017. E-Business. Available at: https://managementmania.com/cs/e-business.
Petrtýl, J. 2013. Využití e-business pro dosažení konkurenční výhody podniků. Available at: https://www.marketingmind.cz/wp-content/uploads/2017/04/Jan-Petrtyl-Vyuziti-e-business-pro-dosazeni-konkurencni-vyhody-podniku.pdf.
Přikrylová, J. 2019. Moderní marketingová komunikace, 2., zcela přepracované vydání, Grada Publishing, ISBN 978-80-271-0787-2.
Podivinský, J.T., Ehler, T. 2016. Německý fenomém Industrie 4.0. 2016. Available at: https://www.czechtrade.cz/media/czechtrade-media/monitoring/nemecky-fenomen-industrie-4-0.
Retail Summit Newsletter 4/2019 Souboj kamenného a internetového obchodu vstupuje do dalšího dějství. Available at: https://www.blueevents.eu/cs/aktualni-zpravy/336-retail-summit-newsletter-4-2019#tvorba.
Romer, P. 1990. Endogenous technological change. Journal of Political Economy, 98(5), part 2, S71-S102.
Rolinek, L., Kopta, D., Plevný, M., Rost, M., Kubecová, J., Vrchota, J., Mariková, M. 2015. Level of process management implementation in SMEs and some related implications. Transform. Bus. Econ., 14, 360-377.
Spir.cz Sdružení pro internetový rozvoj. NetMonitor. 2018. Available at: Úvodní stránka | SPIR.
Seoradce.cz. 2017. Rozdíl mezi SEO a SEM. Available at: http://www.seoradce.cz/rozdil-mezi-seo-a-se.html.
Shimizu, K. 1989. Advertising Theory and Strategies. (Japanese) first edition. Souseisha Book Company in Tokyo, 63-102.
Semerádová, T., Weinlich, P. 2017. The Broad and Narrow Definition of E-Commerce. Chapter in book: Achieving Business Competitiveness in a Digital Environment.
Shoplet.cz. Slovník pojmů. 2017. E-Marketing. Available at: https://www.shoptet.cz/slovnik-pojmu/e-marketing/.
Shoplet.cz Slovník pojmů. 2017. SEO. Available at: https://www.shoptet.cz/slovnik-pojmu/seo/.
Schwab, K., Davis, N. 2018. Shaping the Fourth Industrial Revolution. World Economic Forum, 287 p.
Siberhornová, L. 2022. Lidský kapitál jako hlavní zdroj ekonomického růstu: Problémy a nedostatky jeho kvantifikace. SEHS, 1/2020, vol 11, vydaný AMBIS, a.s., ISSN 1804-6797
Sklik.cz. Sklik. Available at: Sklik.cz
Stenmark, C.Z. 2022. CATI a CAWI. Available at: https://www.stemmark.cz/encyklopedie-. cawi-casi/.
Triadbkog.cz. 2018. Advergaming. Available at: https://blog.triad.cz/marketingovy- /co-je-to-advergaming/.

Simmer, L. 2015. Industrial revolution—Industry 4.0: Are German manufacturing SMEs the first victims of this revolution? J. Ind. Eng. Manag., 8, 1512-1532.

Ritz, W., Volf, M., Mcquitty, S. 2019. Digital Marketing adoption and success for small businesses: The application of the do it yourself and the technology acceptances models. Journal of Research in Interactive Marketing.

Taberner, T. 2022. Rozdíl mezi M2M a IoT. Available at: https://www.cad.cz/strojirenstvi/38-strojirenstvi/6972-rozdil-mezi-m2m-a-iot.html.

Technodat Zlín. 2022. Průmysl 4.0. Available at: https://www.prumysl-4.cz/.

Theintactone. 2022. Meaning and Nature of Industry 4.0 and Latest Trends. Avalable at: Význam a povaha Průmyslu 4.0 a nejnovější trendy theintactone.com.

Tomek, G., Vávrová, V. 2017. Průmysl 4.0, aneb, Nikdo sám nevyhraje. První vydání. Průhonice: Professional Publishing, 200 stran.

Teixeira Aurora, A.C., Queirós Anabela, S.S. 2016. Economic growth, human capital and structural change: A dynamic panel data analysis, Elsevier, 45(8), 1636-1648.

Vrchota, J., Pech, M. 2019. Readiness of Enterprices in Czech Republic to Implement Industry 4.0: Index of Industy 4.0. ResearchGate.

Word Economic Forum. 2014. Zpráva o globálních informačních technologiích. Available at: https://www.weforum.org/reports/global-information-technology-report-2014.

Wilkins, J. 2019. The Current State of Industry 4.0 Around the World. In: MachineDesign.com.

Vysekalová, J. 2006. Psychologie reklamy: nové trendy a poznatky, 3, rozšířené a aktualizované vydání. Praha: Grada Publishing.

Xia, F., Yang, Laurence, T., Wang, L., Vinel, A. 2012. Internet of Things. International Journal of Communication Systems. Ed., 25.