

# Business Competitiveness in the Conditions of the Fourth Industrial Revolution

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## Abstract

Businesses are currently facing the onset of the Fourth Industrial Revolution which is characterised by rapid changes in production methods and the implementation of previously unknown innovations. Digitization and automation are the driving forces increasing the speed and effectiveness of production as well as other related activities. Success of businesses is based on an advanced technology foundation, innovative labour force and effective processing of data. In addition to production activities, automation and digitization affect business and marketing activities with more and more emphasis being put on innovation and quality of on-line processes. New customer relationships based on the perception of customer requirements and the speed and quality of their fulfilment are one of the main pillars of company competitiveness. One of the paths, which has been already taken by a number of businesses, is the use of e-commerce. This business model offers a number of advantages to customers as well as the companies themselves. Customers do not have to go to a store to be able to purchase their selected product but instead they can conveniently order from the company's e-catalogue and pay online using any of the payment methods offered by the store. The main reason behind companies' decision to engage in e-commerce is cost reduction. This article evaluates competitive capabilities of a business specialising in products for leisure activities using the Porter's five forces model, selected indicators of the financial analysis and the SWOT analysis, and innovations for the individual components of the marketing mix for the company's portfolio are proposed.

Keywords: competitiveness, Industry 4.0, e-commerce, micro and macro environment analysis, marketing mix.

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## **1 Introduction**

The concept of a 4th Industrial Revolution has been taking place in the world since the beginning of the 21st century; its driving force is digitalisation and automation. Automating current processes and activities results in more reliable, precise and cheaper products while using materials more efficiently. This industrial revolution is characterised by the interconnection of technology and communication with the environment, leading to a change in the shape of current businesses to a “smart factory”. A typical phenomenon of industry 4.0 is the so-called “Internet of Things”, which generally means linking things and people together over the Internet. In contrast, “Internet of Services” is based on on-line collaboration and data sharing in cloud storage via a web browser. ( Mařík, 2015)

The position of businesses is changing within this 4th Industrial Revolution - if they want to be successful in their field of business, they must respond adequately to the new environment. Digitalisation and automation are becoming a new attribute of business competitiveness in the 21st century and part of its potential. Significant technological advances in recent decades, accompanied by the rapid development of communications technologies, are placing ever increasing demands on businesses. The changing market environment is pressing businesses to provide customers with exceptional value in order to maintain their competitiveness. The value created thus becomes a competitive advantage for the company and also a major incentive for the customer in deciding on the purchase of products or services. After thoroughly analysing its internal and external environment, assessing its strengths, weaknesses, opportunities and threats, a business can identify and gain a competitive advantage. It is equally important however to maintain a particular competitive advantage, which is very difficult in today's globalised world. The same or similar products and services are offered by competitors from different regions of the world. Thus, a rapid response to changes in customer demand is essential, as are product and process innovation in companies, and investing in the development of those capabilities that are important for creating and maintaining a competitive advantage.

In order to remain competitive, business entities are currently reorganising their marketing tools to utilise modern communications technologies, as a large proportion of customers today use the Internet for their purchasing activities. E-commerce is a form of business communication where an entire business transaction (purchase, sale, payment) is effected via the Internet. E-commerce is beneficial both for customers (simplicity, availability, convenience, price) and for businesses (cost reduction). Internet shopping is becoming more and more popular, leading to an annual growth in Czech e-commerce turnover, with a year-on-year increase of around 20 percent.

## **2 Material and methods**

### ***2.1 Influence of the Fourth Industrial Revolution on a Company's Competitiveness***

Many authors have discussed the impact of the 4th Industrial Revolution on business competitiveness. On the one hand, the new business environment presents an enormous burden for businesses, especially in terms of the demands placed on modernising their processes and activities, and on the other hand it is a challenge for many, which may strengthen their competitiveness.

