

NEW MARKET DEVELOPMENTS AND FUTURE REQUIREMENTS FOR POSTAL SERVICES

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Abstract: *Recent development and increase of e-commerce has brought new challenges to postal services market. The new requirements for the postal market should be considered since e-commerce has started to grow. Focus should primarily be on the implementation of new technologies in business processes, with emphasis on the last mile delivery. This paper explores recent technological development that accomplish better information and commodities flow in a postal system to improve quality of service, as well as user satisfaction.*

Key words: *postal service market, e-commerce, big data, Internet of Postal Things*

1. Introduction

In many countries the provision of postal services has been traditionally guaranteed by monopoly of the national postal operator. This situation has often led to postal services being performed without attention to the needs of users and their demands. Development programs have been focused on technical and production capacities. Production processes have been predominantly manual with limited use of technology and automation.

With the development of new services for delivering documents and goods, considering user requirements, competition has been created within the postal sector for the first time. International transport of shipments has been one of main postal services, where quality of postal services has varied between national postal service providers. This has been an opportunity and challenge for the emergence of new postal service providers, who have offered services with a guaranteed quality standard through their own networks. Over time, international service providers have been able to offer services within the domestic market, thus generating direct competition for existing postal monopolies.

Activities of private postal service providers, led to adoption of new strategies, more oriented towards the users-consumers and their needs by introducing more appropriate, market-oriented organizational culture. Today, national postal service providers leave boundaries of government organizations. They are focused on creating business conditions with a flexibility and independence, necessary to meet new demands for postal services in a competitive environment.

Globalization of business and economic integration has created a completely new approach to the performance of postal services. Digitalization of the postal sector will be key element for future delivery of postal services [1]. The importance of the postal infrastructure has been recognized for business development, since production and consumption are often physically separated over long distances.

New information technologies create a major challenge for the postal sector. New forms of competition with new communication possibilities in terms of speed and cost enable development of value added services. At the same time, it is possible to apply new technologies for the development of new postal services at lower prices, better quality and increased productivity. In this context, rapid development of e-commerce must be emphasized, where many challenges are met, especially in the field of delivery of postal items.

2. E-commerce as a driver for new postal services development

Growth of e-commerce has a strong impact on the development of postal services and postal service providers. Development of postal services is in line with market needs, throughout the value chain and across all market segments. This is especially important in the segment of cross-border mail delivery (e-commerce) as the most important area of postal market transformation.

Traditionally, security of consignments has been a priority for service users. Today, delivery speed and deadlines are an added value that is often the key factor when choosing the delivery mode and service provider. It is possible to identify three key aspects of e-commerce services that are directly related to the delivery and services offered by postal service providers, as it is shown in the Figure 1.

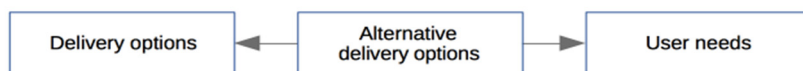


Figure 1. E-commerce key delivery aspects

Delivery options are an important aspect for both e-commerce providers and the end user. This enables clear definition of the customer's options for delivery, where characteristics of each option should be set clearly and transparently. Alternative delivery options include delivery over alternate points in the network, regardless of time and day, which is an additional benefit to the end user. This could reduce the need for delivery to home address, especially in urban areas. Users' needs, habits and historical behaviors are essential to information about e-mail service providers (E-commerce) in order to match service development to market and user needs.

The e-commerce, development trend accelerates and boosts the need for adapting postal services in terms of flexible delivery deadlines, providing detailed and accurate information and quality of services to customer satisfaction. That applies specially to cross-border parcel delivery. The future challenges for the postal sector are to effectively connect the national postal service with the cross-border delivery of the e-commerce package.

The International Post Corporation (IPC) research from 2017, encompassed 24.000 consumers in 26 countries in Europe, Asia Pacific and North America. Research

included characteristics related to: product delivery choices, delivery schedules, delivery locations, and delivery tracking. Trends of these characteristics are analyzed in more detail. When considering delivery choices, users expect availability of multiple services and flexibility in meeting their requirements.

