


# “Online technology and promotion tools in SMEs”

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# ONLINE TECHNOLOGY AND PROMOTION TOOLS IN SMEs

**Abstract**

Online technologies are currently the most dynamically developing industry, both in product creation and promotion. The study focuses on their incorporation into the SME (small and medium enterprises) segment, which comprises the most economically stable element of any European economy. This paper aims to identify and evaluate dependency in the area of online technologies and promotion tools use in small and medium enterprises (SMEs) related to company age and export involvement. Most research on SMEs focuses on external influences and factors, while this article reflects the internal environment of business entities, which is the source of this study's originality. The hypotheses were validated by an empirical study of a sample of 743 respondents (companies and entrepreneurs, including family businesses). The research method was a combination of CATI and CASI, and the research tool was a structured questionnaire. To analyze the survey results, the Chi-square test of independence was applied. The key finding was validation of the dependence between the use of the online tools for manufacturing and promotion and the export focus of companies. Companies operating on foreign markets use a wider range of online tools for their business than companies focused on the domestic market. On the other hand, the presumed significant differences in the use of online tools between young businesses and companies long-term established on the market were not confirmed.

**Keywords**

enterprises, online promotion, export, family business

**JEL Classification**

M10, O00, M31

**INTRODUCTION**

The use of online and digital technologies in business has been in place for some time. However, academic attention has always been predominantly focused on the onset of the Fourth Industrial Revolution (Industry 4.0). It consists of the digital integration of all company systems, which ultimately results in creating the "smart factory" communicating within itself through digital and online means and availing of artificial intelligence. This applies primarily to their capacity to remain established in a supply-consumption value chain, including servicing and services (Břečková & Havlíček, 2016). It is also confirmed by Balcerzak and Pietrzak (2017) from the macroeconomic perspective.

Production innovation using online technologies became part of business activities first in larger companies, but as access to these modern technologies has gradually increased, digital processes have also become entrenched in small and medium enterprises and family businesses. A study by Moeuf, Pellerin, Lamouri, Tamayo-Giraldo, and Barbaray (2018) demonstrates that SMEs do not exploit all the resources for implementing Industry 4.0 and often limit themselves to the adoption of Cloud Computing and the Internet of Things.

Regardless of the extent of their use, online channels of communicative nature are also evolving in a similarly dynamic manner to that of

online and digital technologies in manufacturing processes. These are understandably more publicly visible and perceptible by a significantly wider mass of users, both consumers and companies. They include internet tools of business communication in general, whereas the largest growth of their use in business by far is represented particularly by social media (Papa, Santoro, Tirabeni, & Monge, 2018; Scuotto, Del Giudice, della Peruta, & Tarba, 2017). Even these tools, however, are not so easily adopted by all family businesses and small and medium enterprises. These issues were examined by Wassenberg and Mau (2016), for example, concerning German SMEs. They claimed that nowadays, many small and medium enterprises (SMEs) are facing the missing practical and feasible solutions on how to integrate and implement social media activities in their current structures. And yet, this study of the use of online tools from the SME perspective is almost one of a kind. The majority of academic interest on the topic of the use of online technologies is for the most part given from the consumer perspective (Khatwani & Srivastava, 2018; He & Negahban, 2017), the perspective of large retail companies (Verhoef, Kannan, & Inman, 2015; Ziliani & Ieva, 2014), or at the most from the perspective of corporate communications with the customer. This is confirmed by Burgess, Sellitto, Cox, Buultjens, and Bingley (2017): while many studies have examined social media use from a consumer perspective, relatively few have examined its use by small and medium enterprises (SMEs), a group for whom it is becoming increasingly important.

Small and medium enterprises, which include family businesses, represent an essential part of the economy not only in the Czech Republic but also all Europe. According to Petrů, Tomášková, and Krošlákova (2019), a competitive bracket of small and medium enterprises (SMEs) is a prerequisite for the full-fledged integration of any economy into the global economic area. It is for this reason that they are also the subject of this study.

In the Czech Republic in 2018, a total of 1,154,687 companies and entrepreneurs performed entrepreneurial activities, of which a total of 1,152,735 were small and medium enterprises (SME). The share of SMEs in the total number of active commercial bodies in 2018 was 99.83% (MPO, 2018). The importance of this segment is proven as well by the share of added value created by SMEs, which in 2017 amounted to 54.6%, and the share of SME employees of the total number of employees in the commercial sector in the Czech Republic, which in 2017 amounted to 58.0% (MPO, 2018). For this article, the authors are operating from the definition of small and medium enterprise used in the EU, which is based on Commission Regulation No. 651/2014 of 17 June 2014, in the wording of the novella that was enacted by Commission Regulation No. 1084/2017 of 14 June 2017.

Despite the lack of homogeneity and thereby more difficult accessibility of SMEs, they are, nevertheless, subject to broad research interest. However, due to these typical contours of this segment, SMEs are subject to fragmented scientific studies only. The research within the SME segment is often limited to a certain, not large group of companies that share similar signs in some areas. A similar situation appears in the family business segment, which was identified as a strong stabilization element of most countries' economies. Because of this stabilizing function, a political consideration has been given to development support for this segment, among others, in online technologies. Despite the exact specifications, however, they are viewed in this study as classical small and medium enterprises without any greater distinction.

This article includes an appropriate overview of current knowledge in the issues referenced, followed by a description of the goals of the current study and methodologies and databases used. The fourth section subsequently presents the results of the study, along with a discussion over the findings. In conclusion, a summary of the main study outcomes is given.

## 1. LITERATURE REVIEW

The development of online technologies brings a multitude of changes with it in the sense of the in-

ner operating of companies, as well as in the sense of their communication with the market (customers), promotion, and the capability of companies to take advantage of their market potential.

