

The Application of Consolidation Centers to Postal Services Operations

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Abstract: Customers' approach to goods and services has changed with time, and with those changes, the organization of the operations of postal/logistics/transportation companies drastically changed, too. As the population in urban areas increased, e-commerce developed, the number of e-commerce platforms rose, so rose the expectations of customers to receive what they want, when, where, and how they want it. Instead of bulk deliveries to shopping malls or retail stores concentrated in certain urban zones, the practice now encompasses a large number of smaller deliveries to various locations that call for different routes. The downward mileage trend for large deliveries is bound to continue, while the mileage for small deliveries is predicted to abruptly rise. Many companies will have to reexamine and redefine their transportation logistics since transportation in cities is becoming increasingly difficult and, in certain cases, impossible. The purpose of the paper is to show that the demands that postal operators face, especially those that operate in the above-described environment, can be satisfied with a wide choice of consolidator locations, i.e., consolidation centers. The paper will present suggestions for overcoming the problems related to the optimization of the delivery process, easier access to a higher number of individual customers, as well as ensuring access to office spaces in urban zones where it is currently difficult or too costly.

Key words: location, delivery, postal operators

1. Introduction

It is a well-known fact that courier services not only integrate four types of services (communication, advertising, transport and logistics, and financial services) but also possess certain characteristics that make them stand out. Postal service operators, in addition to their regular services, offer, for example, specific delivery times with one-hour precision, money-back guarantees, door-to-door pickup and delivery, parcel tracking... [1]

In a time of intense competition, companies used these services to better their chances, which not only benefited the companies themselves but also had a

direct impact on the competitiveness of the sector (industry) as a whole. If we define competitiveness as the ability of operators to gain and maintain a share of the market in a profitable way, then it is clear that the operator must adjust and transform in order to keep up with changeable market conditions. It is apparent that competitiveness has a dynamic nature.

The need for superiority within the sector that an operator develops through comparison with competition must now be viewed in a different way. An operator's available resources no longer can — nor may — have a more dominant position compared to factors and limitations from the surroundings (e.g., environmental protection, reducing traffic in urban zones, better distribution of available resources...). The need for cooperation is evident, social accountability should go without saying, and diversity

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can still be obtained in terms of prices, service quality, and technology used to grant services.

The identified inefficiency in the last mile part could be eliminated or lowered through the usage of consolidated centers. If we take into account that consolidation is the process of merging parcels for the purpose of more efficient transport and a consolidator is a person that, based on a contract, consolidates parcels with the goal of simplifying the process (ISS, 2020), then the definition of a consolidation center — a logistic unit that serves a part of or the whole city [2] — can easily be adjusted to the needs of the postal sector.

The consolidation center (CC), which would separate transport routes to inner-city zones and outskirts [3], or multiple other routes, if necessary, of different capacities, equipment, and purpose adjusted to specific needs, would be utilized by multiple postal operators. The functioning of such a CC should be based on some basic sharing economy principles, i.e., solidarity economy.

The authors' basic idea is to point out the fact that the demands set in front of postal operators, who operate in environments with limiting factors, can be efficiently fulfilled by defining and opening one or several consolidation centers. CCs would make it possible to overcome problems related to delivery process optimization and easier access to multiple customers but also ensure access to offices in denser urban zones where it is either difficult or expensive.

2. Sharing Economy Principles Adjusted to The Needs of Postal Operators

As it is difficult to find an agreed-upon definition of sharing economy, the authors shall mean the exchange and sharing of all types of resources within a community with the aim of realizing mutual goals and without unnecessary purchases and uncontrolled expenses. The basic idea is based on (re)routing all factors of the government and society to function for

the benefit of people and the environment¹.

Urban areas, which have a constantly rising population — which is gradually switching its shopping habits to the combination of a mouse click and home delivery — are impacting the need for further increase in the number of delivery vehicles. The decrease in the mileage covered for large deliveries will continue, while the mileage covered for smaller deliveries will rise exponentially. Many companies will be forced to reexamine and redefine transport logistics, as transportation in cities is increasingly difficult and, in some cases, impossible.

These conditions will continue to intensify, and the consequence will be an additional challenge for postal operators. The quality and availability of services are fundamental for the quality of life, but, on the other hand, with that in mind, postal operators would all be forced to grow into large transportation enterprises. As such, they would have a significant impact on the quality of life, especially in urban zones.

How should individual needs be merged with collective needs with the goal of creating decent living conditions? Around the world, postal operators work in a similar way, and they tackle the same problems most connected to the specificity of the environment where services are granted.

One possible solution for delivery can be a consolidation center whose services would be utilized by multiple postal operators, who would possess a license or approval from a regulatory body and who would, through accepting sharing economy principles, agree to grant access to their own resources, but also gain access to others' resources.

Sharing is not a new notion, but the development of information-communication technologies has accelerated the development of such a possibility. The idea of ownership we have now will be considered obsolete in the near future. The option to access

¹ Available online at: <http://www.solidarityeconomy.eu/>, accessed on 20.6.2021.

anything will have a much greater significance than the option to own it.

