APPLICATION OF IT TOOLS IN MANAGING SMALL AND MEDIUM-SIZED ENTERPRISES IN THE CONTEXT OF CREATING ENTREPRENEURIAL ORIENTATION

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ABSTRACT
The presence of small and medium-sized enterprises on the Internet in the era of increasing global competition has become a necessity. These entities have begun to notice the benefits that can be obtained by using modern IT tools in various areas of their operations. The aim of the paper is to analyse and evaluate the impact of the use of IT tools in various areas of SMEs' operations on creating their entrepreneurial orientation. The implementation of such a goal required, on the one hand, a literature review and an analysis of current research on the IT tools used by small and medium-sized enterprises in the context of creating their entrepreneurial orientation, and on the other hand, conducting the author’s own research among small companies. Quantitative research was carried out from December 2017 to January 2018 among 400 small enterprises in Poland by means of a survey questionnaire using the CATI technique.

Key words: SMEs, IT tools, Internet technologies, SME management, business models, entrepreneurial orientation

INTRODUCTION
The continuous development of Internet technologies and tools has a significant impact on the functioning of small and medium-sized enterprises, and the constant progress of the functionality of the Internet offers many possibilities and opportunities that can be exploited in virtually all spheres of enterprises’ business activity. As a result, the Internet has become a source of competitive advantages for entities that have access to it and are able to use its potential. The most popular and at the same time the most frequently used form of small and medium-sized enterprises’ presence on the Internet is a website which is mainly used to inform the market about the existence of the company, to communicate with customers, to promote the company and its products as well as to build the company’s image. Much less often, as research shows [Baller et al. 2016], Polish enterprises take advantage of the opportunities offered by the Internet, especially in the field of establishing and maintaining relationships with other enterprises and creating new organisational models of business operations. In these two areas of Internet use, Poland ranks 41st among 139 countries surveyed. In the EU, however, there are economies with even a lower ranking, such as Hungary, Italy or Greece. SMEs that actively use Internet tools tend to increase their revenues, employment, scope of market activity and export level more quickly [PARP 2018]. Digitisation allows for improving the productivity of SMEs...
by optimising processes, expanding the market, introducing innovative products and implementing a more efficient use of human capital [McKinsey&Company 2016], which is important for these entities from the point of view of building a competitive advantage based on strong entrepreneurial orientation.

The aim of the paper is to analyse and evaluate the impact of the use of IT tools in various areas of SMEs’ operations on creating their entrepreneurial orientation. Therefore, the following research hypothesis has been put forward: “Strong entrepreneurial orientation of small and medium-sized enterprises is positively influenced by the use of IT tools in various areas of their operations”.

The implementation of such a goal and the verification of the hypothesis required a literature review and an analysis of current research on the IT tools used by small and medium-sized enterprises in the context of creating their entrepreneurial orientation which are included in the first part of the paper. The second part of the paper presents an analysis of the author’s own research carried out among 400 small companies in Poland.

**LITERATURE REVIEW**

Managing a small and medium-sized enterprise operating in a changing environment requires increasingly often the implementation of appropriate solutions in the area of information technologies that allow, among others, to optimise and automate processes, support the decision-making process, support cooperation with suppliers and provide value to the customer. As it has already been mentioned in this paper, these entities usually use a website to exist in a virtual space. As indicated by the Central Statistical Office [GUS 2017], more and more small and medium-sized enterprises recognise the need to have their own website. In 2017, 62.6% of small and 85.3% of medium-sized enterprises had such a website. The reason for the creation of the Internet site was the need for the company to communicate with the environment through the presentation of catalogues of products and services (almost 63% of responses). Next in the ranking of reasons for having a website, the entrepreneurs indicated the presentation of information on vacancies, with the possibility of sending application documents (18.6% of responses), online ordering or reservation (13.1% of responses), as well as ordering products and services according to one’s own specifications (11.6% of responses) [GUS 2017].