SMEs were represented as the research subject in terms of using dynamically evolving online technologies to a somewhat small extent (Foroudi, Gupta, Nazarian, & Duda, 2017; Brink, 2017). In the Czech Republic, the evaluation of marketing activities, including online tools, was the subject of the research by Petrů, Havlíček, and Tomášková (2018). This resulted in the finding that SMEs give preference to intuitive marketing tools, whereas the assessment of the efficiency of online communications is most often addressed at random. Ungerman, Dedkova, and Gurinova (2018) also examined marketing in the context of Industry 4.0 and its impacts. The impacts that businesses classed as being most important were, among others, increasing the competitiveness of the company and increasing work productivity. However, the results of their research also showed that there are differences in how SMEs and large enterprises see impacts.

The question of whether small and medium enterprises attend at all to efficiency or return of investment of investments made (time-based, financial, etc.) into the online promotion of their own business was also addressed by Burgess et al. (2017) who tried to identify the factors that influence SMEs to either adopt social media or not and, if they adopt it, how they use it and evaluate its usefulness. However, opinions of its perceived usefulness for SMEs varied widely across users. McCann and Barlow (2015) say that most existing research on social media is related to large organizations and tends to focus on technical and commercial use rather than examining the value and ROI gained from social media from an SME perspective.

In their study, Cesaroni and Consoli (2015) tried to identify some specificity in how small firms use social media and assess their ability to exploit technologies' potential. The results show that social media open a wide range of opportunities for small firms because they are cheap and do not require high-level technological competences. A similar study was conducted in Croatia on a significantly smaller sample of respondents, solely with the use of online research tools, and yet the conclusions indicate certain similar findings (Walaitis, Ivankovic, & Avdic, 2017). The research was focused on how small and medium enterprises are considering the importance of technological

changes, and they are giving enough attention to the changes in the business that need to be done. An interesting study on this topic performed by Ainin, Parveen, Moghavvemi, Jaafar, and Shuib (2015) also examined the factors influencing the use of social media by SMEs and its performance outcomes. Unfortunately, this study was limited merely to Facebook, which slightly limits its testimonial capability.

Stankovska, Josimovski, and Edwards (2016) investigated the usage of digital channels by UK small and medium enterprises (SMEs) and declare that despite indications from the relevant literature about the reluctance of SMEs to adopt advances in technological communication, the research indicates a high level of usage of digital channels, especially social media (SM). The web 2.0 technologies that facilitate the new digital channels are standardized, interactive, ubiquitous, and cheap. On the other hand, in some cases, the excessive dynamism of online technologies is considered to pose an issue, one that is felt in particular by small enterprises and entrepreneurs for whom the burden of promotion often lies on the owners themselves. The time capacity for absorbing upgrades and novelties in online technologies is thus often significantly limited. This is also partially confirmed by Kuchta and Miklosik (2016) who state that emerging technologies improve the functionality of platforms and advertising formats, affecting purchase models and influencing the variability of targeting options. For marketing managers, it is necessary to stay in touch with all these new trends. However, due to the dynamism of the digital environment, this might be very difficult. Taiminen and Karjaluo (2015) concluded that SMEs seem not to use the full potential of the new digital tools, because they seem not to be keeping pace with digital developments, mostly due to the lack of knowledge of digital marketing. Burgess et al. (2017), in their study of SMEs and the use of social media, also refer to concern about the amount of time needed to use it.

Verhoef et al. (2015) addressed this topic from the perspective of large retail companies. The advent of the online channel and new additional digital channels such as mobile channels and social media have changed retail business models, the execution of the retail mix, and shopper behavior.

The majority of academic interest has focused on issues of growth and evaluation of whether and how online technologies help to develop business in general (Harrison & Hair, 2017; Odoom, 2017; Wang, 2016). While it was merely a case study, Straker and Wrigley (2016) claim that results illustrate that the ability to create engaging interactions via digital channels with customers has a significant impact on growth, revenue, and brand advocacy.

This study is original in its focus on companies' internal perspective in the SME segment, whereas the majority of studies in the SME segment focus more on external influences and factors. The authors focus on the question of whether the level of business (advancement) influences the extent of the use of digital technologies. An advanced level of business in this study is represented by an interest in internationalization activities (export activity) and higher revenue than the average of the sample of respondents obtained. For this study segment, the authors are operating from the presumption of wider adoption of online technologies for creating a product, as well as the adoption of a wider range of online tools for promoting their business (with a preference for traditional tools of online promotion) to sell their products at home and abroad successfully. The authors thus build in part on a study of six industrial companies (Taiminen & Karjaluoto et al., 2015), which yielded the results that firms have not used social media tools as a part of digital marketing communication as widely as traditional digital tools. This confirms a generally widely held belief that while companies in the industrial segment (B2B), particularly those that are expanding abroad, are adopting online technologies for the creation of products and for promoting their businesses, nonetheless they are not logically particularly active in the adoption of social media (as one of the series of so-called). These are stereotypically more often associated with B2C (retail segment) (Styvén & Wallstrom, 2019; Gupta, Bakshi, & Dogra, 2018; Dahiya & Gayatri, 2018). The study, therefore, focuses on export activity and the adoption of online production technologies and online promotional tools, including the adoption of social media.

