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VIRTUAL ENTERPRISES IN THE MODERN ECONOMY

Summary: This article attempts to approximate the conditions of process of virtualization of business activity in the aspect of virtual enterprises. The theoretical basis of the publication is therefore a reflection on the essence and functioning of virtual enterprises. The virtual enterprises operate in the Internet and all economic processes are carried out electronically. The practical part of the article is based on the results of research. The aim of research was to try to identify the virtual enterprises' perception of society. The method of collection data was personal interview. Respondents participating in the research were asked about their perception of virtual enterprises. The results of the research have provided interesting information and introduced to the process of virtualization of business activity in the aspect of virtual enterprises. In addition, the article presents a fragment of the latest data on the use of information and communication technologies in Polish enterprises and issues related to e-commerce.

Key words: a virtual enterprise, e-enterprise, Internet company.

1. INTRODUCTION

The digital revolution, which has transformed societies into information societies, has created fundamentals of the new economy, namely, e-economy. This term includes the effect of structural changes taking place in business activity due to mass implementation of modern information and communication technologies. Among the main characteristics of the new economy, there can be distinguished [Pastuszek 2005, p. 245-247]:

- knowledge – the contribution of knowledge comprises an essential part of products,
- the power of digital technology,
- moving towards virtual reality – searching for virtual counterparts of existing solutions (e.g. companies, teams, institutions, activities),
- molecularization – moving away from hierarchical systems,

- network integration (work),
- elimination of intermediaries and intermediate functions,
- correlation of economic activities – joining together organizational structures, fields and functions of a calculation, communication and economic type,
- innovation – innovation as a key success factor,
- consumer as a producer – consumers participate in production processes,
- functioning in real time,
- globalisation.

Therefore, in today's economy products and services are increasingly corresponding to buyers' individual needs. Enterprises attach greater importance to the preferences of buyers and faster meet customers' needs. Likewise, changes affect management styles and cultures, where one can observe decentralization of decision-making processes, flattening of organizational structures and generalization of access to certain information [Pawłowska 2002, s. 108-115]. The dynamic development of the information society and the Internet provide chances and provide new opportunities for smaller businesses as well. Unlimited access to necessary resources, the speed and relative ease of acquiring and processing information as well as easier access to a wider group of customers, which the Internet can assure, increase the competitiveness of companies [Goliński 2002, p. 568-573]. In addition, contemporary enterprises have to participate in the exchange of information between particular market participants in order to be able to respond smoothly to the changes in the surrounding world [Chaberek, 2002, p. 51-57].

Information has begun to play an essential role in all business processes. Hence, with rapid development of modern technologies, especially the information and communication ones, companies are moving towards virtualisation of business activity to gain a competitive advantage on the market.

2. THE NATURE AND FUNCTIONING OF VIRTUAL ENTERPRISES

A virtual enterprise is also referred to as an e-enterprise, a virtual company, an electronic enterprise or an Internet company. Virtual enterprises are characterized by the pursuit of the objectives of all business processes by electronic means. Besides, they use multimedia capabilities in the development of people-to-people contacts on a very large scale. The use of electronic documents, that is, the replacement of all paper documents with electronic documents and the use of electronic mail for the circulation of paper documents comprise an important paradigm of an e-enterprise [Jelonek 2008]. "A virtual company is a distinct system of human, material and information resources combined with information technology, which function in the virtual space and perform certain tasks in accordance with the defined objective of actions, using electronic communication media for communication with customers and partners as well as providing inter-

face by means of a website” [Kański 2005, p. 81]. In the contemporary economic reality, companies operating in a traditional way and companies functioning in the virtual reality, exist side by side competing for the favour of customers. It is also common that traditional activities are linked to the performance of virtual operations within one enterprise. Numerous economic operators run their business activities in both spheres and are called partially virtual companies. Then, some business processes are conducted by electronic means and still others are handled traditionally. The Internet network is here an efficient tool needed to carry out a professional activity. Thus, these companies use the advantages of both business forms. Fully virtual enterprises, on the other hand, are companies which perform all business processes by electronic means. They do not have their counterparts in the traditional operating sphere and operate only in the virtual space [Kański 2005, p. 82-84]. The virtual enterprise is then “a way of data circulation and information transfer. Distribution channels, searching for new customers, suppliers, contractors, marketing operations, financial operations – these are the actions the purpose of which remains unchanged and the change affects only the channel that we use and the contact takes place via the well-known Internet and the standard protocols existing there. The virtual company, like no other, does not have to be linked permanently to any location depending on the type of business activity. The choice of location is taken into account only in economic (tax differences or existing economic zones may turn out to be an extra advantage for the entrepreneur) and not practical terms (e.g. the distance to the city)” [Szymanowski, Perkowski 2011, p. 72].