The activities of small and medium-sized enterprises on the Internet were not limited only to the creation of a website, but also encompassed the use of cloud computing services, which was declared by 17.2% of medium-sized and 7.6% of small enterprises in 2017 [GUS 2017]. Enterprises using cloud computing solutions expected a number of benefits, most often including: better communication with the environment, quick access to knowledge, shortening the time to product launch, development of new business models and greater flexibility of offered products and services. However, for the significant majority of SMEs, the obstacles to using cloud computing solutions include, among others: limited trust in new technologies, concerns about data and service security, implementation costs, difficulties with integration of solutions and an unknown impact on company management.

Small and medium-sized enterprises use social media such as Facebook, Instagram, Twitter, LinkedIn, or GoldenLine, which is declared by 24.2% of small and 38.4% of medium-sized enterprises, more often than cloud computing solutions. The essence of these websites in the context of business management consists mainly in the personalisation of purchasing processes, communication with customers and building the company’s image [GUS 2017].

Small and medium-sized enterprises that have appeared on the Internet most often use the following business models [Afuah and Tucci 2003, Akhtar et al. 2014]:

− brokerage model – companies act as organisers of virtual markets where buy and sell transactions are made;
− advertising model – companies, thanks to increasing the attractiveness of their websites, increase revenues from ads placed there;
− infomediary model – companies collect, process and pay for information about customers and offers from different manufacturers;
− merchant model – companies sell their products or services on the Internet;
− manufacturer (direct) model – companies, using the Internet, aim at direct contact with customers;
subscription model – periodic access to Internet services is provided in return for payment of an appropriate fee.

The use of IT tools in SMEs can contribute to building a competitive advantage by using their own entrepreneurial potential which is often measured by the intensity of entrepreneurial orientation.

Entrepreneurial orientation is defined as a coherent set of interconnected activities and processes [Davidson et al. 2002, Dyduch 2008], structures, methods, practices, and behavioural styles [Lumpkin and Dess 1996, Bratnicki 2010, Rauch et al. 2017] that business managers use to act in an entrepreneurial way. This definition is based on the observation that enterprising companies are prone to take a greater risk than companies that lack entrepreneurial orientation, particularly under the conditions of uncertainty, proactively search for business opportunities and focus on introducing changes of an innovative nature [Kuratko and Hodggets 2007, Covin and Miller 2014, Wach 2017].

The main dimensions of entrepreneurial orientation according to Miller and Freisen [1982] include: proactiveness, innovativeness and risk taking. Proactiveness is a trait characteristic of enterprises which constantly seek new opportunities and possibilities to respond to changing requirements and needs of their customers and enterprises which often become pioneers introducing new products or services. Proactiveness is seen as a desirable and even vital organisational trait, since proactive enterprises are oriented towards customers’ future needs, actively searching for new solutions and opportunities [Aragon-Sanchez and Sanchez-Marin 2005, Deepa Babu and Manalel 2016].

Another dimension, innovativeness, is manifested in a given company’s propensity for focusing on the creative process and new ideas supported by new technologies, which results in creating new products and services as well as streamlining processes within the company. In order to gain a competitive advantage, innovative enterprises concentrate on the R&D sphere, development of creativity and experimentation to generate new solutions [Dyduch 2008, Bratnicki 2010, Nogalski and Karpacz 2011, Deepa Babu and Manalel 2016].

In the framework of this approach, the dimension of risk taking reflects the readiness of a given company to undertake audacious actions, e.g.: entering unknown, new markets or allocating significant resources to uncertain, high-risk projects which are associated with the probability of failure [Rauch et al. 2017].

The development of the concept of entrepreneurial orientation was proposed by Lumpkin and Dess [1996], who added two more dimensions: autonomy and competitive aggressiveness. Autonomy is a reflection of actions taken independently of the organisational boundaries and consists in company participants making freely and constantly decisions regardless of existing barriers, such as limited availability of resources or intensive competition [Deepa Babu and Manalel 2016]. This dimension is considered to be more of an antecedence to entrepreneurial orientation than its actual dimension, which is why it is not included in the interpretation of research results. Competitive aggressiveness is a given company’s willingness to achieve a high market position and its desire to outcompete its market rivals, i.e. its propensity for intensifying direct challenges to competitors in order to gain a market share. The enterprise focuses on its own development in the existing market aiming to increase its market presence [Dyduch 2008, Bratnicki 2010, Nogalski and Karpacz 2011, Deepa Babu and Manalel 2016], which requires the company to be ready to use unconventional competition methods [Nogalski and Karpacz 2011].