If postal operators have been users of modern technologies for some time, why would they not use this opportunity to lower their mileage, primarily in inner-city zones. An integrated delivery chain in the last mile part would be a result of the cooperation of multiple companies within a joint framework. The optimization of this link in parcel transportation would lead to the rationalization of transport, lowering of transportation costs, better use of flexible transportation capacities and staff, the possibility of purchasing and using eco-vehicles and auxiliary equipment, and minimization of many adverse effects on the environment. The goal of the optimization of capacities, carpool, and staff should be turned into the objective to use the fewest possible resources, vehicles, and staff to grant a requested service within the shortest possible time frame and with the highest possible quality [4].

3. Defining the Limitations of Basic Terms Related to the Location of Consolidation Centers

Two types of consolidation centers can be distinguished:

- Voluntary consolidation centers
- Mandatory consolidation centers [5].

Mandatory participation in consolidation implies a ban on all other types of delivery or an order to exclusively use consolidators. Many city agglomerations that have the goal of drastically reducing or completely banning motor vehicle traffic in certain zones have opted for this type, all with the goal of improving the quality of life of their citizens [5].

To meet these demands, the location of CCs in which logistic processes take place, in both cases, must be as close as possible to the area of demand, enabling maximum flexibility in operations and lowering transportation costs and the number of vehicles on the road.

Every CC has a minimum of three unavoidable conditions for successful functioning. We shall list and briefly explain them:

- To be in accordance with the demands of consumers — An emphasis is put on the optimization of the delivery process (punctual delivery with short deadlines). Times when parcel tracking and prices were the only criteria for deciding on a purchase or a provider are long gone. In order to further diversify the market, there must be added-value services, primarily multiple options for delivery times (a more diversified time frame) and places (more locations).
- To be in accordance with the limitations defined by local and national legislatures — These limitations mainly impact the ability to access each individual consumer, especially those living in inner-city areas. Across Europe, there are many laws that protect city zones from large polluters. In Monaco, vehicles with a capacity of over 8.5 t must use the Monaco Consolidation Center. Smaller vehicles can enter the city only during predetermined time periods. Copenhagen has a consolidation center that uses zero-emission vehicles to deliver non-food products from Monday to Friday between 7 AM and 4 PM. The project has been subsidized by city authorities. Utrecht has implemented a limitation of up to five vehicles in pedestrian zones in the city center at the same time. Goods are delivered to city distribution centers and then distributed into the city using electric vehicles with trailers. The French capital has founded micro consolidation centers strategically located in the city center. Transport vehicles pick up goods at the central node, while zero-emission vehicles do the distributing. London's strategy in this area includes the goal to have 80% of all commuting in the city zones be by foot, bicycle, or public

transport by 2041. In Belgrade, in accordance with the *Decision on the Regime of Traffic of Trucks and Carts through Belgrade* (article 6), trucks may not stop or park in streets utilized by public transit vehicles from 7 AM until 8 PM (Official Gazette of Belgrade, 2019). Therefore, there is a need to reexamine and redefine transportation logistics, as city transport is very difficult and, in some cases, impossible. The number of possible solutions is not high, and some of them (e.g., electric delivery vehicles, robots...), especially for countries that are not the strongest financially, can be too expensive.

- To be in accordance with limitations and conditions on the road — The increase in the need for residential objects has impacted the decrease of available areas for business facilities (logistic capacities). This applies especially to international markets, where the best locations are “reserved” for domestic companies. In addition, opening separate branches, as final infrastructural points, is not always profitable.

If we disregard the possibility of the city government providing an existing unused space for a CC, then we must search for the solution for a location that will service several operators and ensure their joint operations, mainly in the last-mile part.

The location of a CC can be a plot where an object will be built or an already built object. It should enable the provision of logistic services in an optimal way for a defined area where demand is generated.

The locational problem, in this sense, includes defining the number of CCs, finding the best possible solutions for their locations, as well as distributing consumers who are requesting services among the CCs.

Although this problem can be accessed from the micro and macro aspect, in this case, it will suffice to base the solution on the micro aspect only, i.e., to find a solution on the level of the city region (city center and

its urbanized surroundings), central city zones, industrial complexes...

In addition, although there is a theoretical possibility to position CCs anywhere, limiting the possibility to certain areas is more likely. The reason lies in the fact that the possibility of disregarding all urban, transportation, economic, organizational, and other limitations of both local and national legislation while meeting the demands of consumers is very low.

The decision on the location and number of CCs for each city area is a strategic one. Providing these capacities is not easy, cheap, or quick — political will and financial support are necessary, but their existence would have a positive effect on the quality of life of the residents of the given area. The optimal model does not exist, but several different options can be combined.

