

Wojciech Paprocki

Warsaw School of Economics
Collegium of Management and Finance

Role of Virtual Platform Operators in Transforming Consumer Goods Market

ABSTRACT

Consumer goods market has evolved in recent four decades together with the dissemination of digital technologies and development of *e-commerce*. Practices based on human intelligence that solidified over ages are nowadays being supplemented in omni-channels with automated operations supported with artificial intelligence. The emergence of actors, who by applying disruptive innovations try to assume the role of operators of virtual platforms with dominant position in the global market is of primary importance. The paper discusses various business models in analogue and digital economies and the impact of their dissemination on market changes. It describes the entering of the market and fostering the position of *e-commerce* leaders, with Amazon.com playing an increasingly prominent role. The Author highlights potential effects of a dominant market position of such an operator.

Keywords: E-Commerce, Relationships on the FMCG Market, Digital Technologies, Virtual Platform Operators

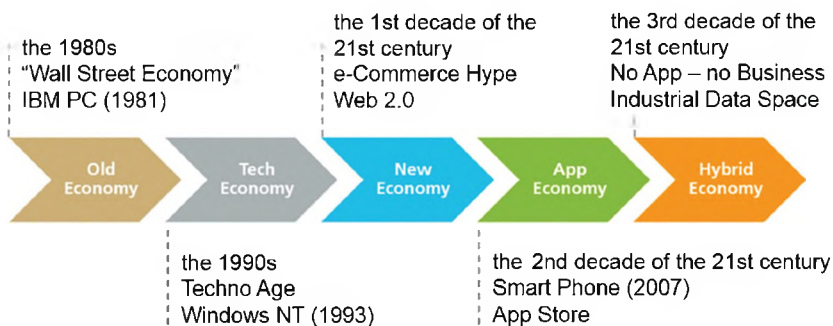
1. Introduction

Microeconomics textbooks have for decades been outlining standard market models. Even if it is not stated explicitly, ideas of the market are described as follows: on the supply side of the market there are **producers of consumer goods**, while on the demand side we have **consumers**. It means the market is understood as a platform of “B2C” (*business to consumer*) relations. In such a simplified description of the market, special role is played by relations between producers and employees, i.e. by the labour market. These relations, although they concern producers as buyers, make reference to a specific situation, in which consumers in order to acquire financial resources necessary to satisfy their needs, act as employees. Textbooks, which present only a simplified model of the market marginally discuss “B2B” (*business to business*) relations, where producers among themselves and in relations with trade organisations act in a dual role of buyers and suppliers.

The selection of content in many textbooks focuses, consciously or not, readers’ attention on relations that develop in the market among producers and consumers. Apparently, as a result of changes in supply chains, observation and analysis of behaviours that shape relations among economic operators merit much more attention than before.

The rate of transformations in the global economy has accelerated due to the introduction and rapid dissemination of new, mainly digital technologies. Five stages of change are depicted in Figure 1.

Figure 1. Five Stages of Change in the Global Economy Since the 1980s



Source: Author's own studies based on M. ten Hompel, *Logistik 4.0. Es geht ums Ganze!*, Fraunhofer IML-BVL, Dortmund-Frankfurt/M 2016, p. 37.

The emergence of the first e-commerce operators by the end of the 20th century marked the development of the digital economy. Since the first decade of the 21st century, with the diffusion of mobile applications, an increasingly bigger group of consumers is giving up any relations with producers and traditional retail organisations. If they purchase (almost) all material and virtual goods that they need through one virtual platform only, they withdraw from other ways of acquiring information about goods, ordering them and making payments to manufacturers and retail outlets. In extreme cases, changes in consumer behaviour generated by operators of virtual platforms active at a global level, reduce “B2C” relations exclusively to relations between these operators and consumers. By doing so, producers of consumer goods and services get more and more often, and in extreme cases fully, covered by “B2B” relations.