The application of IT tools supporting the activities of small and medium-sized enterprises in various areas of their operations can be such methods.

RESEARCH METHODS AND CHARACTERISTICS OF THE ENTERPRISES SURVEYED

The adopted research hypothesis was verified on the basis of the analysis of the results of the primary study¹ which was conducted in the period from

¹ The paper was financed from the funds for the statutory activities of the Department of Entrepreneurship and Industrial Policy of the Faculty of Management at the University of Lodz, and the research results come from the research grant entitled Determinants of the Development of Entrepreneurship and Innovativeness in Small Businesses implemented by the Department of Entrepreneurship and Industrial Policy of the Faculty of Management at the University of Lodz.
November 2017 to January 2018 with the use of the CATI and CAWI techniques among 400 small innovative enterprises.

In the first stage of the study, 20,000 small enterprises (employing 10–49 persons) were drawn, out of which 8,000 companies were selected on the basis of a screening question. The realised sample size, i.e. the number of received, completed questionnaires, was 400. The conducted quantitative research, on the one hand, made it possible to reach more business entities and ensure the degree of anonymity of the respondents (it was often a prerequisite for conducting the survey). On the other hand, there was a high degree of difficulty associated with completing the survey, e.g.: partially filled questionnaires and problems with the interpretation of some questions.

The surveyed small enterprises were mainly service enterprises – 45.7%, manufacturing enterprises – 39.3%, and less often commercial enterprises – 15.0%. The spatial market structure of the surveyed enterprises was dominated by the domestic market – 40.8%, followed by the regional market – 31.4%, and the international market with the smallest share of 27.8%.

In addition, the obtained results indicate strong entrepreneurial orientation of the surveyed companies in all the analysed dimensions, i.e. proactiveness, innovativeness, risk taking and competitive aggressiveness.

In the case of proactiveness, i.e. an attitude consisting in searching for market opportunities, the average rating was 3.91 points, which may indicate a high activity of the surveyed enterprises in the field of seeking market opportunities. More than 70% of the respondents rated this dimension at the level of 4 and 5 points. Another dimension, innovativeness, i.e. an attitude towards introducing new products, was rated at the level of 4 and 5 points by nearly 75% of the respondents, and the average rating was 4.03 points. However, in the case of the risk-taking dimension, i.e. risk-orientation, the readiness to accept risk, the average ranking was 3.41, and only 47.7% of the respondents rated this dimension at the level of 4 and 5 points. The last analysed area was competitive aggressiveness, i.e. an attitude towards market competition, which was ranked by almost 60% of the respondents at the level of 4 and 5 points, and the average rating was 3.63.

**RESULTS**

One of the research areas was the analysis of the use of IT tools in the surveyed companies (Table 1) which shows that these tools are most often used to promote the company, e.g.: online advertising through the company’s website, advertising on other websites, search engine positioning, advertising on social media, and

<table>
<thead>
<tr>
<th>Areas of operations</th>
<th>Yes</th>
<th>No</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sales</td>
<td>57.0</td>
<td>43.0</td>
</tr>
<tr>
<td>Purchases</td>
<td>70.0</td>
<td>30.0</td>
</tr>
<tr>
<td>Company management support</td>
<td>71.8</td>
<td>28.2</td>
</tr>
<tr>
<td>Market information collection</td>
<td>77.3</td>
<td>22.7</td>
</tr>
<tr>
<td>Company promotion and communication with customers</td>
<td>80.3</td>
<td>19.7</td>
</tr>
</tbody>
</table>

\[ N = 400. \]

Source: The author’s own compilation.

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2 An innovative enterprise is an enterprise which in the last three years has introduced changes in its products, services, production or organisational methods. These changes may include (i) the introduction of new or improved products or services offered by a given enterprise; (ii) the introduction of new or improved production methods or methods of service provision in a given enterprise; (iii) the introduction of new or improved organisational methods.