In today's globalised world, businesses must face not only domestic competition, but international competition as well. (Chen, 2017) explores this issue, looking at the impact of the Fourth Industrial Revolution on international competitiveness. He states that the competitiveness of countries is based on theories of international trade and the factors of these countries, while business theory is based on Porter's five forces model. Involving countries and companies in the fourth industrial revolution can significantly affect productivity and prosperity of nations. Competitiveness at the national level is explored by Mercedes Delgado (Delgado et al., 2012), who defines competitiveness as the expected level of output for every working-age individual; this competitiveness is then supported by the overall quality of the country as a place of business. The basic factors of competitiveness she presents are social infrastructure, political institutions, monetary and fiscal policies, and especially the microeconomic environment. The authors Siudek and Zawojcka (Siudek and Zawojcka, 2014) propose the use of composite indicators to present the complexity of aspects related to competitiveness.

The competitiveness of countries and businesses is also closely linked to environmental protection. Some authors (Koneczna et al., 2011) deal with the issue of analysing the competitiveness of environmental goods and services in selected sectors in Poland in order to assess their export potential. In their study, they show that increased environmental spending has an impact on increasing the competitiveness of the sectors analysed in the international market. The topic of sustainable production in relation to competitiveness is examined by Winroth (Winroth et al., 2016), who has created a list of sustainability indicators at different levels of society. The development of the Sustainable Development Consensus for individual countries and their organisation is presented in an article by Jovane (Jovane et al., 2008), who also presents a proposal for a reference model for the active application of sustainable development at national and global levels.

The new business environment is characterised mainly by automation and robotisation of processes and activities. The driving force is digitalisation and automation, which brings higher speed and efficiency not only to production itself, but also to other activities associated with it. The Internet of Things is characterised by linking objects and people via the Internet. Many authors deal with this issue in relation to company management; Accorsi, for example, (Accorsi et al., 2017) states that designing and establishing the Internet of Things can be effectively used to manage the food chain in relation to the endogenous environment. In this context, Manavalan (Manavalan et al., 2019) has created a sustainable supply chain model that meets the requirements of the Fourth Industrial Revolution, which includes five perspectives: management, business strategy, technology, sustainable development and cooperation. Atzori (Atzori, 2010) states that the development of the Internet of Things must be the result of synergies carried out in various fields such as telecommunications, informatics, electronics and social sciences. In a manufacturing firm, using analytical methods before deploying a computer network means more flexible and efficient execution of activities, a prerequisite for setting conditions for industry 4.0. Bagheri (Bagheri, 2015) recommends an adaptive clustering method for linking manufacturing systems. In the use of the Internet of Things and Cloud Computing, Tao (Tao et al., 2014) sees the ability to intelligently perceive the connection between people and machines, as well as for efficient resource sharing. Programming robots in industrial processes is described in an article by Gadaleta (Gadaleta et al., 2019), who points out the possibility of reducing the amount of energy consumed while maintaining product quality. Cochran (Cochran et al., 2017) and Tolio (Tolio et al., 2017) focus on using the breakdown of the manufacturing system design for cost-effective decision making, with the goal of improving the development of the manufacturing system with regard to the conditions of the fourth industrial revolution.

The competitiveness of countries and organisations is also closely linked to innovation processes in businesses. In the environment of Industry 4.0, it is innovations that can make a significant contribution to a company's competitive advantages (Peiro-Signes et al., 2014). Innovative processes in small and medium sized businesses are addressed by Forsman (Forsman, 2011), comparing production companies and service companies. Significant differences in the innovation capacities of these companies have not been found; major differences occur across sectors. Choi (Choi et al., 2018) explores the possibilities of implementing sustainable development and innovation activities for small and medium sized businesses. He notes that manufacturers often lack the resources, motivation and expertise to meet the goals set. The competitiveness of small and medium sized businesses in China and India is addressed by Rajesh (Rajesh et al., 2009), describing their position and exploring the role of government policies in developing strategies to increase the competitiveness of these businesses. Ahmedova (Ahmedova, 2015) notes that Bulgaria's accession to the European Union provides great opportunities for supporting the development of small and medium sized businesses, using programs to support them. Applying the concept of corporate social responsibility and its impact on the competitiveness of small and medium-sized businesses in Uganda, Turyakira (Turyakira et al., 2014), notes that business interest in concept implementation is increasing, but state support is needed.

## ***2.2 Methodology for Assessing the Competitiveness of a Company***

A company can use a variety of evaluation methods to evaluate the current situation with respect to competition. This chapter will describe some selected methods that will be used: a SWOT analysis, the Porter five forces model and selected parts of financial analysis.

