The Impact of New Technology and Innovation on the Courier & Local Delivery Services

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Introduction:

Relevant topic: Within the past decade the courier services market has started to play an increasingly important role in the global economy and it has turned into a mediatory unit supporting economic activities in other sectors and as well as contributing the greater efficiency and integrity of the economy. In this sense, the globalization of markets, the development of technologies, the socio-economic changes, the more complex consumers' behavior and increasing demands are razing up the need of reconsideration of business models in terms of trade and customer services by courier companies. That is also relevant to the last stage of the supply and demand chain, precisely the supply of goods to the end-user.

The market of postal and courier services has undergone some significant changes concerning the deregulation of European markets, which has resulted in increased competition. The changes in industrial and commercial activities, including the active online trading and purchasing goods from remote locations, enhanced the role of courier companies within the supply chain in terms of guaranteed quality and on time service for each customer. This has brought them to the challenge of being proactive and adaptive to the new technologies and innovations. The topic of the current publication focuses on that relevant matter – the impact of technology and innovations on the quality and efficiency of the courier services, as well as the added value from the additional services which they offer.

Increasing customer requirements in terms of speed and convenience of delivery of the requested service and achieving an individual approach, demand the introduction of new business models. Services of a higher added value are increasingly dependent on technological developments and serve as a basis for the implementation of the overall courier service.

The competition of the European market of postal services, including the courier services, according to the EC[1] has increased after the end of the long liberalization process, whereby any private company can already freely operate in the presence of a universal or non-universal postal service license. Customers can choose a postal service provider that fully meet all their requirement in terms of price, quality, speed, coverage, additional services offered. Similar is the situation on the Bulgarian market[2] where during the last years there is a steady upward trend of the number of postal service providers.

The fast development of the postal and courier services sector, the high customer requirements and constantly increasing competition are sufficient reasons for active search for new technologies and innovations by courier service providers, aiming to adapt and use them within the service delivery process. They are the basis of the competitive advantage, predominantly owned by the large companies. Currently, technology and innovation are at a different stage of use and adaptation. Some of these technologies are: Internet of things, Big Data, electronic payment, drones, robots, RFID, Personal Digital Assistants (PDA), 3D printing, electric and hybrid vehicles' funds.

Thesis:

The impact of new technologies on courier & local delivery services is a positive one and adds a new value, although there are certain groups of users experiencing difficulties in using technology due to their social status or age, which limits the proven effect to their attitudes and satisfaction.

Body text:

Courier services are within the scope of non-universal postal services (NPS) and include delivery of documents and small packages (up to 2 kg) to individual or business customers and other various organizations. The process of providing

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[1] http://ec.europa.eu/competition/general/liberalisation_en.html

[2] Komisiya za regulirane na suobshteniyata, „Godishen doklad za 2015 godina. Analiz na poshtenskite uslugi“, 2016

these services consists of communication and complex logistics for collecting the shipments (documents and packages), sorting, transportation and delivery. Customers' individual requirements and needs make the process even more complex. The effectiveness of courier services is entirely dependent on the time factor and the level of organization and management of the whole process. Therefore, the aim of the current publication is to show that new achievements in technology and innovation, including the development of electronic technologies adapted to the process of providing courier services, are the basis for achieving higher delivery speed, higher quality and more competitive prices of these services.

The official definitions of "courier service" on which the current publication is based are:

According to Services Sectoral Classification List of the World Trade Organization[3]: "Courier services include: 1. multimodal courier services, performed by a courier, consisting of receiving, carrying and delivering letters, parcels and packages in the country and abroad by means of one or more of transport modes; 2 other courier services of goods not classified elsewhere, e.g. transport or transfer of services without storage."

According to the Law on Postal Services[4], the courier service is a postal service with added value above the universal postal service, guaranteeing greater speed and reliability, as well as the possibility of integrating additional value-added services such as: collecting from the sender's address; delivery until a specified date; opportunity for changing the destination and the receiver while the parcel is in motion; notifying the sender for the arrival of the shipment; supervised tracing and tracking of the shipments; personalized consumer services.