Almost every traditional enterprise can turn into a virtual company. However, the transformation of the traditional enterprise into a virtual one requires investing in information technology and reconstructing of the current orientation of business activity. The virtualization of the company is spread over the period of time and can be divided into the following stages [Szymanowski, Perkowski 2011, p. 57]:

- 1) marketing through the Internet,
- 2) automation of orders and payments,
- 3) communication with employees,
- 4) knowledge management,
- 5) virtual trading,
- 6) virtual business.

The virtualisation of such a company should be divided into three parts: the virtualization of the production sphere, the virtualization of sales processes and the virtualization of organizational structures. All the existing organizational levels and cells should undergo the process of virtualization. All units should have common information channels, data circulation needs to be focused and cause dependency of every existing position with others. Only a company with all of the above-mentioned elements being computerized, can be called a virtual company [Szymanowski, Perkowski 2011, p. 57-58].

Thus, the practical implementation of the virtual enterprise concept would not be possible if it were not for the rapid development of the Internet. The Internet

results from the globalization of information systems. It makes one move away from linear thinking and leads to network approach instead [Lubański 2004, p. 35]. This provides an opportunity to have an insight into the customer characteristics and allows for faster customization. In consequence, the Internet has created a new dimension of economic activity [Rutkowski 2002, p. 17] because:

- it has changed the balance of powers for the benefit of end users who can easily compare available offers on the market and have higher expectations with regard to suppliers and change the purchasing source,
- suppliers may try to develop their relationship with customers by means of comprehensive services and profit share on account of cost reduction.
- it reduces transaction costs and increases availability and speed of information transfer.

The remarkable development of information and communication technologies has thus provided the opportunity to pursue a flexible business policy and to increase the market share while reducing costs [Warner, Witzel 2005, p. 11].

Nowadays, computers with broadband Internet access are commonly applied by companies in their activities. The Internet, as a business tool, is used by enterprises all over the world, in many aspects of business operations like conducting purchase and sale transactions, searching and exchanging information, promotion, searching for prospective partners or obtaining the competitive advantage on the global market. All thanks to specific features of the Internet such as: 24-hour availability, 7 days a week, 365 days a year; lack of bureaucratic constraints; global range; immediate availability of information and the possibility of using search engines¹. There is no doubt about the fact that using the opportunities provided by the Internet brings tangible benefits for both entrepreneurs and customers. Table 1 displays an example set of benefits for both parties.

Taking the advantages indicated in the above table into consideration, the concept of the virtual or partially virtual enterprise has become an attractive form of running business operations. On the one hand, companies use the opportunities that the functioning in the cyberspace entails. On the other hand, it should be admitted that most contemporary entrepreneurs cannot afford to expose their companies to not having access to the Internet as a business tool. This may cause the lack of business development opportunities, loss of customers, loss of the competitive position on the market and other consequences of excluding the enterprise from the process of obtaining and exchanging information that is currently perceived as the strategic business resource. Naturally, not every company has to and is able to become a virtual enterprise. Everything depends on the business line, the specificity of the company operation and the conditions of corporate environment. Nevertheless, tending towards the virtualization of business activities brings tangible advantages to companies and is an inherent phenomenon in the modern economy.

¹ GUS, *Information society in Poland, Statistical test results from years 2012-2016*, GUS, Statistical Office in Szczecin, p.35, <http://stat.gov.pl>, [02.10.2017].