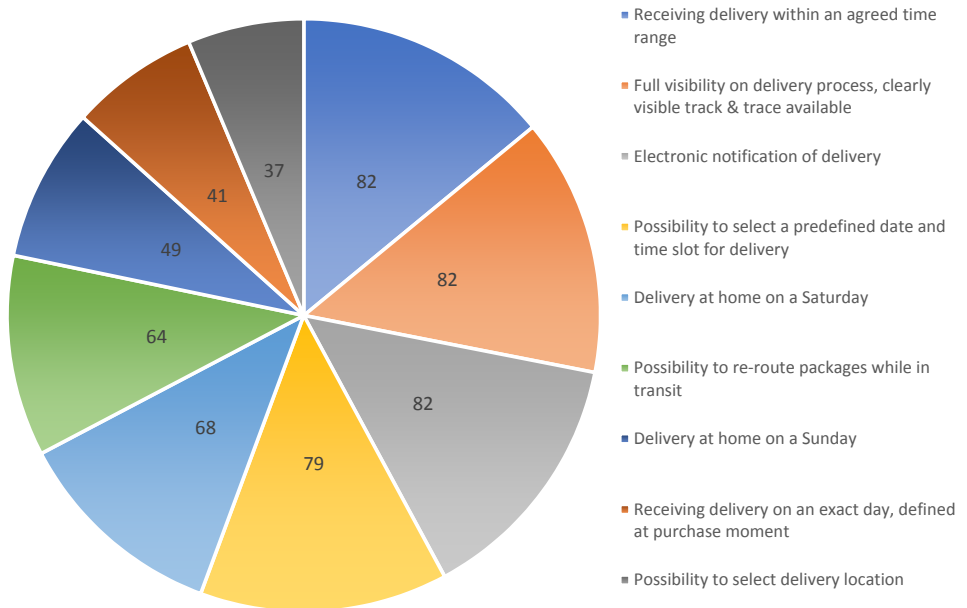


Figure 2. Selected delivery for purchased products

Source: [2]

The Figure 2 shows that for service users, the characteristics that make delivery transparent and visible at any time, like tracking, are important. Delivery information, as well as delivery within the agreed time range are also important elements for the service users.

Delivery times are analyzed through 3 categories: the products with the price of up to 10 EUR, 11 to 50 EUR, and over 50 EUR. The results for all three product categories are very similar and the most significant difference is that consumers expect somewhat faster delivery time for more valuable products [2]. The results are grouped by the following regions:

- Europe - 25% expect delivery of products from another European country within 2 to 3 days, while 75% expect deliveries within a maximum of 6 to 7 days. 29% of European consumers would be willing to wait for a maximum of 6 to 7 days shipment from Asia.
- USA and Canada - Half of consumers in the US and Canada expect the product from another country to deliver within 4 to 5 days.
- Australia and New Zealand - Half of consumers in Australia and New Zealand expected the goods to arrive within 4 to 5 days.

- China and Japan - 41% of consumers in China and Japan expect the goods to arrive from another Asian country within 4 to 5 days.

The delivery location makes an important part of the customer's preference for delivery. The Figure 3 shows that the delivery to the home address is still the most important characteristic of user selection for delivery of the shipment [2].

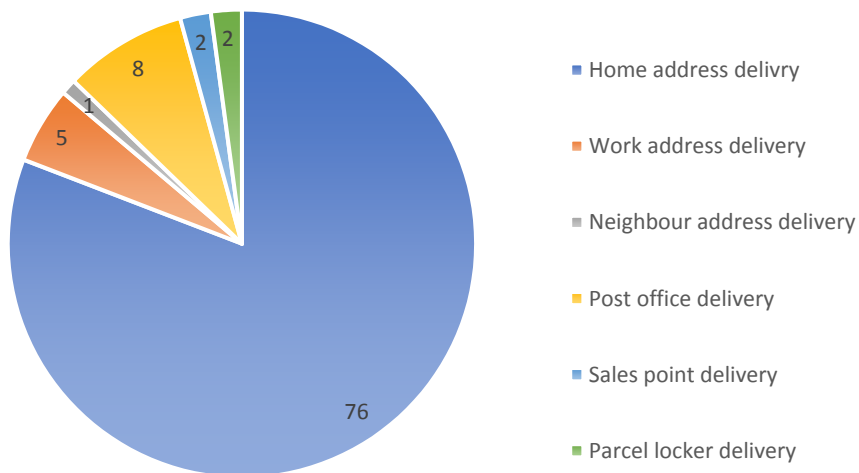


Figure 3. The delivery location
Source: [2]