According to their type courier service providers can be categorized into several segments: B2C (Business to Consumer) B2B (Business to Business) and C2C (Customer to Customer), C2B (Consumer to Business). The widespread distribution of electronic commerce (e-commerce)[5] has become a major driver of the growing demand for courier service in the B2C segment, shifting the focus of large express operators from the development of added B2B services[6]. Furthermore, usually in this sector a shipment may be a subject of several courier deliveries due to the possibility consumers to return/replace the already purchased goods, and this service is also paid[7].

According to the Eurostat data[8] in the EU- 28 for the period 2008 - 2015, the number of companies selling online increased by 7% and the reported growth in online trade was 4%. The share of online trade rises from 13% in 2008 to 20% in 2015, i.e. one in every five companies in the EU-28 is trading online. For the period considered, the turnover of online trade also recorded a relatively stable growth of 12% to 16%.

Figure 1. Online trading and realized working capital for the period 2008-2015 in the EU-28

Source: Eurostat

The reported growth in online commerce is one of the reasons why the market analysis of the development of postal and particularly courier services, shows impressive results on global, European and even national level.

According to the data of the market analysis of Technavio[9] the Compound Annual Growth Rate

[3] World Trade Organization, 1991. Services Sectoral Classification List, Mtn.Gns/W/120

[4] Zakon za poshtenskite uslugi, v sila ot 01.08.2000 g., izm. DV. br.95 ot 29.11.2016

[5] The definition of "e-commerce" used by Eurostat is "the sale or purchase of goods or services, whether between businesses, households, private individuals or private organizations, via electronic transactions through the Internet or other mediating networks (online communications)." http://ec.europa.eu/eurostat/statistics-explained/index.php/Glossary:E-commerce

[6] European Commission, Report of the Commission to the European Parliament and the Council on the implementation of the Postal Services Directive (Directive 97/67 / EC, as amended by Directives 2002/39 / EC and 2008/6 / EC), Brussels, 17.11.2015, EC, SWD(2015) 207 final, http://eur-lex.europa.eu/legal-content/BG/TXT/?uri=CELEX%3A52015DC0568#footnote27

[7] Technavio, 2016. Global Courier Express and Parcel Market 2016-2020

[8] http://ec.europa.eu/eurostat/statistics-explained/index.php/E-commerce_statistics

[9] Technavio, 2016. Global Courier Express and Parcel Market 2016-2020

(CAGR) on the world market for courier services, parcels and express deliveries for the period 2016-2020 will be 6%, compared to the rate of growth of express services in Europe, which for the period 2017-2021 is expected to increase by about 4%.

In Bulgaria, according to the Communications Regulation Commission[10], by 31 December 2015, the number of registered postal operators in the NPS is 145 and the revenues from courier services up to 35 kg, hybrid mail, direct mail advertising, cash on delivery (COD) and delivery notices, is amounted to BGN 240 million. Courier services generated revenues of BGN 216 million in 2015, with an increase of 4% compared to the previous year. Regarding the total number of accepted, shipped and delivered courier items, the growth is 28% compared to 2014.

According to Technavio's[11] worldwide data analysis, the world-class B2C segment is among the fastest growing in online commerce and courier services. For the period 2016-2020, this segment of the courier, parcel and express delivery market is expected to grow by 11%. The higher demand for courier services in this segment in the recent years has forced reconsideration of the business model by courier companies due to the reduced weight of a single delivery and the increased number of customers and delivery requests in different locations. Along with the new challenges, the courier companies are facing a higher demand for express delivery services within a couple of days at a competitive price, as well as providing additional services to help the customer. Along with the new challenges, the courier companies are facing a higher demand for express delivery services within a couple of days at a competitive price, as well as providing additional services to facilitate the customer. This increases the need of greater infrastructure, human resources, higher speed and flexibility of the delivery, lower prices of services in terms of intense competition. In order to achieve efficiency and rationalization in the business process, it is necessary to introduce automation and develop suitable conditions for purposeful and repetitive activities which can guarantee high speed, reduced risk of error, predominance of the mechanical over the manual labor, flexibility in decision making. Technology and IT solutions are the basis of automating the process and providing an opportunity to respond adequately to the customers' needs in the digital world.