Table 1. The comparison of the advantages of e-commerce for customers and entrepreneurs

Customer	Entrepreneur
<ul style="list-style-type: none"> ■ lower price compared to products available in traditional shops, ■ possibility of placing an order 24 hours a day 7 days a week, ■ convenience of shopping, ■ possibility of familiarising with the offer (no time limits). Access to a much wider range of products and related goods, ■ saving time, ■ possibility of tracking the status of order delivery ■ new opportunities not available in traditional shops, e.g. the possibility of listening to an extract of a composition in an e-shop with CDs or reading a review of a book in an e-library, ■ possibility of continuous control of the amount to be spent in the shop (basket), ■ access to the tools that facilitate searching for and comparing products, ■ creating individual products with the help of the configurator. 	<ul style="list-style-type: none"> ■ access to a large group of prospective customers (Internet users), ■ possibility of offering the product range of the shop on a global scale ■ reduction of costs, savings – avoidance of the chain of intermediaries, no need to maintain retail outlets, warehouses, to employ workers; elimination of some processes characteristic for traditional trade, low cost of reaching a larger number of prospective customers; low cost of advertising and promotion, ■ automation and acceleration of the ordering process reduces time and labour consumption and thus the cost of order processing and handling, ■ eliminating the risk of errors (the risk shall pass to the customer), ■ solutions focused on building the supply chain, ■ more effective procurement planning, ■ building the image of a modern company, ■ supporting the competitiveness of small businesses in relation to large enterprises, ■ possibility of integration with the information system of enterprise management and with IT systems of its suppliers ■ interactivity – thanks to interactivity, on-line trading can provide sellers with so much more information about customers, their needs, taste and preferences than traditional trade.

Source: M. Chojnowski, P. Ładny, *E-commerce market in Poland. The analysis of the advantages of online shops in the era of digital economy*, [at:] Ways of reaching the information society, the current state, development prospects and constraints. Scientific journals of the University of Szczecin No. 651, Economic issues of services No. 68, Scientific Publishers of the University of Szczecin, Szczecin 2011, p. 148.

In addition, it should be highlighted that as part of virtualization of business operations one can talk about virtual companies and virtual organisations. These terms are frequently used interchangeably in the relevant literature. However, it should be mentioned that a virtual enterprise is not a virtual organization, but can be its participant making cooperative associations with other enterprises [Perkowski 2005, p. 42]. More information on this issue is available in the article by U. Słupska “The process of creating a virtual organization in the contemporary business world” [Słupska 2016, p. 141-152].

3. THE USE OF INFORMATION AND COMMUNICATION TECHNOLOGIES IN POLISH ENTERPRISES

The operation and development of companies including the virtual ones undeniably has an impact on the development of modern information and communication technologies. Information and communication technologies (ICT²) are technologies that process, collect and transmit information by electronic means³. As mentioned before, computers with broadband Internet access are nowadays commonly applied by companies in their activities. Additionally, it would seem that nearly every enterprise has its own website. However, it appears that the Polish economic reality does not exactly look like that. Table 2 displays data concerning the use of the selected information and communication technologies in Polish companies. These data constitute a part of results of the study conducted by the Chief Statistical Office.

Table 2. Companies that use selected information and communication technologies

Item	2005	2010	2015	2016
	%			
Computers	92	97	94	95
Access to the Internet including broadband Internet	86	96	93	94
	42	69	92	93
Own website	49	66	65	67
Social media	.	.	22	25

Source: GUS, the statistical yearbook: *Mały Rocznik Statystyczny Polski 2017*, <http://stat.gov.pl> [02.10.2017].

As shown in Table 2, as much as 67% of Polish enterprises had their own websites in 2016. When looking closely at the figures published by the Chief Statistical Office, it can be observed that nearly all large businesses had their own websites whereas the smallest group of companies with a website was reported in small companies. Besides, in terms of using information and telecommunication technologies by enterprises, Poland occupied one of the last positions in rankings out of 28 EU countries in 2015.

Much below the average calculated for EU countries, and in the category of using social media, Poland took the last position in the ranking⁴.

Interesting as it seems to be is also the purpose of the company's website. Table 3 presents the figures concerning this aspect. As it turned out, companies

² ICT are interchangeably referred to as information-telecommunication.