A SWOT analysis is an open assessment of the company to focus on highlighting the strengths, weaknesses, opportunities and threats that are of strategic importance. Some strategy-related strengths are more important than others because their impact on the market is stronger and they play a decisive role in implementing an effective strategy. It is therefore very important to make the SWOT analysis conclusions related to the specific situation of the company and evaluate their impact on the selection of the strategy. In order to determine the key factors, it is necessary to carry out a thorough analysis of the current situation (internal environment) and the current situation in the surrounding environs (external environment). Strengths and weaknesses should relate to the internal success factors of the organisation in all relevant areas. It is necessary to determine whether a given factor is on the plus side or minus side. Opportunities and threats are identified and assessed when analysing the external environment. In this section the surroundings of the company are monitored. Opportunities and threats should relate to environmental impacts in all relevant areas. It is important to examine both the micro- and macro-environment of the company. The macro-environment can include economic, environmental, political, technological or legal influences. The micro-environment can include customers, competitors, suppliers or distributors. All of these components affect the company's ability to make a profit. (Kotler, 2013)

Using his model, Porter points out that an industry's profitability is dependent on five competitive factors which affect the prices, costs and investment of firms in an industry. Based on these five competitive forces, the strategic position of a company operating in a given industry can be determined. When entering a market, it is necessary to analyse the five forces that determine the attractiveness of the industry. How much these factors affect competition and the company varies according to the industry. Each

sector has a structure; the importance of each factor in each sector is different. Using a five competitive forces model, a company can identify the factors that are critical to the competition and then choose a competitive strategy. In order to fulfil Porter's model, it is necessary to monitor the development of the business environment of the company; i.e., the micro-environment, but it is also necessary to respect the macro-environment of the company regarding the threat of customers and substitutes. (Molnár, 2012)

Financial analysis is understood as a method of evaluating the financial management of a company and diagnosing the "financial health" of the company. This method serves as a tool for defining economic systems and revealing not only their current and past effects, but also for estimating their future development. (FA, Business Economics)

### 3 Results

This paper includes an evaluation of the competitive ability of a company which offers products for leisure activities, using Porter's five forces model, selected indicators of financial analysis and a SWOT analysis.

XY was established as a limited liability company and has been operating on the market since 2006. The company sells goods for cycling and leisure. More than 30,000 products from worldwide brands can be found in the range on offer. The company's sales are effected via the Internet, and the customer can choose from various delivery options. All products may be delivered by means of a courier service, personal collection at a branch in Pardubice or a mail-order service. Payment options of the e-shop are standard; i.e., cash on delivery, bank transfer or cash payment for personal collection. Based on data collected from XY s.r.o., a chart has been created that includes strengths, weaknesses, opportunities, and threats. The SWOT chart is shown in Table 1.

Table 1 SWOT analysis, source (Hrdličková, 2019)

<p><b>Strengths</b></p> <ul style="list-style-type: none"> <li>- Wide range of products</li> <li>- Affordability of the range</li> <li>- Quality of products offered</li> <li>- Worldwide leading brands</li> <li>- Social networking</li> <li>- Use of comparative portals</li> <li>- PPC Campaigns</li> </ul>	<p><b>Weaknesses</b></p> <ul style="list-style-type: none"> <li>- No option for online card payment</li> <li>- No customer service</li> <li>- No loyalty program</li> </ul>
<p><b>Opportunities</b></p> <ul style="list-style-type: none"> <li>- Expansion to other countries</li> <li>- Expanding the portfolio of goods or brands</li> <li>- Mobile application</li> <li>- Growing trend of online shopping</li> </ul>	<p><b>Threats</b></p> <ul style="list-style-type: none"> <li>- Entry of a new e-shop</li> <li>- Changes in legislation</li> <li>- Changes in customer behaviour</li> <li>- Deterioration in the economic level of buyers</li> <li>- Changes in preferences</li> </ul>