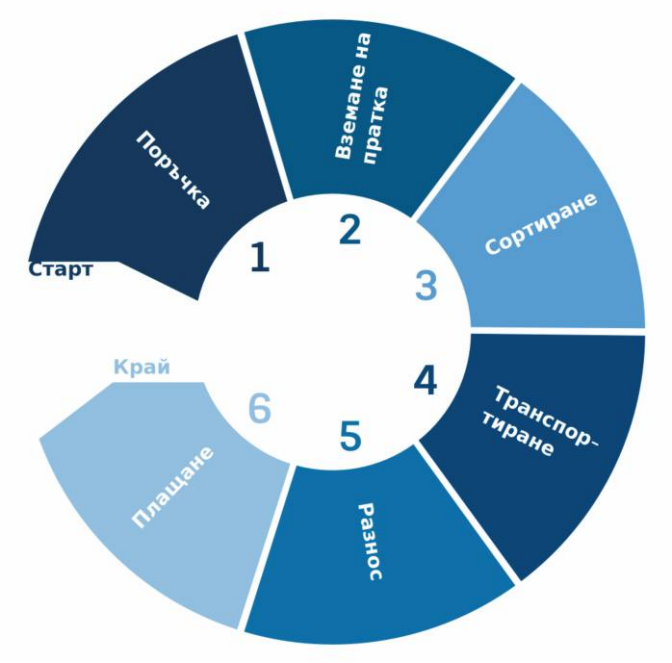
Figure 2. The driving force of technology

Source: Personal study based on existing analysis

[10] Komisiya za regulirane na suobshteniyata, „Godishen doklad za 2015 godina. Analiz na poshtenskite uslugi“, 2016

[11] Technavio, 2016. Global Courier Express and Parcel Market 2016-2020

Figure 3. Business cycle of courier services



Source: Personal research, software: Vizzlo

The main steps in the business cycle of courier services are: receiving a request for an order, picking a shipment from a customer, sorting, transporting to a reloading station, delivery and payment for the service. They require very precise coordination to perform efficient and quality customer service. Companies offering courier services face everyday problems in providing efficient delivery management, especially in cases of inability to deliver (due to the absence of the recipient), traffic, isolated and scattered customers' addresses, sorting of different types and non-standard shipments. In addition, high competition and constantly increasing customers' demands determine the need to offer some additional value-added services such as sorting, packing, access to an information system of shipments' management, mobile tracking applications, SMS and email alerts, a possibility of receiving shipments from certain locations. Every successful courier service provider must develop a business model to meet not only the general customer expectations but also all the above listed steps in the delivery chain. There should be provided an easy and convenient way for customers to request a service, receive a shipment and pay, as well as achieve sufficient speed and flexibility in sorting, transporting and delivering. Various technologies such as GPS tracking systems, bar codes, radio frequency identification, information tracking system, etc. are applied to serve these purposes.

The efficiency of adapting new technologies lies in the reduced time for carrying out the operations, the need of less human resources, financial costs in the supporting activities of the courier service – collection, transportation, packing, sorting, delivery, payment.

New technologies and innovations concerning the stages represented in the courier services process

Management of the overall courier services

The overall management of logistics services over recent years is based on a widespread use of computers, software with embedded algorithms are laying the basis of optimizing and automating the courier service process. The courier business is actively using technology innovations such as Internet of things, big data analytics, Cloud space and services, and the so-called IT self-learning systems[12]. The adaptation of these innovations to some extent affects the efficiency of courier services. They are in the core of digitizing the logistics business process and creating a completely new level of interaction between customers and providers.