The other research segment in this study is starting entrepreneurs and companies (within two years of existence) in connection to their use of online tech-

nologies and online tools for promoting their business that is not active in foreign markets. A prerequisite for gradual learning and its influence on the company's growth in any area appears in the literature only after several decades. The pioneers in the study of complex links between duration of business and internationalization activity are Johanson and Vahlne (1977) who were the first to interpret internationalization as a sequential and orderly process of increased international involvement. Over the years, however, this theory has become a target of scientific skepticism. Two decades later, Oviatt and McDougall (1997) brought the findings that, although most firms still appear to internationalize incrementally, the speed and complexity of firm internationalization is increasing around the world, and a small but increasing number of firms are international at the founding. Today the term "born-globals" is a common part of scientific knowledge, whereas online technologies and communication tools used for promoting businesses have a large share of the rapid expansion. However, this still does not amount to a massive percentage of companies. For the study sample of young businesses (less than two years of existence), there is a presumption of lower capacity and capital, therefore, lower adoption of online technologies for production, and the authors presume a narrower range of online promotional tools (than with groups of exporters), moreover with an emphasis on the newest communications channels represented in particular by social media.

## 2. AIM, METHODOLOGY, DATA AND HYPOTHESES

This research aimed to identify and evaluate the dependence in the area of use of online technologies and online tools for business promotion of small and medium enterprises (SMEs) in connection to the company age of and their export involvement from an internal perspective. A key factor was the extent of the use of online technologies concerning company age and international involvement, or rather in export. The hypotheses were validated using an empirical study of a sample of 743 respondents (companies and entrepreneurs).

The data collection methodology of the presented empirical study was a combination of CATI and CASI, i.e., telephone and online surveys of com-



panies using a structured questionnaire of 32 questions as a research tool. The target audience consisted of entrepreneurs and small and medium enterprises (up to 250 employees). The dataset was collected from publicly available databases, as well as from the member base of the Association of SMEs and Entrepreneurs of the Czech Republic (AMSP ČR), which compiles an up-to-date database of approximately 250,000 members (SMEs) in an open, apolitical platform. The research team performed the survey of respondents during the period from August to September 2018, and a full version of the results is available on the AMSP ČR website (AMSP ČR, 2018a, b).

The study sample of respondents to the empirical study consisted of 743 enterprises from various business fields, representing all regions of the Czech Republic. The segments reviewed in the study were divided into groups by company age, specifically to young businesses up to 2 years of existence (253 respondents) and entities in business for a long time, i.e., over two years (490 respondents). A second criterion was involvement in export activities, as the assumption exists that companies capable of finding a foothold in a competitive environment on a foreign market, for the most part, are more likely to use more sophisticated methods or a wider range of online promotion tools. The sample size of the export subjects was 292 respondents, subjects without current export activities numbered 451. All these segments have been followed longitudinally and have had their characteristics profiled over time, giving a more reliable depiction of SMEs' realities and entrepreneurs in the Czech Republic.

The data were analyzed using the Chi-square test ( $\chi^2$  statistic), method, which calculates the association between two phenomena. The applied Chi-square test of independence tests the null hypothesis that the two qualitative features are independent. Tests statistics, for the contingency table of  $r$  rows and  $s$  columns, can be written in the following form (Hindls, Hronová, & Novák, 2000):

$$G = \sum_{i=1}^r \sum_{j=1}^s \frac{(n_{ij} - \psi_{ij})^2}{\psi_{ij}}, \quad (1)$$

where  $n_{ij}$  are associated frequencies,  $\psi_{ij}$  are hypothetical associated frequencies, wherein  $i = 1, 2, \dots, r$ , and  $j = 1, 2, \dots, s$ , respectively.

Under the null hypothesis, test statistics  $\chi^2$  has a distribution with  $(r-1)(s-1)$  degrees of freedom.

As a part of the study, the following hypotheses were defined using a method of expert estimation based on long-term monitoring of the various groups of companies' and entrepreneurs' behavior:

*H1: The extent of online technologies use is dependent on company age. Statistically significant differences are presumed between the defined groups of business entities in the SME segment.*

*H1a: The extent of online technologies use is dependent on export involvement. There is an assumption that export-oriented companies use different tools than companies operating solely on domestic markets.*

*H2: For the group of young businesses, social media predominate as online promotion tools over more traditional tools such as web pages and email.*

*H2a: For export-oriented companies, more traditional types of online promotional tools, such as web pages and email predominate over social media.*

### 3. EMPIRICAL RESULTS AND DISCUSSION

#### 3.1. Online technologies in SMEs and relationship to company age

The results of the current study demonstrate that digital knowledge and competence are considered essential for the business's growth by an absolute majority of business respondents throughout the segments studied (92%). The first of the tested hypotheses verified the relationship (dependency) between company age and extent of online technologies use. The dominant technological tools addressed included virtual or expanded reality, 3D printing, robotics and artificial intelligence, big data, and blockchain, whereas the authors assumed statistically significant differences between

groups of business entities in the SME segment according to company age. The groups analyzed in this study consisted of the young business entities active for up to two years and the entities that have been in business for a long time (i.e., more than two years).

*H1: The extent of online technologies use is dependent on company age. Statistically significant differences are presumed between the defined groups of business entities in the SME segment.*

**Table 1. Online technology use and Company age**

Pearson and M-V Chi-square <i>H1</i>	Online technology use x Company age		
	Chi-square	sv	p
Pearson Chi-square	13,92485	df = 12	<i>p</i> = ,30553
M-V Chi-square	13,58054	df = 12	<i>p</i> = ,32829

Hypothesis *H1* was not validated. The differences by company age were not confirmed between the study groups. It appears that the extent of online technologies use is not dependent on company age. The research findings demonstrated that young businesses use approximately the same number of online technological tools from the range available for their manufacturing or general business activities as companies that have been in business for a long time. This means that business bodies are compelled to procure a wide range of technologies already in the early stages of a business, even despite often higher capital demands. It appears that despite the high task demands of the early stages of entrepreneurship, the young businesses acknowledge the necessity to give priority to the area of online technologies, as delay in this area could be fatal for the growth or even the very existence of a young business. Moreover, the results of the subsequent hypothesis, *H2* (which examines online promotional tools), yielded the finding that there is not much difference in the tools used or the types thereof among the groups of businesses examined. This could not be substantiated for hypothesis *H1*.