This paper explores changes in the market of consumer goods, the role of operators of virtual platforms, as well as consequences of the discussed changes. The Author deploys the following research methods: abstract and deductive approach, model building, and studies of theoretical literature and media reports. Moreover, he uses knowledge acquired as a passive and active participant to meetings of international top management from operators competing for the leading position in global virtual trade market and supply chain services¹.

2. Online Trade and the Idea of Omni-Channels

The period between 70,000 and 30,000 years ago when new ways of thinking and communicating appeared is considered one of the most critical periods in mankind’s development. The period is called the Cognitive Revolution². At that time a man started building the first settlements and initiated an era when individual groups collectively living in a community started to perform different jobs. Food to be consumed by all the community was acquired only by some of its members unlike before when everybody was busy with finding it. The division of tasks forced out the adoption of food distribution rules, which required human intelligence of a higher order than the one accomplished in the age of small nomadic tribes. The next milestone in civilisation advancement, that we may consider the origin of the market, was the birth of an

¹ Author took part, inter alia, in the 3PL Summit in Venlo (NL) on 11–12 October 2016 and 33. Congress of Logistics BVL in Berlin (DE) on 18–20 October 2016.

² Y.N. Harari, *From Animals into Gods. A Brief History of Humankind*, Dom Wydawniczy PWN, Warsaw 2014, p. 34.

exchange economy. Since the amount of food and other articles started to exceed the needs of the local community, surpluses could be exchanged. Exchange of a “good for good” in the Neolithic, i.e. more than 5,000 years ago followed by the exchange of “goods for money” around 4,000 years ago shaped market relations, which remained almost unchanged until the end of the 20th century³. These relations were based on the transfer of ownership of consumer goods in the place where they were produced or sold or at service establishments when the buyer was taking goods over or using services and paying for purchasing them. In the 2nd half of the previous century the market got enriched with a new form, i.e. distance selling but the importance of this distribution channel has always been limited.

When describing the development of transaction channels we also need to remember that in the 2nd half of the 20th century non-cash settlements have started to widespread and replace cash transactions. A bill of exchange has been known to mankind for several thousand years but modern non-cash transactions began only several dozen years ago⁴. Electronic bank transfers and, first and foremost, credit cards and mobile payments opened up new opportunities of concluding commercial transactions leading to the situation when the majority of “B2C” transactions in the 21st century are non-cash based⁵.

E-commerce was launched in the last decade of the 20th century when – together with online “B2B” purchase technology – electronic exchange of information was increasingly more frequently used for concluding contracts for the sale of consumer goods and services, i.e. in the “B2C” area. Until 2015 online commerce, in its primary PC technology and later with the use of mobile technologies (*M-commerce*), could be treated as an additional component that enriches the market and leads to the development of multichannels⁶. At that time, e-commerce was only a supplement to traditional channels⁷. It seemed that consumers will restrict their online purchases to several groups of products. Their list and estimated value of global online sales in 2016 are presented in Table 1.

³ R. Sédillot, *Moral and Immoral History of Money*, Wydawnictwo W.A.B., Warsaw 2002, p. 15.

⁴ Ibidem, pp. 384–387.

⁵ *Ewolucja elektronicznych instrumentów płatniczych stosowanych w transakcjach typu lokalnego*, 14.07.2009, <http://www.bankier.pl/wiadomosc/Ewolucja-elektronicznych-instrumentow-płatniczych-stosowanych-w-transakcjach-typu-lokalnego-1985872.html> (3.11.2016).

⁶ S.K. Mourya, S. Gupta, *E-Commerce*, Alpha Science, Oxford 2015, p. 4.2.

⁷ S. Mohopatra, *E-Commerce Strategy. Text and Cases*, Springer, New York–Heidelberg–Dordrecht–London 2013, p. 175.