Internet of Things[13] is a technology that is widely used in courier services. It is fundamental in achieving an integrated process for connecting data, people, processes, techniques and other physical objects to create an intelligent environment with a coherent digital and physical environment. This is an innovation which enables data exchange between objects and subjects that so far were not able to be digitally bound. Internet of Things is a technology that allows you to monitor the location and status of shipments, people, assets, to automate and coordinate the process in its individual steps, and to improve quality and predictability. This affects the effectiveness of communicating with users, storing, transporting, and managing the process. It is performed by various sensors, transducers, emitting pulses and others.

[12] WIK-Consult Report, 2016. Technology and change in postal services – impacts on consumers

[13] DHL Trend Research, Cisco Consulting Services, 2015. A collaborative report „Internet of Things In Logistics". Available from: http://www.dhl.com/content/dam/Local_Images/g0/New_aboutus/innovation/DHLTrendReport_Internet_of_things.pdf

"Big Data" analysis is at the heart of optimizing the courier process and reducing costs, quick and effective decision making, creating new, entirely demand-driven additional services and products. This technology automatically analyzes a huge amount of data accumulated across the whole delivery chain, looking for different correlations and hidden links to improve the analysis and speed of decisions taken on specific issues.

Cloud spaces and services provide fast access to a particular service without the need for IT infrastructure or maintenance costs.

IT self-developing systems[14] are systems, algorithms, hardware which develop a new form of automated system that processes data and optimizes the logistics process without a human intervention based on self-improvement. Through this system and together with other innovative technologies, the most effective solutions could be made in all steps of the logistics process.

Sending and receiving a request for a courier service

The basic technologies that facilitate and optimize the sending and receiving of a courier service request are the ERP systems, the software of customer's address identification via GPS coordinates, the software tracking online coordinates send from phone/ tablet/ computer and mobile applications. Additionally, an innovation in terms of flexibility of receiving/sending shipments is the ability to use automated key positions with increased traffic and workload.

The ERP system, integrated in the courier business, automates the process of receiving requests, creating a bill of lading number, sending reminders (via email or SMS) to customers, and integrating the information into other transport and tracking systems. ERP systems are part of the technologies that are a prerequisite for improving the efficiency and effectiveness, and directly affect time factor, human resources, accessibility and financial resources. The ERP systems reduce the chance of technical error by automatically transferring the data to the specified systems.

Tracking systems and GPS platforms are key technologies in optimizing request and transportation processes. They allow real time tracking of the vehicle in the closest proximity to the requested address, in order to optimize the visiting time of the client's address, as well as to recalculate the speed, to set the correct GPS coordinates of the customer's address and to determine the fastest and shortest route, that is best matching the other requests of the relevant courier. This technology optimizes the time and resources needed to complete the delivery request, it contributes the accurate informing of the client concerning the execution of the order and tracking its progress in real time.

The key positions automatic machines are yet another new technology which gives the opportunity to access courier services throughout the day. Customers can easily leave or receive shipments at a convenient time and day. This reduces the cost of human resources, optimizes the cost of transportation and improves customers' access to the service during out-of-work hours. The costs related to the inability to find a customer at his address are reduced to 0. In comparison, in the cases when a customer is visited several times at an address, the costs of reprogramming and unsuccessful delivery are double[15].

Sorting practices

Optimization of the sorting process.

Along with the introduction of IT technologies, sorting of letters and packages can be done not only manually, but semi-automatic or fully automatic. Depending on the size of the company and the number of services it provides, the sorting of mail and shipments via the available technologies can be done both individually or with the help of multi-sorter machines. Hand work is minimized and is mostly used for non-standard packages. The automatic sorting of mail and shipments influences the sorting speed, accurately determines packages' size, minimizes the manual labor, and the need of human resources and leads to optimized ordering of shipments in the transport vehicles.