### 3.2. Online technologies in SMEs and relationship to export activity

There is a wide range of economic, procedural, and internal differences between companies operating on international markets and those whose busi-

ness activities are centered on the domestic market. As part of this study, the authors validated this assumption in the area of online technologies among companies focused on export and domestic business. The technological tools were defined in the same manner as with hypothesis *H1*.

*H1a: The extent of online technologies use is dependent on export involvement. There is an assumption that export-oriented companies use different tools than companies operating solely on domestic markets.*

**Table 2. Online technology use and Export involvement**

Pearson and M-V Chi-square <i>H1a</i>	Online technology use x Export involvement		
	Chi-square	sv	p
Pearson Chi-square	59,06033	df = 5	<i>p</i> = ,00000
M-V Chi-square	58,47218	df = 5	<i>p</i> = ,00000

The research results validated this hypothesis. The *p*-value ranges at the level of less than 5%, i.e., the authors do not accept a null hypothesis for the independence of these two indicators; in other words, they are dependent. The validation of the hypothesis confirms that a statistically significant dependency exists between a predominant export orientation and the adoption of online technological tools. The research findings indicate that companies predominantly focused on export use different online tools than those without export orientation. Statistically, it is also possible to conclude that export influences the tools that companies use to gain traction in foreign markets.

### 3.3. Young businesses and dominant tools of online promotion

Dominant types of online promotional tools include webpages, email, maps, and company catalogs as representatives of traditional (older) types of online promotion. In contrast, social media, e-shops, and online comparison tools represent newer high-speed online promotion types concerning company age. The authors operated from the premise that a young – beginning – company is more motivated, and by extension, compelled by the market and its surroundings to adopt newer technologies and faster interactive (such as social media) to accelerate market success.

*H2: For the group of young businesses, social media predominate as online promotion tools over more traditional tools such as web pages and email.*

**Table 3. Young business and Online promotion tools use**

Pearson and M-V Chi-square H2	Young business x Online promotion tools use		
	Chi-square	sv	p
Pearson Chi-square	1,828992	df = 4	<i>p</i> = ,76717
M-V Chi-square	1,794741	df = 4	<i>p</i> = ,77344

This hypothesis was not validated with a resulting test *p*-value of 0.77; therefore, the study variables may be considered independent. Based on the results, the use of substantially different types of online tools by beginning companies (up to two years of existence) for promotional purposes was not substantiated compared with those active in the business environment for some time. In other words, the preference for various types of promotional tools (social media, web pages, email, etc.) appears to be independent of company age. This corresponds with the findings of hypothesis *H1*, where modern technologies used for production or product creation were examined concerning company age.

The original assumption that young businesses adopt more new technologies and rapid interactive tools (such as social media) to accelerate market success was not confirmed. The majority of businesses with a maximum two-year company age surprisingly uses also a range of more traditional tools for online promotion such as web pages and email because they consider them to be still highly commercially effective.

This supports the assumption that companies – regardless of their age on the market – are forced to continually monitor the wide range and dynamic development of communicational and promotional tools and incorporate them into their portfolios. This requires a continual investment of time and other sources, which could be a burden for companies in the SME segment, yet probably unavoidable one. These findings correspond to the cited references given in the literature review of this article.

### 3.4. Export-oriented businesses and dominant tools of online promotion

The same range of online tools used for the promotion of companies in hypothesis *H2* was tested to verify hypothesis *H2a*; however, this time concerning the companies' involvement in the export activities. Export-oriented entities operate predominantly on the B2B market, where social media has not been considered a primary tool for communication with business partners.

*H2a: For export-oriented companies, more traditional types of online promotional tools, such as web pages and email predominate over social media.*

**Table 4. Exporters and Online promotion tools use**

Pearson and M-V Chi-square H2a	Exporters x Online promotion tools use		
	Chi-square	sv	p
Pearson Chi-square	7,138932	df = 3	<i>p</i> = .06760
M-V Chi-square	7,509398	df = 3	<i>p</i> = .05732

This hypothesis was validated, despite indicating only a weak dependence between the research variables. The null hypothesis on the dependence of indicators examined can be rejected at 10% level of statistical significance; in other words, there is only a weak dependence. The null hypothesis of independence of the selected features was rejected at 10% significance level. In other words, one can say that there is a weak dependence, which is significant at 10% level. The study results confirmed that export-oriented companies use more traditional types of online tools for their promotional activities, such as webpages and email. This can be partly explained by the fact that export orientation in SMEs is mainly focused on the B2B (Business to Business) market segment. Within this market segment, the forms of approach to the market (customer or business partner and communicating with them) differ diametrically from those used on the consumer market (B2C). This is also associated with a need for slightly different communications tools, and for this reason, it is not surprising that these are dominated by web and email, which are well-suited to targeting and personalization. At the same time, however, as



with the evaluation of hypothesis *H1a*, this does not limit the range of tools used. Export-oriented companies use a greater extent (in the sense of a wider range) of tools for promotional purposes than companies focused particularly on the domestic market.

## 4. DISCUSSION

The first part of the research was dedicated to SMEs' online technologies in their business activities (for manufacturing or product creation, etc.). The prediction of a statistically significant difference in the extent of adoption of online technologies in the dependence on company age was not confirmed. It appears that the extent of online technological tools use is not dependent on company age. The findings demonstrated that young businesses use approximately the same number of online technological tools from the range available in the study for their manufacturing or general business activities as companies that have been in business for a long time. This finding is not entirely compatible with the results of the study by Taiminen and Karjaluo (2015); while they analyzed SMEs as a whole, they nonetheless concluded that SMEs seem not to use the full potential of the new digital tools because they seem not to be keeping pace with digital developments. On the other hand, this could be because they examined traditional external factors acting on SMEs, whereas this study focused on SMEs' internal perspective.