- Improvement in the economic level of buyers	
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For a more detailed analysis of factors influencing the market, **Porter's five forces analysis** was created, including the threat of rivalry in the industry, the threat of new competitors entering the market, the threat of substitutes, the threat of competitors' growing bargaining power and the threat of growing suppliers' bargaining power. Competition in the Internet business environment at present is immense. The main reason for the great rivalry is the low cost and the possibility of nationwide or even foreign targeting. Most stores today struggle for customers and do so through various forms of marketing. The threat of potential new competition on the Internet market is also high. This is due to low entry barriers. Nowadays it is very easy to enter the Internet market, especially because of the low cost of entry and operation. The threat of substitutes entering the market affects at least the company in question. This is a business that only sells goods but does not produce them. Bargaining power on the part of buyers is not an essential factor. A customer who decides to place an order on the e-shop is probably interested in the goods. It is not a question of goods for everyday use or goods needed in the running of the household. The company is committed to suppliers the same as most of its current competition. Any change made to the supplier affects not only XY, but all customers in the industry.

The evaluation of competitiveness of the company also includes selected **financial indicators** - recommended for the evaluation of performance and competitiveness are ratio indicators of profitability (creation of profit) and liquidity (ability to repay liabilities). Profitability indicators recorded a relatively large increase in 2016 but deteriorated in 2017. ROE values are in the interest of company owners, as this indicator represents the rate of return of their investments. XY s.r.o. fell into minus values in 2015, as negative equity values were achieved. In 2016, the company rose into positive values due to an almost 200% increase in equity. This growth was due to a significant increase in the company's net profit. In 2017, the net profit of the company decreased and the value of return on equity decreased by 19%. In terms of liquidity, the company is below average, with a positive trend only in Current Liquidity.

#### 4 Discussion

The authors analyzed competitive forces using Internet tools and search engines. The result is an evaluation and proposal of measures in the area of competitiveness in the marketing mix of YX s.r.o. In the product area, more detailed specifications have been identified for each product than in other companies, which is positive. In contrast, most companies offer loyalty programs to customers, unlike the company in question, which allows them to gain customer feedback on their products. In terms of pricing, XY s.r.o. has a competitive advantage by offering most of its products at prices lower than the competition, thus appearing in the leading results in price search engines. In terms of company distribution policy, companies offer not only e-shopping at their own branches, but also delivery and holding services for products purchased. XY s.r.o. does not offer this, but then again, it does offer lower delivery costs. Only one of the companies monitored offers online payments, which can also mean a significant competitive advantage. Advertising is the most used method for communication with customers among the companies monitored. Paid advertising is effected through commodity portals and Internet browsers. In this area, XY s.r.o. placed second; the reason is again lower

pricing than the competition. All the companies monitored use direct marketing in the form of newsletters; XY s.r.o., along with its biggest competitor, sends a reminder of a customer's previous visit via email.

## 5 Conclusion

The aim of this paper was to evaluate the competitive ability of XY s.r.o. under the conditions of the fourth industrial revolution. This company sells accessories for sports activities online. A SWOT analysis of the company was carried out, as was an analysis of competitiveness through Porter's five forces model, and as well, selected financial indicators were used to assess the company's financial performance. The SWOT analysis showed that the most important opportunities of XY s.r.o. are new payment methods for orders, sales promotion events, and customer satisfaction surveys. Weaknesses identified a lack of customer service, as well as a lack of on-line payment options, loyalty programs and major sales promotion events. The analysis of Porter's five forces model revealed that competition in the Internet business environment is currently very high. Businesses are trying to reduce their costs and also win over customers through new forms of cooperation and loyalty programs; in the current globalised marketplace, it is becoming increasingly difficult to attract and retain customers. In the financial area, the company was rated mainly in terms of profitability and liquidity, which are most often used for performance evaluation, and the company has significant fluctuations in these areas.

In addition, a competition analysis was performed using a comparison with the two largest competitors in the marketing mix. Based on this, the company was recommended to use more references and loyalty programs in the product area. The pricing policy of XY s.r.o. can be assessed as positive, which, due to its low level, is attractive to customers, but at the same time it results in a lower margin on the average volume of sales. In the distribution area, the company was recommended to introduce on-line payment and offer delivery services for the goods sold. It would be useful to supplement the company's communication policy with promotion through the placement of keywords on Internet search engines. In conclusion, it can be stated that the situation in terms of competitiveness, gaining a competitive advantage and maintaining it is increasingly difficult for businesses, especially in this fourth industrial revolution. At the same time, it is an opportunity for innovative businesses to adapt to their new environment via their products and a customer-friendly approach.

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