3 The respondents rated on a scale from 1 to 5 the occurrence of a given area of entrepreneurial orientation in their enterprise.
to communicate with customers, e.g. through social media (80.3% of responses). IT tools are also often used to collect market information, e.g.: searching for customer data, their preferences, opinions, decision making criteria, competition (77.3% of responses), and less frequently in the sales area (57% of responses). The reasons for this state of affairs can be seen in a small share of sales of the surveyed enterprises through online shops (their own or run jointly by a group of entrepreneurs) (15.5% of responses), universal Internet platforms, e.g.: Allegro, eBay, OLX (13.8% of responses), and specialised Internet platforms (dedicated to a selected group of products/services, e.g.: OTOMOTO, ART-MADAM (16.8% of responses).

In order to verify the research hypothesis adopted in the paper, an assessment was made of the impact of the use of IT tools by the company in various areas of its operations on its entrepreneurial orientation. To achieve this goal, it was examined whether the use of IT tools in the following areas of operations: sales, purchases, company management support, market information collection, company promotion and communication with customers influences entrepreneurial orientation (analysed in four dimensions: proactiveness, innovativeness, risk taking and competitive aggressiveness).

In the case of the first dependence assessment, the analysis procedure began with verifying whether the obtained research results met the chi-square test assumption, i.e. whether all the expected counts were greater than or equal to 5, and then the test was used to assess whether there existed a statistically significant relationship between the analysed variables i.e. the use of Internet tools in various areas of the enterprise’s operations and its entrepreneurial orientation.

The analysis of the first dependence, i.e. the impact of the Internet tools used in various areas of the company’s operations on its proactiveness started with the verification of the hypotheses:

- \( H_0 \): the variables analyse dare independent against alternative hypothesis;
- \( H_1 \): the variables analyse dare not independent.

The calculations carried out indicate (Table 2) that in the case of the three analysed areas of the company’s operations (i.e. sales, market information collection as well as promotion of the company and communication with customers), from the point of view of the use of Internet tools, \( H_0 \) should be rejected for \( H_1 \), as probability in the chi-square test is smaller than the assumed level of significance \( \alpha = 0.1 \), and thus the dependencies are statistically significant, i.e. there is a dependence between the Internet tools used in these areas of the company’s operations and its proactiveness. In order to check the strength of this dependence, the contingency coefficient (C) was calculated, which indicated the existence of a weak relationship between the analysed variables.

However, in the case of other analysed areas of the company’s operations, i.e. purchases and company management support, from the point of view of the use

<table>
<thead>
<tr>
<th>Areas of operations</th>
<th>Chi-square statistic</th>
<th>Chi-square p-value</th>
<th>Contingency coefficient (C)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sales</td>
<td>15.961</td>
<td>0.006</td>
<td>0.205</td>
</tr>
<tr>
<td>Purchases</td>
<td>5.284</td>
<td>0.259</td>
<td>–</td>
</tr>
<tr>
<td>Company management support</td>
<td>2.861</td>
<td>0.587</td>
<td>–</td>
</tr>
<tr>
<td>Market information collection</td>
<td>12.069</td>
<td>0.017</td>
<td>0.171</td>
</tr>
<tr>
<td>Company promotion and communication with customers</td>
<td>14.128</td>
<td>0.007</td>
<td>0.185</td>
</tr>
</tbody>
</table>

\( N = 400. \)

Source: The author’s own compilation.
of Internet tools, $H_0$ should be adopted, which indicates a lack of dependence between the Internet tools used in these areas of the company’s operations and its proactiveness.

The analysis of the second dependence, i.e. the impact of the Internet tools used in various areas of the company’s operations on its innovativeness, started with the verification of the hypotheses:

- $H_0$: the variables analyse dare independent against alternative hypothesis;
- $H_1$: the variables analyse dare not independent.

The calculations carried out indicate (Table 3) that in the case of the three analysed areas of the company’s operations (i.e. purchases, company management support as well as promotion of the company and communication with customers), from the point of view of the use of Internet tools, $H_0$ should be rejected for $H_1$, as probability in the chi-square test is smaller than the assumed level of significance $\alpha = 0.1$, and thus the dependencies are statistically significant, i.e. there is a dependence between the Internet tools used in these areas of the company’s operations and its innovativeness. In order to check the strength of this dependence, the contingency coefficient (C) was calculated, which indicated the existence of a weak relationship between the analysed variables.