While it appears that the use of online technologies is not dependent on company age, this does not automatically mean that SMEs use all possible technical tools for their business activities. The findings, therefore, may not conflict with the findings of Moeuf et al. (2018) who declare that SMEs do not exploit all the resources for implementing Industry 4.0 and often limit themselves to the adoption of Cloud Computing and the Internet of Things.

However, this research confirms that the extent of online technologies use is dependent on involvement in export activities. The dominant technological tools examined included virtual or expanded reality, 3D printing, robotics and artificial intelligence, big data, and blockchain. The authors

assumed that export-oriented companies use different tools than companies operating solely in the domestic market, and this assumption was confirmed. Companies operating in international markets seemed to be motivated or forced towards greater adoption of the most modern digital technologies to withstand the competition in progressive markets. Due to their heterogeneity and uneasy approach, SMEs were subject to only fragmented analysis. As stated in the literature review, SMEs have only relatively rarely been the object of research in terms of dynamically growing online technologies (Foroudi et al., 2017; Brink, 2017). Interesting findings were yielded by a study by Centobelli et al. (2016) whose study shows the problems of SMEs to be reactive to the fast technological changes that are affecting marketing, as well as the low-intense support from ICT vendors. The paper also highlights that SMEs typically do not have resources focused on the evolution of the digital market, and they are cannot even follow the dynamic technological environment. While this study indicated that Czech SMEs also frequently address these problems in question, the Indonesian study may be influenced significantly by the non-European environment and its narrow-field focus.

In the second half of their research, the authors focused on online promotional tools. This study yielded the finding that young businesses do not use different types of online tools for promotional purposes when compared to companies that have been established in the market for a long time, contrary to assumptions. This may be somewhat contrary to Cesaroni and Consoli (2015) claims, who tried to identify some specificity in the way small firms use social media. They found that small firms are starting to realize the importance of virtual channels to achieve business goals and gradually learn to take advantage of such technologies. However, as previously mentioned, the findings do not introduce any difference between young businesses and established businesses in this respect; therefore, it does not apply that companies would gradually learn to use new online promotional tools and increase their adoption.

This corresponds with the conclusions of hypothesis *H1*, where digital online technologies used for production or product creation were examined

concerning company age. It appears that young businesses use approximately the same number of online technological tools from the range offered in the study for their manufacturing or general business activities as companies that have been in business for a long time. This means that business bodies are compelled to procure a wide range of technologies already in the early stages of the business, despite often higher capital demands. This corresponds to the findings of Stankovska et al. (2016). However, different conclusions were supported by Wassenberg and Mau (2016) who examined German SMEs and claimed that nowadays, many small and medium enterprises (SMEs) are facing the missing practical and feasible solutions on how to integrate and implement social media activities in their current structures. From this point of view, it may be seen that even social media may not be entirely automatically adopted by all small and medium enterprises.

Not even the original assumption, that young businesses use more of the newer online promotional tools and rapid interactive tools (such as social media) to accelerate their market success, was confirmed by the research. Surprisingly, most business entities with a maximum of two-year company age use a range of more traditional tools for online promotion such as web and email because they consider them to be still highly commercially effective. Of course, established companies likewise use traditional tools and newer ones, including social media. From corporate practice and detailed interviews with business owners, the signs of different targeting may be seen within social media. It appears that established companies use social media more for the fields of PR and employee recruitment in the exploited job market rather than for obtaining new customers and business partners. It would be relevant in subsequent studies to focus on this area.

For export-oriented companies, the authors assumed that more traditional types of online promotional tools such as webpages and email predominate over social media. They were led by the statistical dominance of the B2B (Business to Business) environment where most Czech export-oriented companies operate. The authors were also working with the premise that social media is dominantly a tool for approaching the

end customer (the user of a product), and therefore finds application mostly in the B2C (Business to Consumer) market, and therefore does not represent a typical tool for sales communications in the B2B environment. Obviously, this does not exclude the use of social media by these SMEs. The research findings confirmed that export-oriented companies use more traditional types of online tools for their promotional activities, such as webpages and email, which can be easily targeted and personalized. However, this does not limit the range of tools used. This conclusion thereby partially corresponds with the study by Taiminen & Karjaluoto et al. (2015), which yielded the findings that industrial firms have not used social media tools as a part of digital marketing communication as widely as traditional digital tools. This confirms the generally widely accepted assumption that companies in the industrial segment (B2B), particularly those expanding into international markets, do not consider social media a primary tool of online promotion.

The export-oriented companies examined use a greater extent (in the sense of a wider range) of tools for promotional purposes than companies focused particularly on the domestic market. This can be associated with the variety of export territories and the diversity of customs and requirements of their customers, which companies active in export must accommodate if they want to succeed in foreign markets over the long term. Different markets have different levels of technical advancement, and the aforementioned local customs play a significant role in terms of communication, information search, and mutual interaction.

In all cases, however, this finding, to a certain extent, overturned the principle of gradual learning and increased interest, which was originally introduced to the literature and made visible by Johanson and Vahlne (1977, 1990) in the area of internationalization of companies. While the element of internationalization played only a partial role in our study (only one of the segments was focused on export, whereas the process of entry to foreign markets was not examined), it is clear that the Czech market is small and has its limits for company growth. They thus face a greater impetus than companies in large economies to expand beyond borders and internationalize. An interesting

implication for future research would be to determine how this process is progressing, whether it corresponds with any existing theories, or whether it needs to be modified in the light of technical

and social developments. It would be useful for such research to include the correlation between company age and interest in export activities (or general internationalization).