Barcode technology and scanners are innovations that are already being used by courier companies for identification and sorting of individual deliveries and they successfully replace the handwriting and manual sorting of shipments.

[14] DHL Trend Research, 2016, Logistics Trend Radar, Available from: http://www.dhl.com/content/dam/downloads/g0/about_us/logistics_insights/dhl_logistics_trend_radar_2016.pdf

[15] TPR, Department of Transport and Regional Economic, University of Antwerp, 2015. Cross-Border Parcel Logistics

The barcode technology has a unique code that helps to identify the shipment with a scanning system. As technology advances, the barcode system devolves in various dimensions, allowing the introduction of additional information. This leads to automatization of the labeling process and sorting, it helps tracking the shipment, reduces manual labor costs and considerably increases the speed of the performed steps. A downside of the barcode technology is the need to place the shipment with the bar code to the scanning system, which in some cases requires the intervention of human labor, but in a minimum quantity. The barcode technology, as well as the necessary hardware for its use – printers, scanners, are at a price that quickly returns the costs from the increased speed and reduced manual labor. This technology can be used as a basis for upgrading and delivering new value-added services for sorting and tracking the shipment in real time.

Radio-frequency Identification (RFID)[16] is an innovative and more expensive technology for reading or identifying data via radio waves. It could replace the barcode technology, as the underlying difference between them is that RFID allows data to be read at a distance through the interaction of an antenna, reader and server. This reduces to a minimum the chance of human error and it is not necessary to have a close contact between the consignment and the reader, thus automatically are processed a huge number of shipments for a short time.

The Robotics[17] is a technology that is being developed daily, although its active use is expected in about 5 years, according to DHL's Logistics Radar. In logistics, this innovation is mainly adapted to reduce manual labor in warehouses and sorting centers by creating an environment in which robots interact with people to perform repetitive actions. The technology can save time and human resources in terms of transferring, assembling, packing, loading, monitoring, inventory management and other type of operations. Active work is being done to fully adapt robotics to the activity of the courier process. The future development of the technology is dedicated to the complete automation of the processes and work in the sorting centers and deliveries.

Payment

Optimizing the process of payment and receiving the deliveries is also related to the development of technology. Increased operational control and delivery efficiency is guaranteed with the introduction of the digital signature (e-signature) technology which reduces the risk of unauthorized delivery. The efficiency in adaptation of the technology is based on eliminating paper carriers as proof of delivery, their processing, archiving and transportation. The electronic signing is an easy and fast approach with no negative effect on the consumers' attitudes. The data processing is automatic, the information is directed and archived for seconds with a specialized software for various needs. The risk of losing the proof of delivery or accepted order is reduced to a minimum.

The different types of non-cash payment and online billing are technologies that affect the speed of service, significantly increase customer's convenience, contribute the additional services of added value. The cash payment requires much more time to finalize the delivery process.

Transportation and delivery

When carrying out the step "delivery of shipment" from the process of courier services human labor is still actively applied. Technologies such as the delivery management and optimization software is used in almost all courier companies. The real-time courier and shipment tracking applications and the widespread introduction of the specialized software and GPS systems not only simplify but also influence the efficiency of planning and performing the service.

The innovative technologies for transportation of courier shipments such as electric and hybrid vehicles, drones, self-propelled vehicles are under development and adaptation. Major companies such as UPS, FedEx, DHL and others have already launched programs to replace the existing automobile park with electric and hybrid vehicles. Numerous studies have demonstrated the impact of new technologies on conventional vehicles in terms of reducing fuel consumption, carbon dioxide emissions and maintenance costs. Although the value of electric and hybrid vehicles is higher than

[16] Radio-frequency Identification (RFID), see: Harrop, P., 2005. RFID in the Postal and Courier service http://www.idtechex.com/research/articles/rfid_in_the_postal_and_courier_service_00000338.asp

[17] DHL Trend Research, 2016, Robotics In Logistics. Available from: http://www.dhl.com/content/dam/downloads/g0/about_us/logistics_insights/dhl_trendreport_robotics.pdf

traditional ones, the price difference is reduced by the saved fuel costs in the future, the tax relief and the increased demand for services involving socially responsible items. Customers, especially in large cities, are highly appreciating the use of such technologies and setting requirements to the courier companies in terms of sustainable development and environmental protection.