Delivery tracking is tested in some key phases of cross-border parcel tracking. The level of importance was high for all six key phases, as it is shown in the Table 1. The levels of very important and important are ranged from 71% to 86% for each of these phases.

	Parcel has been posted by foreign seller	Parcel has left country of the seller	Parcel has arrived in destination country	Parcel is being held by customs in destination country	Parcel will be delivered today, specific date/time	Parcel has been delivered
Very important	43%	32%	38%	40%	55%	40%
Rather important	40%	40%	40%	40%	31%	31%
Neutral	13%	21%	16%	18%	18%	19%
Don't know	2%	5%	4%	4%	2%	6%

Table 1. Importance of delivery tracking phases
Source: [2]

From the presented results, it is apparent that users prioritize delivery within the agreed delivery time, at their home address, and with the ability to track shipments at all stages of travel shipment from sender to recipient. The highest value is given to information on the correct delivery time. It is therefore necessary to adapt the postal service provider's business to ever-increasing customer requirements that will significantly affect the future development of postal services [2, 3].

3. Technologies for the development of future postal services

New challenges in the postal service market require from the postal service providers to adapt to new technologies occurring at various stages of postal service delivery. The Figure 4 shows the basic structure of new technologies in the postal system.

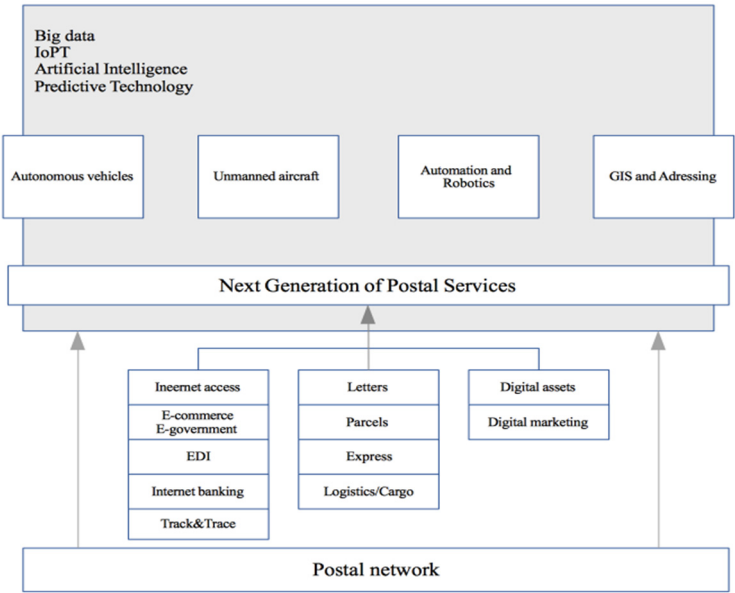


Figure 4. Technologies for the development of future postal services

In the future, postal services will use several technologies that will enable high quality of service, for both the end user and service provider. For the end users such concept will allow tracking of shipments at any time, connection with postal infrastructure for timely information and delivery options, in general a greater flexibility in the last mile phase. Providers of postal services, apart from optimizing business processes, by reducing human factor errors, will also anticipate potential difficulties or barriers at certain business phases. By applying predictive and artificial intelligence, the system will be able to anticipate and correct errors in processes within the technological stages of the postal system.