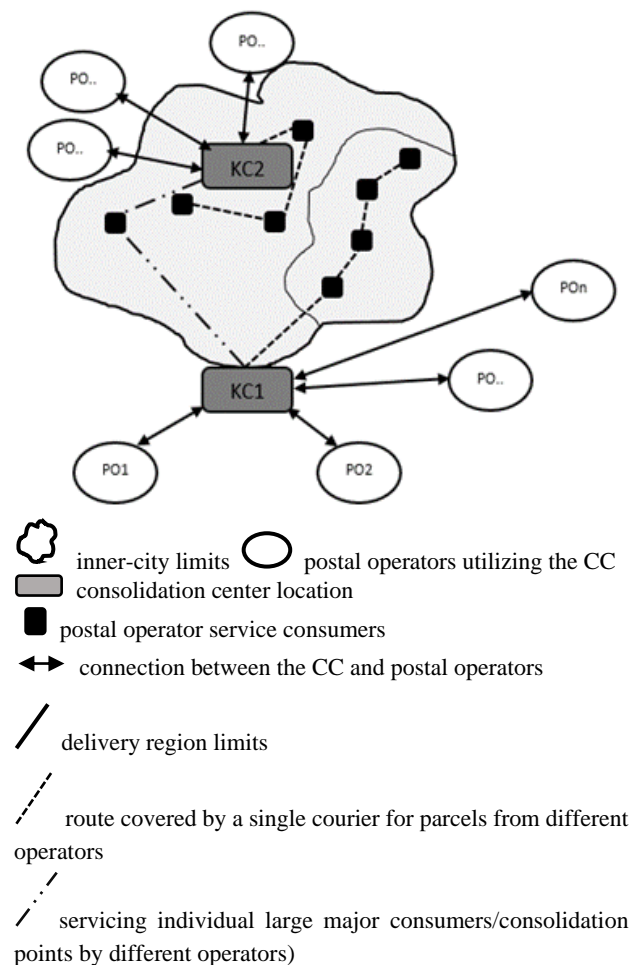


Fig. 1 Delivery routes with CCs.

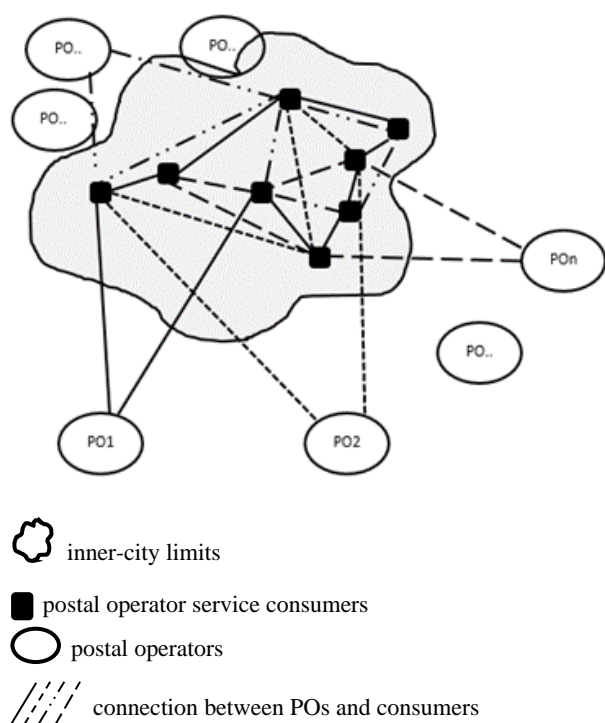


Fig. 2 Delivery routes without CCs.

4. Final Considerations

Although the sharing economy is talked about quite a bit, it is still an insufficiently understood and insufficiently developed concept, especially in certain areas. Since it is a market model that enables and facilitates access to goods and services, it must not be viewed narrowly, solely as a way of sharing cars, houses, etc.

The presented idea can be a starting point for solving a part of transportation issues, at least around delivery in inner-city zones. Given that e-business, that is — e-commerce, in Serbia is still in its beginning stages of development and that economic reforms carried out by the government are expected to bring about a rise in the numbers of small and medium enterprises, who also happen to be the biggest consumers of courier services, it is clear that the number of postal operators will rise, too. In accordance with the idea of following the latest global trends, we can expect that private postal operators can find an interest in the sharing economy and the forming of a joint consolidation center.

This paper only represents basic ideas of a new type of cooperation between postal operators. Further considerations would primarily have to consider the interest of state and city structures around solving the accumulated problems related to the normal and sustainable functioning of inner-city zones. The next step could be defining the type of CCs — voluntary or mandatory participation in the consolidation process, which would certainly affect how postal operators view the concept. The location would be chosen depending on the type of CC. Defining routes, based on IT technologies, would, on top of connecting the consumers of services by several operators, also bring about a solution to the problem of distributing extra load caused by a higher number of parcels. The process of adjusting supply to demand in the sharing economy calls for new perspectives and tools for overcoming challenges and identifying possibilities.

One of the issues which may arise with postal operators, aside from accepting the fact that business can no longer only be based on ownership but also on the option to share, is the question of protecting their brand. Still, with a deep insight into total opportunities, trends, and functioning issues in densely populated areas, the mutual interest based on creative entrepreneurship, digitalization, and technological advancement will surely come to the surface.

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