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## CONCLUSION

The study focused on the segment of small and medium enterprises (SMEs) and entrepreneurs operating in the Czech Republic. The research question focused on the topic of whether the use of online technologies and online promotional tools are influenced by company age and internationalization activity. The hypotheses were validated using an empirical study of a sample of 743 respondents (companies and entrepreneurs, including family businesses).

First, the relationship (dependency) between company age and extent of online technology use for business was tested. The dominant technological tools examined included virtual or expanded reality, 3D printing, robotics and artificial intelligence, big data, and blockchain. Contrary to their expectations, the authors did not determine any statistically significant differences between groups of businesses in the SME segment by company age. The research findings demonstrated that young businesses use approximately the same number of online technological tools from the range available in the study for their manufacturing or general business activities as companies that have been in business for a long time. Despite the high task demands of the early stages of entrepreneurship, young businesses well acknowledge the necessity to prioritize online technologies, as delay in this area could be fatal for the growth or even the very existence of a young business.

The other area examined was the extent of online technologies use concerning the involvement in export activities. The authors assumed that export-oriented companies use different online tools than companies operating solely in domestic markets, and this hypothesis was confirmed. Companies operating on international markets are motivated or forced towards greater adoption of the most modern digital technologies to withstand the competition in progressive markets.

The last area examined was the relationship between the export focus and the use of online promotional tools. The research findings confirmed that export-oriented companies use a greater extent (in the sense of a wider range) of tools for promotional purposes than companies focused particularly on the domestic market. It was also confirmed that export-oriented companies use more traditional types of online tools for their promotional activities, such as webpages and email. This could be partly explained by the fact that most export-oriented SMEs operate on the B2B (Business to Business) market segment. This market segment has been characterized by forms of approaching the market (customer or business partner and communicating with them) that are diametrically opposed to those of the consumer market (B2C).

An interesting thing was found during the study – it appears probable that established companies (with longer existence on the market) and export-oriented ones use social media more for the field of PR and recruitment of new employees than for acquiring new customers and business partners; however, this could not be verified within the survey.

The limitation of this study is, in particular, the relatively small economy of the Czech Republic. It would be useful to have similar data from comparable countries, particularly those where a higher degree of digital maturity has been identified. The primary benefit of this article is the provision of a complex overview of the online technologies and online promotion tools used in the business of SMEs in connection to company age and internationalization activities, and consequently, the advancement of knowledge on this topic. The goal was to identify and assess the dependency between the stated variables, whereas the defined goal of the empirical study may, therefore, be considered fulfilled.

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## REFERENCES

1. Ainin, S., Parveen, F., Moghavvemi, S., Jaafar, N. I., & Shuib, N. L. M. (2015). Factors influencing the use of social media by SMEs and its performance outcomes. *Industrial Management & Data Systems*, 115(3), 570-588. <https://doi.org/10.1108/IMDS-07-2014-0205>
2. AMSP ČR. (2018a). 39<sup>th</sup> Survey “Využívání online technologií pro podnikání” (Online Technology Use for Business). Retrieved from <http://amsp.cz/66-pruzkum-amsp-cr-vyuzivani-online-technologie-pro-podnikani/>
3. AMSP ČR. (2018b). 66<sup>th</sup> Survey “Digitální garáž – pomáháme Česku růst” (Digital Garage – Helping Czechia to Grow). Retrieved from <http://amsp.cz/39-pruzkum-amsp-cr-digitalni-garaz-pomahame-cesku-rust/>
4. Balcerzak, P. A., & Pietrzak, B. M. (2017). Digital Economy in Visegrad Countries. Multiple-criteria Decision Analysis at Regional Level in The Years 2012 and 2015. *Journal of Competitiveness*, 9(2), 5-18. Retrieved from [https://www.researchgate.net/profile/Adam\\_Balcerzak2/publication/318120063\\_Digital\\_Economy\\_in\\_Visegrad\\_Countries\\_Multiple-criteria\\_Decision\\_Analysis\\_at\\_Regional\\_Level\\_in\\_The\\_Years\\_2012\\_and\\_2015/links/596bdc07aca2728ca6861b37/Digital-Economy-in-Visegrad-Countries-Multiple-criteria-Deci-sion-Analysis-at-Regional-Level-in-The-Years-2012-and-2015.pdf](https://www.researchgate.net/profile/Adam_Balcerzak2/publication/318120063_Digital_Economy_in_Visegrad_Countries_Multiple-criteria_Decision_Analysis_at_Regional_Level_in_The_Years_2012_and_2015/links/596bdc07aca2728ca6861b37/Digital-Economy-in-Visegrad-Countries-Multiple-criteria-Deci-sion-Analysis-at-Regional-Level-in-The-Years-2012-and-2015.pdf)
5. Břečková, P., & Havlíček, K. (2016). *Inovace a jejich financování v malé a střední firmě*. Praha: Vysoká škola finanční a správní, EUPRESS.
6. Brink, T. (2017). B2B SME management of antecedents to the application of social media. *Industrial Marketing Management*, 64, 57-65. <https://doi.org/10.1016/j.indmar-man.2017.02.007>
7. Burgess, S., Sellitto, C., Cox, C., Buultjens, J., & Bingley, S. (2017). An Innovation Diffusion Approach to Examining the Adoption of Social Media by Small Businesses: an Australian Case Study. *Pacific Asia Journal of the Association for Information Systems*, 9(3), 1-23. Retrieved from [https://www.researchgate.net/publication/333124968\\_An\\_Innovation\\_Diffusion\\_Approach\\_to\\_Examining\\_the\\_Adoption\\_of\\_Social\\_Media\\_by\\_Small\\_Busi-nesses\\_an\\_Australian\\_Case\\_Study](https://www.researchgate.net/publication/333124968_An_Innovation_Diffusion_Approach_to_Examining_the_Adoption_of_Social_Media_by_Small_Busi-nesses_an_Australian_Case_Study)
8. Centobelli, P., Cerchione, R., Esposito, E., & Raffa, M. (2016). Digital Marketing in Small and Medium Enterprises: The Impact of Web-Based Technologies. *Proceedings of the International Symposium on Social Sciences, Arts and Humanities (SYSSARM 2015)*, 5-6, pp. 1473-1476. <https://doi.org/10.1166/asl.2016.6648>
9. Cesaroni, F. M., & Consoli, D. (2015). The Adoption and use of Social Media by Micro and Small Enterprises. In *Proceedings of the 2<sup>nd</sup> European Conference on Social Media (ECSM 2015)* (pp. 1-10).