³ GUS, *Information society in Poland, Statistical research tests form 2012-2016*, GUS, Statistical Office in Szczecin, p.64, <http://stat.gov.pl>, [02.10.2017].

⁴ GUS, *Information society in Poland, Statistical test results from years 2012-2016*, GUS, Statistical Office in Szczecin, p. 41-51, <http://stat.gov.pl>, [02.10.2017].

with their own websites mainly used their websites to present their products, catalogues as well as price lists. Yet, other opportunities provided by having one's own website were seized by Polish enterprises to only a slight extent.

Table 3. Purposes of corporate websites

Purpose	2015	2016
Presenting products, catalogues or price lists	60.3	63.6
Providing the users with the possibility of ordering products according to the customer's own design	11.8	12.6
On-line ordering or reservation, e.g. "basket/ trolley"	13.0	13.5
Website personalisation for regular users	6.8	7.6
Information on job vacancies and on-line application	16.5	18.3

Source: GUS, *Information society in Poland, Statistical test results from years 2012-2016*, GUS, Statistical Office in Szczecin, p. 64, <http://stat.gov.pl/>

When discussing the virtualization of business operations and virtual enterprises, it is worth paying attention to e-commerce related aspects, namely, sale and purchase of products (goods and services), commodities and materials via computer networks (websites or EDI messages). It turned out that in 2015 only 12.4% of Polish companies sold their products online including 9.9% using the website. Besides, 34.8% of Polish enterprises purchased by electronic means including 33.5% via websites. The ecommerce results achieved by Polish enterprises revealed that Poland took respectively 21st and 25th place in rankings out of 28 EU states in 2014. Apart from that, these results were much below average values calculated for EU states UE⁵.

4. THE PERCEPTION OF VIRTUAL ENTERPRISES – RESEARCH RESULTS

As part of a small project carried out together with the students⁶ of Kujawy and Pomorze University in Bydgoszcz, a study was conducted and an attempt was made to identify the way the society perceived the virtualization of business operations in the aspect of virtual businesses. The subject of the study were virtual companies. The study was carried out at the turn of May and June 2017. Respondents were individuals from the closest environment of students who, in turn, played the role of professional interviewers conducting personal interviews. Naturally the research team was aware of the fact that the study was

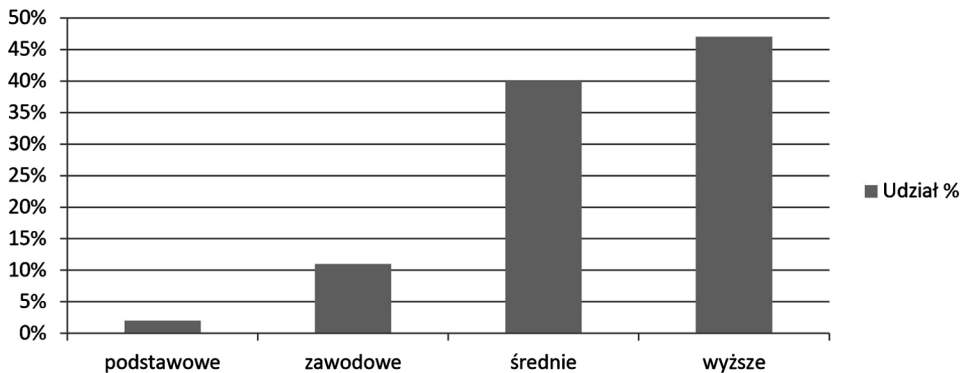
⁵ GUS, *Information society in Poland, Statistical test results from years 2012-2016*, GUS, Statistical Office in Szczecin, p. 76-85, http://stat.gov.pl, [02.10.2017].

⁶ First and second-cycle extramural students of Economics – participants of the additional, non-obligatory scientific project.

not representative and the study results could not be generalized to represent the whole society. Nevertheless, the effort to carry out the study concerning virtual enterprises provided interesting results with regard to this part of economic reality and was an ambitious and fascinating challenge for students as well. Personal interviews were applied as a method of collecting data, where the personal interview questionnaire, developed based on literature studies and accomplished series of lectures, comprised the research tool. The original data obtained in the study were adequately prepared, summarized and developed. There were obtained 212 correctly completed questionnaires. Structure indexes were used as data analysis methods.