Table 1. Top Product Groups in Online Global Sales and Their Estimated Value in 2016

Product group	Market value in 2016 [bn of USD]
Clothes + footwear	223.5 (168.8 + 54.7)
Consumer electronics	149.2
Luxury and hobby goods	113.9
Furniture and interior design	99.0
Physical media	65.4
Household appliances	64.5
Cosmetics and pharmaceuticals	57.9

Sources: Author's own studies based on S. Buss, T. Bohnhoff, K. Werner, *Contextual Commerce: Revolution oder Gimmick? Wie 'Buy-Buttons' den 'eCommerce-Markt' Beeinflussen?*, Statista, Hamburg 2016, p. 2.

Initially, economic operators involved in traditional, “analogue” retail trade perceived only functional advantages of the Internet, such as transaction channels available 365/24/7, i.e. all year round, every day, 24 hours a day⁸.

At the same time, two types of consumer behaviour were observed. Some consumers wanted to grasp the advantages of logistics services, which ensured the delivery of ordered goods by courier services. Others realised the inconvenience involved in the service consisting in the need of the recipient or someone authorised by her/him of being physically present at the moment of the delivery. The latter ones have agreed to co-participate in physical delivery of products. They are ready to receive the parcel from a specified retail outlet or from parcel collecting machines in their neighbourhood. They are also interested in new solutions, e.g. “ready to drop” whereby parcels are delivered right to one's trunk using a virtual key⁹. Since November 2016 Deutsche Post has been offering another innovative solution that facilitates last mile consumer delivery services: any consumer may install a Paketbutler parcel mailbox. Besides the owner, access to the mailbox can be given to the courier through the M2M (*machine to machine*) technology, via which the server of virtual platform operator communicates with the box lock. The exchange of data enables safe and easy delivery of parcels with simultaneous information to the recipient about the status of her/his delivery using appropriate application on a personal mobile device¹⁰.

The development of e-commerce can be described by quantitative changes but it mainly implies qualitative changes. Traditional retail trade has been enriched with

⁸ E. Noren, *The Traditional Retail Business Model*, 28.01.2013, www.thedigitalbusinessmodelguru.com (29.10.2016).

⁹ J. Kugel, *Den digitalen Wandel gestalten: Erfolgsfaktor Führung*, Simens – BVL, Berlin 2016, p. 6.

¹⁰ *Deutsche Telekom macht Paketbutler bundesweit verfügbar*, My Logistics 2016, www.mylogistics.net (3.11.2016).

new types of consumer service when it comes to the transaction channel, as well as to physical distribution of goods, goods in electronic form, and services. The process is about building omni-channels that are used by manufacturers to ensure possibly the best market penetration. We need to stress that e-commerce development within the scope and rate observed in the 2nd decade of the 21st century would not have been possible without innovative digital technology-based solutions, which helped develop new business models. Progress is driven by “obsess over customer” attitude. Consumer goods market leaders remain focused on customers who expect permanent availability, fast delivery and vast selection of goods at possibly the lowest prices¹¹.

Typically of the 21st century, technological solutions linked with the use of automated robots capable of self-controlling their actions with artificial intelligence have got diffused in “B2C” and “B2B” areas. Digital economy is still at its initial stages. We already know better solutions limited to the application of “narrow” artificial intelligence that service only selected stages of business activity¹². Another stage in the future may consist in making man-made machines capable of independently shaping the development of artificial intelligence. The possibility of such singularity in civilisation development was mentioned by J. von Neumann over 60 years ago¹³. In this next stage, a man may lose control over the development of machines. The threat was pointed out in 2014 by, inter alia, S. Hawking who stated that treating technology development leading to the creation of mature artificial intelligence as “*science fiction*” may be “potentially the biggest threat in the history of mankind”¹⁴.

If omni-channels are understood as the fields of economic activity where in the subsequent years new and the most technologically advanced solutions will be implemented in the fastest way, exchange and production of material and virtual goods, as well as available services may become the main areas where a man will lose control over what happens to her/him and in her/his environment. Then principles formulated by human intelligence several thousand years ago will become obsolete. Individual ownership and rationality of equivalent exchange will not be valid any more. The right of an individual to protect her/his intimacy will also be waived. Consumers within omni-channels will become “defenceless nudists” in intellectual and physical terms surrounded with machines capable to proceed with their self-development.