However, in the case of other analysed areas of the company’s operations (i.e. sales and market information collection), from the point of view of the use of Internet tools, $H_0$ should be adopted, which indicates a lack of dependence between the Internet tools used in these areas of the company’s operations and its innovativeness.

In the case of the analysis of the third dependence, i.e. the impact of Internet tools used in various areas of the company’s operations on risk taking, it began with the verification of the hypotheses:

- $H_0$: the variables analyse dare independent against alternative hypothesis;
- $H_1$: the variables analyse dare not independent.

The calculations carried out indicate (Table 4) that in the case of two analysed areas of the company’s operations (i.e. company management support and market information collection), from the point of view of the use of Internet tools, $H_0$ should be rejected for $H_1$, as probability in the chi-square test is smaller than the assumed level of significance $\alpha = 0.1$, and thus the dependencies are statistically significant, i.e. there is a dependence between the Internet tools used in these areas of the company’s operations and risk taking. In order to check the strength of this dependence, the contingency coefficient (C) was calculated, which indicated the existence of a weak relationship between the analysed variables.

However, in the case of other analysed areas of the company’s operations (i.e. sales, purchases, promotion of the company and communication with customers), from the point of view of the use of Internet tools, $H_0$

<table>
<thead>
<tr>
<th>Areas of operations</th>
<th>Chi-square statistic</th>
<th>Chi-square p-value</th>
<th>Contingency coefficient (C)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sales</td>
<td>5.821</td>
<td>0.213</td>
<td>–</td>
</tr>
<tr>
<td>Purchases</td>
<td>8.911</td>
<td>0.063</td>
<td>0.148</td>
</tr>
<tr>
<td>Company management support</td>
<td>18.492</td>
<td>0.005</td>
<td>0.293</td>
</tr>
<tr>
<td>Market information collection</td>
<td>4.140</td>
<td>0.387</td>
<td>–</td>
</tr>
<tr>
<td>Company promotion and communication with customers</td>
<td>7.910</td>
<td>0.095</td>
<td>0.139</td>
</tr>
</tbody>
</table>

$N = 400$.

Source: The author’s own compilation.
should be adopted, which indicates a lack of dependence between the Internet tools used in these areas of the company’s operations and risk taking.

The analysis of the last, fourth dependence, i.e. the impact of the Internet tools used in various areas of the company’s operations on competitive aggressiveness began with the verification of the hypotheses:
- \( H_0 \): the variables analysed are independent against alternative hypothesis;
- \( H_1 \): the variables analysed are not independent.

The calculations carried out indicates (Table 5) that in the case of three analysed areas of the company’s operations (i.e. sales, market information collection as well as company promotion and communication with customers), from the point of view of the use of Internet tools, \( H_0 \) should be rejected for \( H_1 \), as probability in the chi-square test is smaller than the assumed level of significance \( \alpha = 0.1 \), and thus the dependencies are statistically significant, i.e. there is a dependence between the Internet tools used in these areas of the company’s operations and its competitive aggressiveness. In order to check the strength of this dependence, the contingency coefficient \( C \) was calculated, which indicated the existence of a weak relationship between the analysed variables.

However, in the case of other analysed areas of the

Table 4. Statistical calculations for the chi-square test and the contingency ratio (C) for the analysed relationship between the use of Internet tools in various areas of the company’s operations and risk-taking

<table>
<thead>
<tr>
<th>Areas of operations</th>
<th>Chi-square statistic</th>
<th>Chi-square p-value</th>
<th>Contingency coefficient (C)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sales</td>
<td>2.375</td>
<td>0.667</td>
<td>–</td>
</tr>
<tr>
<td>Purchases</td>
<td>1.676</td>
<td>0.979</td>
<td>–</td>
</tr>
<tr>
<td>Company management support</td>
<td>14.639</td>
<td>0.009</td>
<td>0.274</td>
</tr>
<tr>
<td>Market information collection</td>
<td>12.782</td>
<td>0.011</td>
<td>0.238</td>
</tr>
<tr>
<td>Company promotion and communication with customers</td>
<td>0.788</td>
<td>0.940</td>
<td>–</td>
</tr>
</tbody>
</table>

\( N = 400. \)
Source: The author’s own compilation.