- 65-72). Retrieved from [https://www.researchgate.net/publication/279526077\\_The\\_Adoption\\_and\\_use\\_of\\_Social\\_Media\\_by\\_Micro\\_and\\_Small\\_Enterprises](https://www.researchgate.net/publication/279526077_The_Adoption_and_use_of_Social_Media_by_Micro_and_Small_Enterprises)
10. Dahiya, R., & Gayatri, G. (2018). A Research Paper on Digital Marketing Communication and Consumer Buying Decision Process: An Empirical Study in the Indian Passenger Car Market. *Journal of Global Marketing*, 31(2), 73-95. <https://doi.org/10.1080/08911762.2017.1365991>
11. Foroudi, P., Gupta, S., Nazarian, A., & Duda, M. (2017). Digital technology and marketing management capability: achieving growth in SMEs. *Qualitative Market Research*, 20(2), 230-246. <https://doi.org/10.1108/QMR-01-2017-0014>
12. Gupta, A., Sr., Bakshi, S., & Dogra, N. (2018). Engaging consumers in the digital era: An analysis of official tourism Facebook pages in India. *Tourism*, 66(1), 63-77. Retrieved from [https://www.researchgate.net/publication/325286287\\_Engaging\\_consumers\\_in\\_the\\_digital\\_era\\_An\\_analysis\\_of\\_official\\_tourism\\_Facebook\\_pages\\_in\\_India](https://www.researchgate.net/publication/325286287_Engaging_consumers_in_the_digital_era_An_analysis_of_official_tourism_Facebook_pages_in_India)
13. Hänninen, N., & Karjaluo, H. (2017). The effect of marketing communication on business relationship loyalty. *Marketing Intelligence and Planning*, 35(4), 458-472. Retrieved from <https://jyx.jyu.fi/handle/123456789/53528>
14. He, X. Y., & Negahban, A. (2017). The Effects of Consumer Engagement Behavior on the Growth of Social Media Brand Community: Evidence from an SME. *International Journal of E-Business Research*, 13(1), 25-43. <https://doi.org/10.4018/IJEER.2017010102>
15. Hindls, R., Hronová, S., & Novák, I. (2000). *Metody statistické analýzy pro ekonomy [The Methods of Statistical Analysis for the Economists]* (2nd ed.). Praha: Management Press. (In Czech)
16. IMD World Competitiveness Center. (2019). *The IMD World Digital Competitiveness Ranking 2019 results*. Retrieved from <https://www.imd.org/wcc/world-competitiveness-center-rankings/world-digital-competitiveness-rankings-2019/>
17. Johanson, J., & Vahlne, J.-E. (1977). The Internationalization Process of the Firm – A Model of Knowledge Development and Increasing Foreign Market Commitments. *Journal of International Business Studies*, 8, 23-32. Retrieved from <https://link.springer.com/article/10.1057/palgrave.jibs.8490676>
18. Khatwani, G., & Srivastava, P. R. (2018). Impact of Information Technology on Information Search Channel Selection for Consumers. *Journal of Organizational and End User Computing*, 30(3), 63-80. <https://doi.org/10.4018/JO-EUC.2018070104>
19. Kuchta, M., & Miklosik, A. (2016). Refining Digital Marketing Taxonomies: Advertising Platforms and Digital Metrics. *Marketing Identity: Brands we love, PT I*, 175-185. Retrieved from [https://www.researchgate.net/publication/318722438\\_Refining\\_digital\\_marketing\\_taxonomies\\_advertising\\_platforms\\_and\\_digital\\_metrics](https://www.researchgate.net/publication/318722438_Refining_digital_marketing_taxonomies_advertising_platforms_and_digital_metrics)
20. McCann, M., & Barlow, A. (2015). Use and measurement of social media for SMEs. *Journal of Small Business and Enterprise Development*, 22(2), 273-287. <https://doi.org/10.1108/JSBED-08-2012-0096>
21. Moeuf, A., Pellerin, R., Lamouri, S., Tamayo-Giraldo, S., & Barbaray, R. (2018). The industrial management of SMEs in the era of Industry 4.0. *International Journal of Production Research*, 56(3), 1118-1136. <https://doi.org/10.1080/00207543.2017.1372647>
22. MPO. (2018). *Zpráva o vývoji MSP a jejich podpoře v roce 2017 [Report on SME Development and Support in 2017]*. (In Czech). Retrieved from [https://www.mpo.cz/assets/cz/podnikani/male-a-stredni-podnikani/studie-a-strategicke-dokumenty/2018/10/Zprava\\_MSP\\_2017.pdf](https://www.mpo.cz/assets/cz/podnikani/male-a-stredni-podnikani/studie-a-strategicke-dokumenty/2018/10/Zprava_MSP_2017.pdf)
23. Odoom, R., Anning-Dorson, T., & Acheampong, G. (2017). Antecedents of social media usage and performance benefits in small- and medium-sized enterprises (SMEs). *Journal of Enterprise Information Management*, 30(3), 383-399. <https://doi.org/10.1108/JEIM-04-2016-0088>
24. Oviatt, B. M., & McDougall, P. P. (1997). Challenges for Internationalization Process Theory: The Case of International New Ventures. *Management International Review*, 37(2), 85-99. Retrieved from <https://www.jstor.org/stable/pdf/40228434.pdf?seq=1>
25. Papa, A., Santoro, G., Tirabeni, L., & Monge, F. (2018). Social media as tool for facilitating knowledge creation and innovation in small and medium enterprises. *Baltic Journal of Management*, 13(3), 329-344. <https://doi.org/10.1108/BJM-04-2017-0125>
26. Petrů, N., Havlíček, K., & Tomášková, A. (2018). Comparison of Marketing Vitality of Family and Non Family Companies doing business in the Czech Republic. *Economics and Sociology*, 11(2), 138-156. <https://doi.org/10.14254/2071-789X.2018/11-2/10>
27. Petrů, N., Tomášková, A., & Krošlák, M. (2019). Diversification of Export Territories of Family Businesses as a Tool of their Further Development. *Problems and Perspectives in Management*, 17(3), 306-322. [https://doi.org/10.21511/ppm.17\(3\).2019.25](https://doi.org/10.21511/ppm.17(3).2019.25)
28. Scuotto, V., Del Giudice, M., della Peruta, M. R., & Tarba, S. (2017). The performance implications of leveraging internal innovation through social media networks: An empirical verification of the smart fashion industry. *Technological Forecasting and Social Change*, 120, 184-194. <https://doi.org/10.1016/j.techfore.2017.03.021>
29. Stankovska, I., Josimovski, S., & Edwards, C. (2016). Digital channels diminish SME barriers: the case of the UK. *Economic Research-Ekonomska Istrazivanja*, 29(1), 217-232. <https://doi.org/10.1080/10439862.2016.1191111>