¹¹ R. Peticucci, *Das europäische Logistiknetzwerk: ein Hub für Innovationen*, Amazon – BVL, Berlin 2016, p. 4.

¹² M. Ford, *Rise of the Robots. Technology and the Threat of a Jobless Future*, Basic Books, Philadelphia 2015, p. 229.

¹³ *Ibidem*, p. 233.

¹⁴ S. Hawking, S. Russell, M. Tagmark, F. Wilczek, S. Hawking: *Transcendence Looks at the Implications of Artificial Intelligence – But Are We Taking AI Seriously Enough?*, The Interdependent 1.04.2014, quoted after M. Ford, *Rise...*, op.cit., p. 233.

3. Virtual Platform Operator

Economic operators in analogue economy were constantly working on developing and implementing new, innovative solutions that would give them advantage over their competitors. However, with the dissemination of computer technology and big players emerging in the retail sector they could use solutions based on previously known ideas, which were not mature enough to implement them successfully in the market.

At the turn of the 20th and 21st century some market participants started to successfully apply new aggressive business models side by side with traditional ones. Their list and descriptions are included in Table 2.

Observing changes in the global market of consumer goods since the early second decade of the 21st century allows us to conclude that they are so dynamic that any attempt to describe market development is doomed to fail. Referring to our knowledge about the market of 2016 we may state that one of the most important reflections of changes consists in the emergence of an economic entity who wins competitive advantages over her/his competitors, as well as existing and potential suppliers, by acquiring characteristics of virtual platform operators.

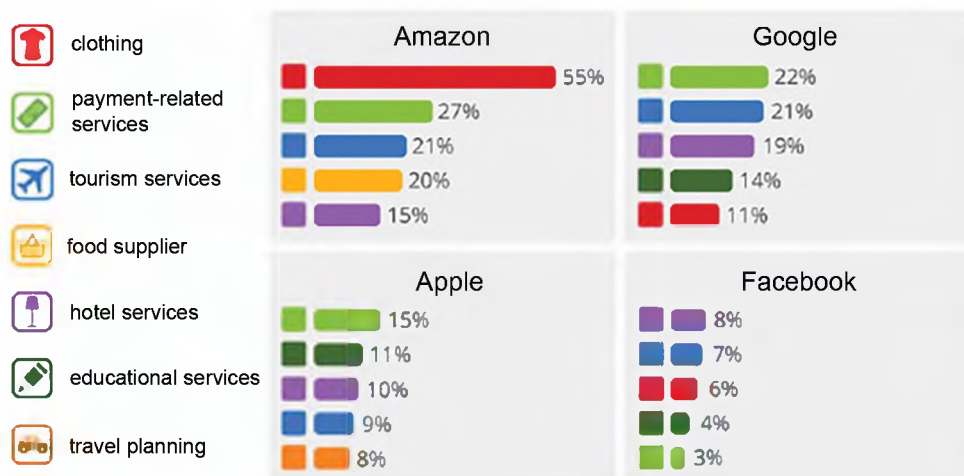
Amazon.com is an American company operating since 1994. Market analysts assess that Amazon is an innovative enterprise active in three areas as a: *Retailer, Service Provider, and Hardware Innovator*¹⁵. Developments observed in the course of recent twenty years let us conclude that Amazon.com is becoming an economic operator whose scale and business methods go beyond models that we previously knew and were able to describe. An important breakthrough in the operations of Amazon.com as the Internet bookshop was the introduction of Kindle, a device designed as a digital text reader of virtual messages. The reader is a part of *hardware*, which together with messages and data transmission technology considered as *software* have created a handy substitute of a hard copy book that “has been admired for the past five hundred years”¹⁶. Market expansion strategy of Amazon.com has brought spectacular success if we compare their market position with that of other leaders of digital economy not only in North America but also in Western Europe. Questionnaire based studies conducted in 2016 in Germany show that Amazon.com

¹⁵ E. Noren, *Analysis of Amazon Business Model*, 8.07.2013, www.thedigitalbusinessmodelguru.com (29.10.2016).

