

NEW POSSIBILITIES FOR PROVIDING SERVICES BY POSTAL OPERATORS THROUGH INFORMATION-COMMUNICATION TECHNOLOGY

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Abstract

In the article, we focused on the business of postal operators in our country and abroad. Based on the results of secondary research about service providing by national postal operators in our country and abroad, we can say that postal services are constantly evolving and modernizing. When comparing the services of the four national postal operators: Slovak Post a.s., Czech Post s.p., Deutsche Post AG and Swiss Post Ltd, we have found that competition in the field is high and therefore every one of them is trying to innovate its services. The Deutsche Post and Swiss Post are mainly focused on information-communication services. The Slovak Post and Czech Post do not use all the opportunities offered by ICT. The article deals not only with the analysis of the services provided by selected postal operators in the Czech Republic and abroad, but also, in particular, with drafts for new services using ICT. This article discusses the use of new ways of delivering shipments.

Keywords

Postal operators, technologies, drones, delivery, new services

1 INTRODUCTION

In the article, we focused on the business of postal operators in our country and abroad. We try to get closer to services provided through information and communication technologies, services of selected national postal operators, such as Slovak Post, and Czech Post, Deutsche Post and Swiss Post. The aim of the article is to bring our draft for a new business area for the postal operator Slovak Post Office.

The implementation of new electronic services in the portfolio of services is an opportunity for postal undertakings. According to UPU, electronic mail services can be divided into:

- ePost services,
- eFinance services,
- eCommerce services,
- eGovernment services.

ePost represents services that are subject to extensive development, especially in developed countries. Includes mailboxes, online direct mail and public internet at post offices, robotics, and more. ePost are postal services provided to customers using ICT.

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eFinance includes services such as online payment, e-invoicing, electronic transactions and more. With e-finance, you can manage your finances yourself anytime and anywhere. Whether you're using a computer, tablet or smartphone, a wide range of functions are available for online account management.

eCommerce is a service that sells philatelic or postal products, but includes on-line subscriptions to various magazines and e-shopping.

eGovernment is an electronic form of public administration through ICT. These include services that are strategically important. These include, for example, digital identity or electronic payments within the pension system. Is the use of electronic communications devices, computers and the Internet to provide public services to citizens and other persons in a country or region.

Given the growing needs of customers, postal businesses should provide new electronic services. At present, it is important for postal service providers to adapt to new trends, enabling them to move forward in the field. [4, 6, 7] We have selected ePost services through ICT for our draft.

2 RESULTS OF SECONDARY RESEARCH

The subject of our secondary research is the four national postal operators, namely Slovak Post a.s., Czech Post s.p., Swiss Post Ltd and Deutsche Post AG. [2, 3] The objects of the survey is the services and technologies of selected postal operators. Our research is focused on services provided through information and communication technologies. The results of our secondary research are shown in the following table 1. [5]

Tab. 1 Results of secondary research

| Services and technology | National postal operators | | | |
|----------------------------------------|---------------------------|------------|---------------|------------|
| | Slovak Post | Czech Post | Deutsche Post | Swiss Post |
| Mobile app - postcard | ✓ | ✓ | ✓ | ✓ |
| eGovernment, state services | ✓ | ✓ | ✓ | ✓ |
| Mobile operator at the post office | ✓ | - | - | - |
| PostShop | ✓ | ✓ | ✓ | ✓ |
| Robot POSTBOT | - | - | ✓ | - |
| e-health | ✓ | - | - | ✓ |
| A small robot for delivery of packages | - | - | ✓ | ✓ |
| eSIPO | ✓ | ✓ | ✓ | ✓ |
| Drones | - | - | ✓ | ✓ |

Source: [5]

Note on the e-Health service provided at Slovak Post - a healthcare professional can apply for the issue of an electronic card at the IOMO workplace. The completed application as well as the contract for issuing the electronic license will be sent by Slovak Post to the National Health

Information Centre. When processing a request, the health professional must be provided with a proof of identity and a registration number. [1]

2.1 Results of comparison of ways of delivering through ICT

The following table 2. shows the results of the secondary analysis for the area of technologies that support delivery through the use of ICT.