- 1080/1331677X.2016.1164926
30. Straker, K., & Wrigley, C. (2016). Emotionally engaging customers in the digital age: the case study of "Burberry love". *Journal of Fashion Marketing and Management*, 20(3), 276-299. <http://dx.doi.org/10.1108/JFMM-10-2015-0077>
31. Styvén, M. E., & Wallström, Å. (2019). Benefits and barriers for the use of digital channels among small tourism companies. *Scandinavian Journal of Hospitality and Tourism*, 19(1), 27-46. <https://doi.org/10.1080/15022250.2017.1379434>
32. Taiminen, H. M., & Karjaluo, H. (2015). The usage of digital marketing channels in SMEs. *Journal of Small Business and Enterprise Development*, 22(4), 633-651. <https://doi.org/10.1108/JSBED-05-2013-0073>
33. Ungerman, O., Dedkova, J., & Gurinova, K. (2018). The Impact of Marketing Innovation on the Competitiveness of Enterprises in the Context of Industry 4.0. *Journal of Competitiveness*, 10(2), 132-148. Retrieved from [https://www.researchgate.net/publication/326360862\\_THE\\_IMPACT\\_OF\\_MARKETING\\_INNOVATION\\_ON\\_THE\\_COMPETITIVENESS\\_OF\\_ENTERPRISES\\_IN\\_THE\\_CONTEXT\\_OF\\_INDUSTRY\\_40](https://www.researchgate.net/publication/326360862_THE_IMPACT_OF_MARKETING_INNOVATION_ON_THE_COMPETITIVENESS_OF_ENTERPRISES_IN_THE_CONTEXT_OF_INDUSTRY_40)
34. Verhoef, P. C., Kannan, P. K., & Inman, J. J. (2015). From Multi-Channel Retailing to Omni-Channel Retailing Introduction to the Special Issue on Multi-Channel Retailing. *Journal of Retailing*, 91(2), 174-181. <https://doi.org/10.1016/j.jretai.2015.02.005>
35. Walaitis, B. K., Ivankovic, J., & Avdic, A. (2017). Internet Tools in Communication Development Role of Small and Medium Enterprises in Croatia. In *Proceedings of 20th International Scientific Conference on Economic and Social Development. Book Series: International Scientific Conference on Economic and Social Development* (pp. 683-692). Retrieved from <https://search.proquest.com/openview/a323792d46710910c556ccb41e8e838f/1?pq-origsite=gscholar&cbl=2033472>
36. Wang, W. Y. C., Pauleen, D. J., & Zhang, T. T. (2016). How social media applications affect B2B communication and improve business performance in SMEs. *Industrial Marketing Management*, 54, 4-14. <https://doi.org/10.1016/j.indmarman.2015.12.004>
37. Wassenberg, N., & Mau, N. (2016). The Relevance of Social Media – Introduction and Basic Knowledge for Small and Medium Sized Companies. In *Innovation Management and Education Excellence Vision 2020: From Regional Development Sustainability to Global Economic Growth, vols. I-VI, Proceedings Paper, Conference: 27th International Business Information Management Association Conference, Milan, Italy, May 04-05, 2016* (pp. 1815-1823).
38. Ziliani, C., & Ieva, M. (2014). Innovation in Brand Promotion: Reacting to the Economic Crisis with Digital Channels and Customer Insight. In *National Brands and Private Labels in Retailing. Book Series: Springer Proceedings in Business and Economics* (pp. 151-159). [https://doi.org/10.1007/978-3-319-07194-7\\_15](https://doi.org/10.1007/978-3-319-07194-7_15)