Table 5. Statistical calculations for the chi-square test and the contingency ratio (C) for the analysed relationship between the use of Internet tools in various areas of the company’s operations and competitive aggressiveness

<table>
<thead>
<tr>
<th>Areas of operations</th>
<th>Chi-square statistic</th>
<th>Chi-square p-value</th>
<th>Contingency coefficient (C)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sales</td>
<td>13.041</td>
<td>0.008</td>
<td>0.245</td>
</tr>
<tr>
<td>Purchases</td>
<td>0.796</td>
<td>0.939</td>
<td>–</td>
</tr>
<tr>
<td>Company management support</td>
<td>2.470</td>
<td>0.650</td>
<td>–</td>
</tr>
<tr>
<td>Market information collection</td>
<td>13.773</td>
<td>0.008</td>
<td>0.262</td>
</tr>
<tr>
<td>Company promotion and communication with customers</td>
<td>11.149</td>
<td>0.012</td>
<td>0.213</td>
</tr>
</tbody>
</table>

\( N = 400. \)
Source: The author’s own compilation.
company’s operations (i.e. purchases and company management support), from the point of view of the use of Internet tools, H0 should be adopted, which indicates a lack of dependence between the Internet tools used in these areas of the company’s operations and its competitive aggressiveness.

CONCLUSIONS

Based on the analysis of the literature and the conducted research, it can be concluded that small enterprises are increasingly often using more or less advanced IT solutions in various areas of their operations. These entities recognise the benefits of using modern IT tools, treating them as processes that support business management. Small enterprises mostly use their own websites as a communication tool with the environment in order to inform the market about the existence of the company as well as to promote products/services and build the company’s image.

The research results presented in this paper allow for a positive verification of the research hypothesis concerning the positive impact of IT tools used by small enterprises on their strong entrepreneurial orientation. This is evidenced by positively verified dependencies indicating that the IT tools used in the following areas of the company’s operations: sales, purchases, company management support, market information collection, company promotion and communication with customers influence its entrepreneurial orientation (analysed in four dimensions: proactiveness, innovativeness, risk taking and competitive aggressiveness).

A wide range of possibilities to use IT tools introduces a new quality and opportunities for managing small enterprises in the context of creating the entrepreneurial orientation essential for building a sustainable competitive advantage.

The value of this paper is manifested through the exploration and analysis of the research problem in a selected population of small enterprises in Poland. The study contributes to the increase of knowledge regarding the use of Internet tools in various areas of management of small and medium-sized enterprises and their impact on entrepreneurial orientation. Indicating the main limitations of the research, it is necessary to emphasise above all a lack of full representativeness (testing only innovative companies), which encourages the author to design a broader study on this subject in the future.

REFERENCES


ZASTOSOWANIE NARZĘDZI INFORMATYCZNYCH W ZARZĄDZANIU MAŁYM I ŚREDNIM PRZEDSIĘBIORSTWEM W KONTEKŚCIE KREOWANIA ORIENTACJI PRZEDSIĘBIORCZEJ

STRESZCZENIE

W dobie rosnącej konkurencji globalnej obecność małych i średnich przedsiębiorstw w Internecie stała się koniecznością. Podmioty te zaczęły dostrzegać korzyści, jakie mogą uzyskać, stosując nowoczesne narzędzia informatyczne w różnych obszarach swojej działalności. Celem artykułu jest analiza i ocena wpływu zastosowania narzędzi informatycznych w różnych obszarach działalności MŚP na kreowanie orientacji przedsiębiorczej. Realizacja tak postawionego celu i weryfikacja hipotezy wymagała z jednej strony przeglądu literatury przedmiotu i dotychczasowych badań dotyczących stosowanych przez małe i średnie przedsiębiorstwa narzędzi informatycznych w kontekście kreowania orientacji przedsiębiorczej, z drugiej zaś przeprowadzenia badań własnych wśród małych firm. Badania ilościowe przeprowadzano za pomocą kwestionariusza ankiety w okresie od grudnia 2017 do stycznia 2018 roku techniką CATI wśród 400 małych przedsiębiorstw w Polsce.

Słowa kluczowe: MŚP, narzędzia informatyczne, narzędzia internetowe, zarządzanie MSP, modele biznesowe, orientacja przedsiębiorcza