Tab. 2 Technologies of national postal operators

| Technologies | National postal operators | | | |
|--------------------------------------|---------------------------|------------|---------------|------------|
| | Slovak Post | Czech Post | Deutsche Post | Swiss Post |
| Small robots for delivering packages | - | - | ✓ | ✓ |
| Robots POSTBOT | - | - | ✓ | - |
| Drones | - | - | ✓ | ✓ |

Source: Authors

Based on a comparison of selected postal technology, we found that Deutsche Post AG offers the most service in the field of modern delivery of packages and packages. Another national postal operator that provides innovative delivery methods is Swiss Post Ltd.

Deutsche Post AG and Swiss Post Ltd are striving to continuously upgrade their services and are therefore delivering new technologies such as drone and small robots designed to deliver packages. Deutsche Post AG also offers a robot delivery service called POSTBOT [2, 3]. Slovak Post and Czech Post do not provide any of the above-mentioned modern technologies.

2.2 Results of the comparison of eGovernment - state services to the post office

The comparison of national postal operators that provide eGovernment service can be found in the following table 3.

Tab. 3 State services at the national post office

| Services | National postal operators | | | |
|----------------|---------------------------|------------|---------------|------------|
| | Slovak Post | Czech Post | Deutsche Post | Swiss Post |
| State services | ✓ | ✓ | ✓ | ✓ |

Source: Author

Based on results of the comparison we found that all of the selected national postal undertakings provide state services directly on post office.

3 DESIGN OF NEW BUSINESS AREAS FOR THE POSTER OPERATOR

Based on research results we also prepared the following drafts for Slovak Post:

- Drones delivery,

- Serving through small robots,
- posting using POSTBOT postage robots.

Establishment of new business areas for the national postal operator Slovak Post would extend the current delivery options in a conventional way. In the next part of the article we will approach the first draft.

3.1 Droning delivery

As part of the draft of the drones for Slovak Post is necessary to amend the legislation on the use of drone in Slovakia, as the use of drones for delivery of consignments is currently prohibited.

Slovak Post postman in Zilina 03 currently delivery parcels and parcels to three city districts, namely Budatin, Zadubnie and Zastranie. Delivery of drones directly to customers of Slovak Post would be realized in the city district of Zilina - Zastranie. Modern drone would deliver shipment from the Slovak Post Žilina - Budatin directly to the Zilina - Zastranie district, which would make it easier for the postal courier, as the city part is at higher altitudes and the bus service is not available at regular intervals. Drones would only deliver packages and lighter packages, up to a weight of 3 kilograms.

3.2 Route of delivery and design of a drone delivery solution

The route for delivering shipments and packages via the drone is displayed on the following figure 1.

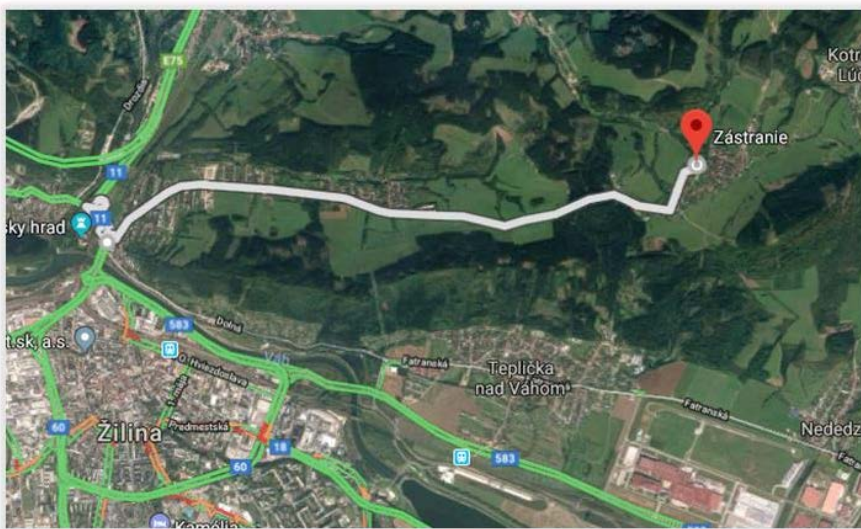


Fig. 1 Route delivery via drone. (Source: <https://www.google.sk/maps/>. [Online].)