¹⁶ R.L. Brandt, *One Click. Jeff Bezos and the Rise of Amazon.com*, Helion, Gliwice 2013, p. 131.

was considered much more attractive than Google, Apple, and Facebook, which is illustrated in Figure 2.

Figure 2. Attractiveness of Potential E-Commerce Offer and Other Virtual Services of Digital Economy Leaders (as at the 4th Quarter of 2016 in the German Market)



Source: M. Brandt, *Amazon Fashion – warum nicht?*, Statista, Hamburg 2016, <https://de.statista.com> (7.11.2016).

It is legitimate to consider Amazon.com a virtual platform operator, who uses and creatively develops digital technologies by implementing disruptive innovations. On the 26 October 2016 Amazon.com, as the first retail operator ever, started to receive voice communication technology messages from its customers disregarding the specificity of customer's language. It is an initial stage of the functionality presently limited to the understanding of communications transmitted by a person speaking English or German. The development of new Echo devices and new software has enabled the application of technologies, which help develop and make available a universal solution that could guarantee human to machine communication in any language¹⁷.

“Echo” is a system of amplifiers and microphones, offered by Amazon.com to its customers to communicate with technological devices. Following years of using perforated cards, keyboards, joysticks or touchscreens, for the first time consumers have received a particularly valuable solution. A man may interactively communicate with the machine (*human to machine to human communication*) without even looking at it. It means a man (almost) not being distracted from activities that absorb her/his

¹⁷ M. Skilton, *Bilding Digital Ecosystem Architectures. A Guide to Enterprise Architecting Digital Technologies in the Digital Enterprise*, Palgrave MacMillian, New York 2016, p. 52.

vision may communicate with the machine by speaking out messages and listening to messages generated by the machine¹⁸.

Easy communication with the machine is the key to special attractiveness of Amazon.com offer as assessed by the consumers, which allows winning more new customers and increasing sales¹⁹. This is how Amazon.com has been becoming an entity representing the characteristics of a virtual platform operator, who, on the one hand, fosters his relations with consumers within “B2C” sphere and, on the other hand, eliminates producers from the “B2C” area. By using digital technologies the company is able to register, process, and create new data in huge volumes incomparable to the volume of data collected by the biggest retail chains who use traditional customer service technologies.

4. Changes in the Role of Virtual Platform Operator in the Market

“B2C” relations in the traditional market may be considered the starting point for the market entry of a virtual platform operator. Figure 3 depicts the development throughout three stages of market evolution. Stage one, within which producers remain in direct contact with consumers and there is no virtual platform operator in the market. In the second, transitory stage, the operator emerges and starts blocking the weakest producers in the market. By depriving them of direct contacts with the consumers, the operator boils down the producer’s role to a “B2B” supplier. Within the third target stage, the operator controls the market, or at least its fundamental segment of consumer goods. He becomes a monopolist in the market of consumer goods vis-à-vis the consumers, and an independent supplier in “B2C” sphere. Simultaneously, he becomes a monopolist in the market of such goods vis-à-vis producers, operating also as purchasers in the “B2B” area.

In digital economy, the role of a virtual platform operator as a “B2C” monopolist may imply a series of positive effects at a micro (i.e. for consumers) or global scale (for the world economy). By using state-of-the-art digital technologies a monopolist may benefit from the economies of scale, which will allow him to reduce consumer goods prices but at the same time to produce high profits. Obviously, the monopolist position of such a platform in the market should be understood in abstract terms.

