

The Development of the Concept of Consolidation Centers in Using the Sharing Economy in Postal Services / Logistics

Jelena Milutinović, Biljana Grgurović, Stevan Veličković, Slavica Radosavljević

Department School of Information and Communication Technologies, Academy of Technical and Art Applied Studies, Z. Celara 16, Belgrade11000, Serbia

Abstract

Switching the business philosophy from “having” to “sharing/using” is especially important when it comes to information technologies, where there is a direct connection between interested parties which, at the same time, can be potential providers and users of services. This principle has found its place in various areas (transportation, services, education, entrepreneurship, real estate, commerce, finance, information technologies). Through its application, companies gain the possibility to demonstrate their potential for contributing to the community, reducing environmental impact, and staying profitable. As the interest in goods in urban areas has been on the rise in the whole world, the necessity for measures which would lower the negative effects of freight traffic is inevitable. In that context, in this paper, we will consider the possibilities of applying different models of the sharing economy concept in postal services, as well as the factors which affect the application and implementation of this concept.

Keywords: *Sharing economy, Urban areas, Freight traffic, Postal services*

1. Introduction

The concept of the sharing economy is a new paradigm that turns the existing consumer society into a more transparent, more inclusive, and more responsible system. Rachel Botsman, a sharing economy expert, in considering the usage of the term, also introduces related terminology depending on the context and focus of usage – access, behavior, business model, or market structure (access economy, circular economy, collaborative consumption, collaborative economy, gift economy, gig economy, on-demand economy, peer economy, rental economy) [1]. An inherent part of the sharing economy in the process of service networking is the usage of technology as a means to build trust, a dependable relationship with the unknown, and a reputation that connects the real and the virtual identity. In this democratic process, communities and relationships become important, as opposed to isolation and separation; social capital is just as important as financial capital; access is more important than ownership; sustainability comes before consumerism; and cooperation takes the place of competition. This concept has been named one of the “top 10 ideas that will change the world” by Time Magazine [2]. The Economist has labeled it an “area of immense

potential” [3], while Forbes introduced it as “the disruptor of economic power” [4].

The paper is divided into several parts. The first part contains introductory concepts. The second part offers an overview of the notion of sustainable business in the postal sector. The third part shows a short overview of literature with models of the sharing economy present in the postal sector.

The fourth part deals with the concept of the consolidation center as a specific form of collaboration between designated and private operators with the goal of achieving a sustainable business model and increasing the contribution to society. Aside from some unavoidable conditions to successful business operations, there are several clearly defined factors which have, or may have in the near future, an inevitable effect on the demand for consolidation centers.

In the last part, we offer final considerations and potential routes for further development and application.

2. The Concept of Sustainability in the Postal Sector

Sustainable development is an important element of postal operations that contributes to an improvement of efficacy, development of new markets, and strengthening of the relationship with consumers. Through the implementation of various activities, the postal sector raises awareness of social and health issues and contributes to the fight against isolation. Everyday activities at the local level have a positive impact on the development, functioning, and maintenance of local communities, as well as the quality of life of individuals.

The goals of sustainable development, also known as global goals dealing with the basic causes of poverty and the universal need for development for the benefit of all people – these 17 goals of sustainable development will be the backbone of the social and economic growth until by 2030. The Universal Postal Union, as a specialized agency of the United Nations, has a key role in achieving these goals through integration, innovation, and inclusion. The postal sector has a potentially great effect, especially on goals 8, 9, 11, and 17:

8. Promote sustained, inclusive, and sustainable economic growth, full and productive employment, and decent work for all;

9. Build resilient infrastructure, promote inclusive and sustainable industrialization, and foster innovation;

11. Make cities and human settlements inclusive, safe, resilient, and sustainable, and

17. Strengthen the means of implementation and revitalize the global partnership for sustainable development [5].

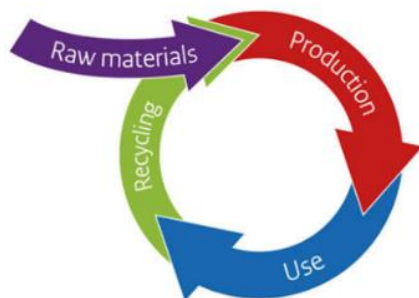


Fig. 1. Circular economy

The circular economy is a narrower term than sustainable development, and it refers to the

increased possibility of repeated usage of resources. (Figure 1)

The circular economy model is completely opposite of the currently dominant linear economy (Figure 2), which promotes the concept of production called “take (from nature), make (in the production process, use, waste (throw away)”.

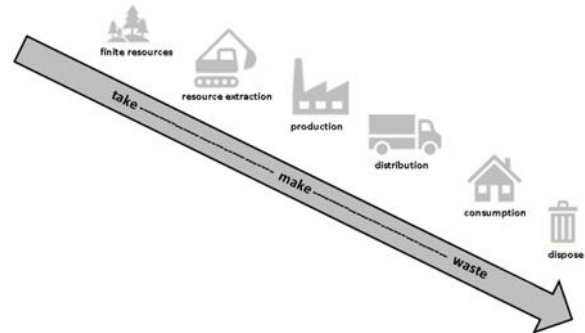


Fig. 2. Linear economy

The circular economy is a system that aims to reconcile economic growth with environmental protection, keeping in mind the limitation of resources. The emphasis is put on making resources last as long as possible through a product design that will enable longevity, business models such as sharing, reusing, and repairing, and only eventually recycling. In this way, a circle in which there is almost no waste is created. Reverse logistics (the process of planning, implementing, and managing of effective and efficient flow of raw materials, semi-finished products, and finished products (goods), along with accompanying data, from the point of consummation to the point of origin – production, with the goal of receiving back a part of the value or with appropriate disposal) [6] can help in closing the loop of a product’s life cycle and switching over to circular economy.