The Budatin - Zastranie route is 7.8 km long, which is about 12 minutes by car and the walk takes approximately 2.5 hours. From a safety point of view, a modern drone would deliver non-residential consignments from a safety point of view through the mountain range. At both ends of the route would be drone ports - landing stations designed for receiving and dispatching parcels and parcels.

In the area of the Slovak Post 03 would be built by droneport, designed for take-off and landing of the drone. A specialist employee would inform the customer by telephone about the arrival of his mail, agreeing on the exact time of delivery by drone to the city of Zastranie. After placing the shipment on the drone, the customer will be informed of the departure from the mailing area, delivery will take approximately 3 minutes. The recipient would wait for a drone placed below the local hill Stranik to get the shipment and then confirm the delivery. After taking the shipment to the

relevant customers, the drone would return to the landing area - a droneport located in the Slovak Post area 03 Žilina along the programmed route. The cost of delivery by unmanned aircraft would be 3 Euros.

Customers of Slovak Post 03 Žilina could also send shipments and lighter packages from the city district Zastranie via the drones. The customer would inform the Slovak Post by phone in the case they want to use the service. They would agree on the exact time of the shipment during the call. Drone would be sent by a specialized employee to the landing area - the droneport in Zastranie, where the sender of the consignment would be waiting. After insertion of the consignment into the storage space, drone would be directed to a landing surface - a droneport located in the premises of the Slovak Post. Post office employee would take over the consignment and then send it to the appropriate address.

The following figure 2. shows the draft of delivering shipments and packages via a drone.

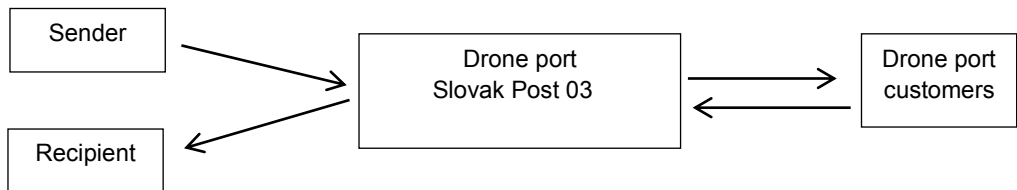


Fig. 2 Draft of drone delivery solution (Source: *Author*)

Deliveries would be delivered on a pre-programmed route via a four-propeller Quadcopter droning, which would represent a delivery time of approximately 3 minutes.

The more the drones have propellers, the stability is the greater. The smaller the number of propellers, the easier and faster it is. For this very reason, we chose the pilotless four-prop aircraft. See Fig. 3.



Fig. 3 Drone for Slovak Post (Source: <http://www.hybrid.cz/oficialne-nemecka-posta-zacala-pouzivat-drony>)

The pilotless airplane would include a camera, a GPS and an electronically installed parachute that would be triggered in the event of a breakdown during a flight. In case of a possible fall, insurance would also be appropriate. With respect to population size of Zastranie, we propose to purchase one drones for delivering. Slovak Post would be able to cooperate with Micronrones. [2]

A very important part of the draft is a recommendation to modify the legislation because the delivering by drones in Slovakia is not allowed. By decree 1/2015 issued August 19, the Traffic Administration determined the conditions under which we can use the drones.

4 CONCLUSION

Based on the results of our comparison, three drafts were made; delivering by drones, small robot delivery and POSTBOT delivery. In the article, we focused only on first draft because of scope of the article. By introducing new delivery technologies, the postal operator will improve its market position and streamline current delivery methods. A new way of delivering via a drones would not replace regular delivery, but would modernize it, making it easier for postal service providers. Once the legislation has been amended, this mode of delivery would have been a major advancement and modernization. Amazon's secret R&D project aimed at delivering packages to your doorstep by "octocopter" mini-drones with a mere 30-minute delivery time. [8, 9]

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