The delivery provided by drones is a new technology, not entirely developed yet. It has the potential to transport small packets within the range of a certain distance. DHL Express[18] is one of the first companies to imply a droning helicopter for specific needs. With the development of robotics, this technology will help reaching customers in hard-to-reach locations as well as reducing the time and cost of such deliveries.

The innovation of the future is self-propelled vehicles and their adaptation within courier services in the step of transporting shipments. According to DHL[19] research, the main effects of using self-propelled vehicles are improved safety, higher efficiency, less negative impact on nature and higher comfort. This technology could be very successfully applied in logistics and courier services. Particularly, it could be used in warehouse operations, for transportation in certain spaces, where the process can be defined and controlled. Such technology is currently being used as part of the vehicle's driving system, such as the speed-maintenance system, maneuverability, others.

3D printing is an innovative technology that is mostly developed for industrial purposes. The introduction of this technology as part of courier services has a mixed effect due to the possibility of changing the traditional production and trade, which are the main sources of courier shipments. UPS[20] is one of the first courier companies to create an international 3D printing factory on customers' demand. The effect of this technology on courier services is expected to be smooth and the overall change in the production process should go from a mixed type of applying both traditional and innovative technologies to completely using the new technologies.

Based on the studied theoretical models and the existing business practices, the following classification has been made regarding the degree of influence of new technologies on the main elements of the efficiency of the courier service:

[18] http://www.dhl.com

[19] DHL Trend Research, 2014. Self-Driving Vehicles In Logistics, Available from: http://www.dhl.com/content/dam/downloads/g0/about_us/logistics_insights/dhl_self_driving_vehicles.pdf

[20] UPS Pressroom, 2016. UPS On-Demand 3D Printing Network Expanded To Asia, https://pressroom.ups.com

Table №1 Level of influence of the new technologies upon the main elements concerning the evaluation of service efficiency

Technology/ Innovation	***Automatization***	***Easy access of the clients***	***Reduced costs***	***Reduced time***	***Human resources required***
Internet of things	■■■■	■■■■	■■■■	■■■■	■■□□
Big Data	■■■■	□□□□	■■■■	■■■■	■□□□
Cloud spaces	□□□□	■■■□	■■□□	□□□□	□□□□
Self-developing systems	■■■■	□□□□	■■■□	■■■■	■■■■
ERP systems	■■■■	■■■■	■■□□	■■■□	■■■□
GPS systems	■■■■	■■■■	■■■□	■■■■	■□□□
Key position automatic machines	□□□□	■■■■	■■■□	■■■□	■■■□
Barcode and scanning devices	■■■□	■□□□	■■■□	■■■□	■■■□
Radio-frequency Identification (RFID)	■■■■	■□□□	■■■■	■■■■	■■■■
Robotics	■■■■	■□□□	■■■■	■■■■	■■■■
Online/ non-cash payment	■■■□	■■■■	■■■□	■■■□	□□□□
Digital signature	■■■■	■■■■	■■■■	■■■■	□□□□
Electric and hybrid vehicles' funds	□□□□	□□□□	■■■■	□□□□	□□□□
Drone	□□□□	■■■■	■■■■	■■■■	■■■■
Self-Propelled Vehicles	■■■■	□□□□	■■■■	■■■■	■■■■
3D printing	□□□□	□□□□	■■■■	■■■■	□□□□

Source: self-conducted research

Legend: □□□□ MHO≤¨°¥COE does not affect the certain element; ■■■■ - strong influence on the certain element

The table shows the impact of the different technologies used in courier services on the efficiency of the service. As already mentioned above, the quality and cost of the service depend on the degree of automation, the easy access of customers to basic and additional value-added services, the reduction of financial costs and the time spent in implementing the process as well as the reduction of the human resources. The integrated use of the different technologies and innovations multiplies the effect on efficiency.