Respondents included in the study consisted of 131 women and 81 men. Individuals under the age of 20 accounted for 8% of respondents, people aged between 20 and 40 years accounted for 59% of the subjects, between the age of 40 and 60 years for 30% of respondents, whereas subjects over the age of 60 for 3%. Chart 1 displays the structure of respondents in terms of education.

Chart 1. The structure of the study group in terms of education



Source: author's own development.

The presented data suggested that most respondents were young people at the age between 20 and 40 years and nearly 50% of the subjects had university degrees. The characteristics of the study subjects and the criterion of domicile revealed that 42% of respondents lived in the country, 20% were from towns while 38% from big cities. Additionally, respondents were asked about their professional status. It was reported that 2% of the people involved in the study were retirees / pensioners, 10% were unemployed, 14% ran a business activity and a vast majority, that is, 74% were employed in enterprises or organisations.

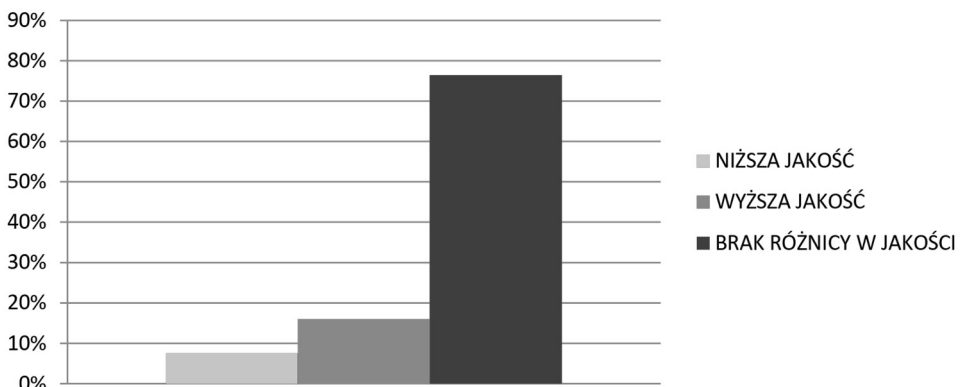
In the substantive part of the questionnaire, respondents were asked whether they had ever come across a virtual or partially virtual company. Among respondents, 147 out of 212 dealt with virtual companies whereas 130 individuals with partially virtual companies. It is noteworthy that 88 respondents, that is ca. 42% admitted coming across both virtual and partially virtual enterprises.

Only 23 subjects (that is ca. 10% of respondents) stated that they had never dealt with such a form of business operations.

Then respondents were asked if they ever used products or services from such companies. As they acknowledged, 126 surveyed persons used products / services of virtual companies whereas 120 subjects used products / services of partially virtual companies, including 68 people (32% of respondents) who admitted using products / services of both fully or partially virtual companies. 34 surveyed persons, namely 16% of respondents stated they had never used any products / services of the investigated group of companies. Moreover, it was observed that among those 34 respondents, 11 individuals admitted coming across such companies but had never used any products / services of such businesses.

Next, subjects were asked about the way they perceived the quality of products / services offered by virtual or partially virtual enterprises. So, they were asked whether, in their opinion, products / services provided by these companies were of a different quality than the ones offered by businesses operating in the traditional way. 34 surveyed individuals claimed that products / services offered by such companies were characterized by better quality, and 16 respondents thought their quality was worse. It was also reported that 162 individuals did not see any difference between the quality of products / services offered by virtual or partially virtual companies and of the ones provided by traditional companies. The structure of responses is shown in Chart 2.

Chart 2. The evaluation of perceiving the quality of products / services offered by virtual or partially virtual companies in comparison with the quality of products / services provided by traditional businesses – percentages



Source: author's own development.

A vast majority of respondents did not notice any difference in the quality of offered products / services.