3.1 Big Data

By applying modern IT technology and transferring a large volume of mail, many postal operators collect large amount of information through their networks. For example, USPS scans each individual parcel up to 11 times, which leads to a potential of 1.7 trillion scans a year. Collection of large amount of data, their integration and sharing, creates new conditions for new features for postal operators. Implementing solutions such as artificial intelligence and predictive technologies will enable better handling of processes, especially in the delivery of parcels [4]. Possibilities of implementation of the predictive technology and tools are presented in the Figure 5.

Predictive technology and tools	Analysis of data and user behaviour that can be used in future situations
Predictive delivery management	Historical analysis of cost and services to better handle future choices in the delivery phase

Figure 5. Possibilities of managing data in the process of delivery of the postal items

Infrastructure is an important aspect in the big data technology. The size and type of the infrastructure available to postal service providers, the collection and use of information represents a great potential for optimizing existing processes, anticipating future behaviors in certain phases of postal service delivery. This ultimately has an impact on the quality of service and customer satisfaction.

Postal network equipment like vehicles, mailboxes, postal logistics centers, etc., equipped with sensors, can exponentially expand collection of the required data. New data sources can help postal service providers improve postal services, customer relationships, new products and services, and support more efficient decision-making processes. For example, the sensors on a mail trucks can help reduce the cost of fleet maintenance, optimize routes, report dead spots in mobile and wireless coverage, or track environmental conditions, detect harmful chemicals and contamination. Data collected by such sensors could also become the basis for a new portfolio of postal services for state agencies and other public and private entities. Databases of large postal network can help sellers choose new sales locations. This is already the case in Germany, where DHL offers companies paid access to the geo-marketing network called Geovista, which is a combination of geo-data with Deutsche Post Direct, socio-demographic and housing data, and consumption patterns statistics. These data help marketing and sales executives when choosing a new retail location and preparing a sales plan. Data could also create opportunities for third-party developers. French La Poste is working with innovative software companies to set up new services using their databases, such as postal codes, address of the post office or correction of base postal addresses [4].

3.2 Internet of Postal Things (IoPT)

It is estimated that by 2025, the 85 billion [5] terminal devices will be connected to the Internet, or have access to the Internet. The Figure 6 shows the basic components of the Internet of Thing (IoT) concept: physical objects, devices, connectivity, and data analysis that ultimately enable "smarter" products and services.

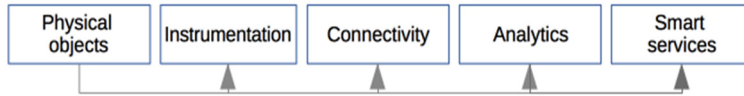


Figure 6. Internet of Things concept

Source: adjusted according to [6]

Postal system data exchange at any phase of postal service fulfillment makes it possible to gain insight into all postal subsystems. Parts of the postal infrastructure equipped with tracking and data devices can, for example, provide users with timely information about the status, location or expected delivery time of the shipment. Furthermore, it enables timely response in the event of delays, extraordinary situations, traffic jams, inability to deliver because the user is not at home, etc. Combination of managing large amount of data (Big Data) and Internet can potentially transform both postal market and postal services that are provided in the future. For service users, this will especially be evident in the last mile delivery phase.

4. Conclusion

The national postal service providers are increasingly meeting e-commerce requirements that are different from the expectations of traditional postal services. Through existing organization of technological processes, postal service providers deliver most letters to home mailboxes thus reduce home delivery costs. Everyday delivery includes most of the letter-mail items that fall into the scope of universal service while the volume of postal items increases beyond the scope of universal service. It is obvious that the technology of transmitting and delivering letter-mail is not suitable for delivering e-commerce goods to the doorstep, especially registered items. All these requests are addressed to postal service providers in order to make appropriate adjustments to the structure of products and services.

New requirements and expectations from e-commerce, in addition to delivering physical deliveries at home, include adaptation in terms of flexible delivery deadlines, providing accurate information and a high-quality service to end users. Effective linking of national delivery services to cross-border e-commerce is one of the most important tasks for the postal service providers.

The providers of postal services through the implementation of Internet technology create the conditions for improving and developing postal services thus adapting to new market demands.

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TRENDVI POŠTANSKIH USLUGA I NOVI ZAHTEVI TRŽIŠTA

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