Effects on the environment and sustainable development from applying the technology and innovation in courier services

The introduction of innovations and technologies in courier services directly affects the sustainable development and environmental protection by providing savings, reducing used fuel and resources, optimizing the service delivery process. According to the US Environmental Protection Agency[21], 14% of the world's main greenhouse gas emissions for 2010 are due to the transportation sector. The customer's requirements towards the chosen courier company increasingly are focusing on the company's social responsibility in terms of the amount of carbon dioxide emitted during shipment and other effects.

The technologies have a direct impact on the reduction of carbon emissions by optimizing the route of transport vehicles, using environmental friendly vehicles such as hybrid and electric cars and drones, using software to calculate the carbon emissions when compiling the delivery routes, reducing the use of electricity by the automation of the process. New technologies have an impact on improving carbon efficiency, they are reducing the carbon footprint on environment and providing carbon neutral services.

The impact of technologies on people

Along with the increasing competition and decentralization of the courier services market, managing customers' expectations is playing an increasingly important role. Fast-developing technologies make it easier for users to access the service often by shortening the request time, the time for coordinating between the user and the courier, making the real-time tracking of an order, easy forwarding and non-cash payment possible. All these facilities can have a **positive effect** on the demand and satisfaction of the customers of the service. A confirmation of that could be found in the WIK Consult study[22].

Besides the significantly positive impact of technologies, for certain groups of people, such as those with low education and social status or the elderly people, they may have **a negative impact**. The degree of using new technologies and experiencing the innovation benefits is quite uneven among these service customers. This is due to the fact access to technology or services requires specific knowledge in the field of technology, internet access and available computer or smart device.

Economic effects

The positive effects could be divided into direct and indirect. The direct ones are related to the growing added value of the services of courier companies and those serving a more competitive environment, quality and prices.

The indirect ones stand out within the development of technology and innovations and their effect on other relevant economic activities, as well as the customers' benefit and reduced alternative costs.

Innovation in courier services has much greater economic potential than it might seems at first, not only for the development of that service market but also for supporting other economic activities. Furthermore, they are a very important driving force for the development of knowledge and technology in other related industries such as information technology (IT) and programming of specialized software, serving the changing needs of the costumers of courier services, engineering technology, software of service-related devices, etc.

Conclusion:

The development of the courier & local delivery services is directly related to the introduction of the new technologies and the adaptation of innovations,

[21] United States Environmental Protection Agency, Global Greenhouse Gas Emissions Data. Available from: https://www.epa.gov/ghgemissions/global-greenhouse-gas-emissions-data

[22] WIK-Consult Report,2016. Technology and change in postal services – impacts on consumers

which guarantees more competitive price and high quality, high speed in delivering the service, achieving greater efficiency and added value for delivery companies as well as for the service users. Each adapted technology on its own has a positive impact on improving the efficiency and effectiveness of the process of courier service delivery and if they are applied in combination they have a synergistic and multiplier effect which leads to many improvements in the services offered. The success of courier & local delivery services is heavily dependent on the adaptation of technology to the needs and specific requirements of the courier companies. They are functioning in a highly dynamic market with accelerated demand and supply of core and value-added services. Maintaining competitively low prices combined with increased user requirements in terms of convenience, tracking ability, speed and quality is a difficult process requiring focused and flexible management decisions. Along with the development of innovations such as the Internet of things and Big data, which combine the outcome of applied technology, allows the complexity and synergy of the technological achievements to be acquired.

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18. http://ec.europa.eu/eurostat/statistics-explained/index.php/E-commerce_statistics
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