The subjects were also asked whether they purchased products / services more often from virtual or partially virtual enterprises than from the traditional ones. As the study revealed, 39 surveyed people indicated they purchased in

virtual enterprises, whereas 50 respondents in partially virtual businesses. It is worth mentioning that 13 subjects (ca. 6%) more often bought both in virtual and partially virtual companies than in the traditional ones. Most of respondents, that is 136 individuals accounting for 64% of respondents revealed they purchased in traditional companies more often.

Then, surveyed people were requested to state if they saw any additional advantages of using products / services of virtual or partially virtual enterprises. It should be mentioned that additional advantages were considered to be benefits described in the theoretical part of this article. A vast majority, that is 157 respondents stated they saw such advantages, while 55 individuals did not notice any additional advantages of using products / services of virtual or partially virtual companies. The structure of received responses is displayed in Chart 3.

Chart 3. The structure of responses concerning the perception of additional advantages connected with using products / services offered by virtual or partially virtual companies



Source: author's own development.

In addition, respondents were asked whether in their opinion the use of social media facilitated access to offers provided by virtual or partially virtual enterprises. It was revealed that 149 persons surveyed believed that social media facilitated access to offers of virtual businesses whereas 105 people pointed out that to offers of partially virtual companies. Yet, 75 individuals (35% of respondents) thought that they facilitated access to offers of both virtual and partially virtual companies. Only 33 subjects (16% of respondents) revealed social media did not facilitate access to offers of the investigated group of companies.

5. SUMMARY

In modern socio-economic systems there have been observed incredibly important structural changes taking place both in societies and in business as a result of the massive implementation of information and communication technologies. The robust development of the information society as well as the occurrence of consequences connected with the development of new economic conditions

have led to modern enterprises moving towards the virtualization of business operations. Seizing the opportunities of the company operating not only in the traditional space but also, or even exclusively, in the cyber one, definitely brings tangible benefits to business.

There is no doubt about the fact that contemporary societies also use the opportunities offered by cyberspace and have a positive perception of the virtualization of business operations in the aspect of virtual companies. This can be confirmed by the study results which show that:

- 90% of respondents came across the virtual form of running business operations like virtual or partially virtual enterprises,
- 84% of respondents used the products / services offered by virtual or partially virtual enterprises at least once,
- 76% of persons surveyed did not see any difference in the quality of products / services offered by virtual or partially virtual enterprises in comparison with products / services provided by traditional businesses,
- nevertheless, 64% of subjects admitted purchasing in traditional companies more often,
- 74% of respondents observed additional advantages of using products / services offered by virtual or partially virtual enterprises in comparison with the ones offered by traditional companies,
- 84% of persons surveyed revealed that the use of social media considerably facilitated access to offers provided by virtual or partially virtual businesses.

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PRZEDSIĘBIORSTWA WIRTUALNE WE WSPÓŁCZESNEJ GOSPODARCE

Streszczenie: Celem artykułu jest próba przybliżenia procesu wirtualizacji działalności gospodarczej w aspekcie przedsiębiorstw wirtualnych. Teoretyczne podstawy publikacji stanowią rozważania na temat istoty i funkcjonowania przedsiębiorstw wirtualnych. Przedsiębiorstwa wirtualne funkcjonują w przestrzeni internetowej, a wszystkie procesy gospodarcze realizują drogą elektroniczną. Część praktyczna artykułu oparta jest o wyniki badania. Celem badania była próba identyfikacji postrzegania przez społeczeństwo przedsiębiorstw wirtualnych. Metodą zbierania danych był wywiad osobisty. Respondentów zapytano o postrzeganie przez nich przedsiębiorstw wirtualnych funkcjonujących we współczesnej przestrzeni gospodarczej. Uzyskane w ramach badania wyniki dostarczyły interesujących informacji i przybliżyły proces wirtualizacji działalności gospodarczej w aspekcie wirtualnych przedsiębiorstw. Dodatkowo w artykule zaprezentowano fragment najnowszych danych, ściśle związanych z procesem wirtualizacji przedsiębiorstw, dotyczących wykorzystywania technologii informacyjno-komunikacyjnych w polskich przedsiębiorstwach oraz zagadnień związanych z handlem elektronicznym.

Słowa kluczowe: wirtualne przedsiębiorstwo, e-przedsiębiorstwo, przedsiębiorstwo internetowe.

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