¹⁸ E. Kühl, *Amazon Echo. Alexa. Ich bin dein Vater*, Die Zeit, www.zeit.de (28.10.2016).

¹⁹ Ch. Roe, *Developing a Culture of Disruption – from the Balance Sheet to the Shopfloor*, 3PL Summit & Chief Supply Chain Officer Forum, Amazon, Venlo 2016, p. 3.

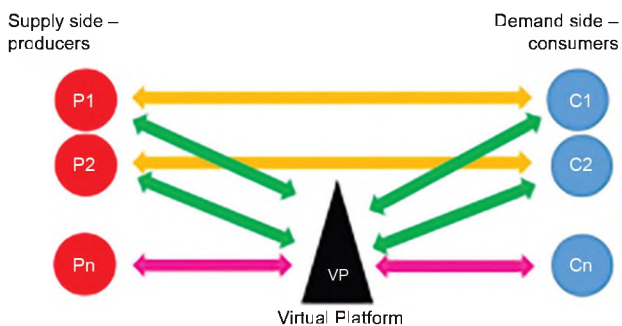
In reality, in the perspective of the forthcoming years, no-one will ever accumulate such advantage in the market.

Figure 3. Two Types of Market Relations: Direct “Producers-Consumers” Relations and “Producers – Virtual Platform Operator-Consumers” Relations

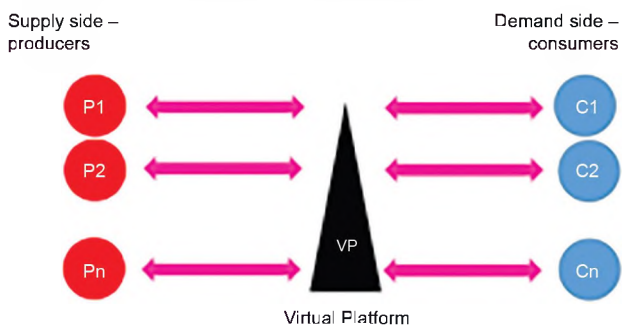
Stage I – Market with classic producer-consumer relations



Stage II – Transition period; a virtual platform enters the market trying to concentrate relations between two groups and restricting their direct relations



Stage III – Market dominated with a virtual platform after direct relations between producers and consumers have been blocked



Source: Author's own studies.

Changes in the “B2B” segment should be assessed differently. Classical understanding of the role of a monopsonist in the market – and limitations in the operations of an economic entity that acts as such – seem generally insufficient to analyse changes in digital economy²⁰.

Operators of virtual platforms (including Amazon.com) build their business model as if they totally ignored limitations connected with resources available in the global market. Vis-à-vis their customers, i.e. consumers, these operators create an illusion that “they can supply any amount of ordered goods”. In practice, the offer gets manipulated. When goods ordered by a consumer are unavailable, operator offers other goods expected to make an impression of a perfect substitute.

However, an important issue is the pressure of virtual platform operators on manufacturers. An operator who is the sole recipient of goods starts dictating conditions, which the manufacturer may approve or withdraw from cooperation (*take it or leave it situation*).

Such relations at the “B2B” level may lead to uncontrolled impact of a virtual platform operator on the structure and geographical profile of production of specific products or groups thereof. A brand promoted by manufacturers, also its value, with the strengthening of the role of virtual platform operators are losing in importance, which consequently leads to real restriction of the freedom to choose products, as well as the efficiency and effectiveness of manufacturer's operations.

5. Conclusion

The above presented considerations suggest that digital economy dramatically changes the role of manufacturers and consumers if a virtual platform operator enters the market and fosters his position with huge dynamics. The perspective of consumer goods market monopolisation becomes real when we take account of already visible effects of Amazon.com expansion in the USA, Canada, and in Western Europe. Similar transformations are also observed in China, where the role of a virtual platform operator has been taken over by Alibaba.

New entities and new business models require further, more in-depth analysis. Attention should focus on the issue whether human intelligence will be dominated by artificial intelligence while shaping market relations. We should screen the theory of economics in seeking suggestions as to if and to what extent digital economy needs

²⁰ See D. Begg, G. Vernasca et al., *Microeconomics*, PWE, Warsaw 2014, pp. 390–391 and 394.

a market regulatory authority. Another question to be considered is whether in the global market any regulatory authority could be effective at all.

References

Books

1. Begg D., Vernasca G. et al., *Microeconomics*, PWE, Warsaw 2014.
2. Brandt R.L., *One Click. Jeff Bezos and the Rise of Amazon.com*, Helion, Gliwice 2013.
3. Buss S., Bohnhoff T., Werner K., *Contextual Commerce: Revolution oder Gimmick? Wie 'Buy-Buttons' den 'eCommerce-Markt' Beeinflussen?*, Statista, Hamburg 2016.
4. Ford M., *Rise of the Robots. Technology and the Threat of a Jobless Future*, Basic Books, Philadelphia 2015.
5. Harari Y.N., *From Animals into Gods. A Brief History of Humankind*, Dom Wydawniczy PWN, Warsaw 2014.
6. Mohopartra S., *E-Commerce Strategy. Text and Cases*, Springer, New York–Heidelberg–Dordrecht–London 2013.
7. Mourya K., Gupta S., *E-Commerce*, Alpha Science, Oxford 2015.
8. Sédillot R., *Moral and Immoral History of Money*, Wydawnictwo W.A.B., Warsaw 2002.
9. Skilton M., *Bilding Digital Ecosystem Architectures. A Guide to Enterprise Architecting Digital Technologies in the Digital Enterprise*, Palgrave MacMillian, New York 2016.

Papers in journals and occasional publications

1. Buss S., Bohnhoff T., Werner K., *Contextual commerce: Revolution oder Gimmick? Wie 'Buy-Buttons' den 'eCommerce-Markt' beeinflussen?*, Statista, Hamburg 2016.
2. Hawking S., Russell S., Tagmark M., Wilczek, F., *Hawking S.: Transcendence Looks at the Implications of Artificial Intelligence – But Are We Taking AI Seriously Enough?*, The Interdependent 1.04.2014.
3. ten Hompel M., *Logistik 4.0. Es geht ums Ganze!*, Fraunhofer IML-BVL, Dortmund–Frankfurt/M 2016.
4. Kugel J., *Den digitalen Wandel gestalten: Erfolgsfaktor Führung*, Simens – BVL, Berlin 2016.
5. Peticucci R., *Das europäische Logistiknetzwerk: ein Hub für Innovationen*, Amazon – BVL, Berlin 2016.
6. Roe Ch., *Developing a Culture of Disruption – from the Balance Sheet to the Shopfloor*, 3PL Summit & Chief Supply Chain Officer Forum, Amazon, Venlo 2016.

Internet content

1. Brandt M., *Amazon Fashion – warum nicht?*, Statista, Hamburg 2016, <https://de.statista.com> (7.11.2016).
2. *Deutsche Telekom macht Paketbutler bundesweit verfügbar*, My Logistics 2016, www.mylogistics.net (3.11.2016).
3. *Ewolucja elektronicznych instrumentów płatniczych stosowanych w transakcjach typu lokalnego*, 14.07.2009, <http://www.bankier.pl/wiadomosc/Ewolucja-elektronicznych-instrumentow-platniczych-stosowanych-w-transakcjach-typu-lokalnego-1985872.html> (3.11.2016).
4. Kühl E., *Amazon Echo. Alexa. Ich bin dein Vater*, Die Zeit, www.zeit.de (28.10.2016).
5. Noren E., *Analysis of Amazon Business Model*, 8.07.2013, www.thedigitalbusinessmodelguru.com (29.10.2016).
6. Noren E., *The Traditional Retail Business Model*, 28.01.2013, www.thedigitalbusinessmodelguru.com (29.10.2016).