In December of 2021, the Universal Postal Union organized an virtual event called “Posts, Planet, and Economies: A circular route to postal sustainability”, that explored the role and the opportunities of the post as a consumer, employer, and one of the key elements of the logistic chain in accelerating the transition toward the circular economy [7]. One of the conclusions is that the logistic process is a critical element for the sustainability of the circular economy, with an emphasis on the importance of the postal sector in the reverse commerce process. A unique advantage of the postal sector is the ability to reach each individual consumer, as well as traditionally

good partnerships with the business sector that collects data on the location of objects that could be recycled, reused, or repurposed [8]. In addition, DHL has published a new white paper titled Delivering on Circularity [9], in which they state that the largest contribution to the circular economy can be made by the fashion industry and consumer electronics. New circular business models will diversify existing products and services but also initiate a different behavior in consumers as supply chains switch over to supply loops.

3. Sharing Economy Models in the Postal Sector

In the paper, the authors [10] consider existing and potential forms of collaboration in the postal service sector:

- Access to a public postal network, which would allow a user of the access to accept parcels from a user of postal services, and then turn them over to a predetermined postal network access point for further routing, transport, and delivery to the address of the recipient, or to do the same with one's own parcels, i.e., to use the postal network and deliver parcels to the address of the recipient;
- Crowdsourced delivery, as a model of shared delivery in which individuals deliver parcels on behalf of the company for certain compensation;
- The development of the IoT concept, which allows companies in the postal-logistic sector to connect and organizes resources into a unique system;
- The interaction and collaboration of people and machines through the augmented reality concept; and
- Sharing the logistic infrastructure with the competition.

The sharing economy concept based on access to goods/services, as opposed to ownership, can be applied as a new business model for the postal sector, especially the designated operator, which, as a rule of thumb, has a developed network where the role of a shared mobility station can be fulfilled by a postal network unit [11].

Postal operators are in a good position to help in the bridging of the digital gap using the development of an array of services in the financial and social inclusion domain, which create a specific social value, leading to an improvement in the lives of individuals and the society as a whole. According to research [12], post offices are the most desirable choice of location by consumers for internet access, and 11% of participants who have never accessed the internet were willing to receive online training from their local post office staff in order to learn the use the system. In fact, in many countries, post offices are considered non-stigmatizing places open for all, and post office workers are considered dependable and caring people, which is especially important in the development of a just and sustainable digital society.

In the digital environment, companies communicate with consumers through online platforms. This concept is neither new nor in opposition to the characteristics of postal organizations. Where the physical element plays a role, postal operators are at an advantage owing to their strong reputation built on direct personal contact with consumers, with an especially important social role within communities. The physical presence and trust of consumers can be crucial for added value to many online activities. Postal operators could become the basic platforms for an array of activities on online platforms: government services, digital identities, insurance and finance management, telecommunication products, and trade mediation. There are also social and socially responsible programs such as environmental pollution measuring and senior assistance. Postal platforms could become a sort of "personal assistants in life" for people affected by the issues of digital transformation, given their local accessibility [13].

An especially important notion related to the sharing economy is *coopetition* – derived from the words *cooperation* and *competition* and used to define complex multidimensional business relations that companies today have with one another, and which enables the sharing of resources instead of duplicating. Modern post offices are already attempting to think differently and apply strategies of openness in terms of the physical network and infrastructure, as well as of service delivery and logistics [14]. Amazon.com has been using this business model since as early as 2000, and the paper [15] points out that the

concept, although counterintuitive, leads to market expansion, increased resource efficacy, and fiercer competition, not only for Amazon.com but its whole cooperative network.

Sustainable development of urban areas and increased demand for delivery services in urban communities calls for the connectedness of urban logistics and the postal sector through the creation of the reverse logistics system [16]. Both designated and private operators have expressed interest in urban consolidation centers, although there are many uncertainties in terms of implementation of the consolidation scenario, such as the number, location, and size of consolidation centers, car pool, regulatory and market framework, and operative agreements [17].

4. Trends That Could Affect the Further Development of Consolidation Centers

As stated in [18], consolidation centers (CCs) should connect several operators in order to lower individual loads, especially in central urban zones. There can be one or multiple centers covering specific service zones defined based on statistical data on the number of parcels and location of requests. In addition, they can function on a voluntary basis or through mandatory participation in consolidation. In both cases, the basic idea is that they are located as close as possible to the area of service demand, enable maximum flexibility in business operations, and lead to lower transportation expenses and a smaller car pool.

Accordingly, every CC faces a minimum of three unavoidable conditions for successful functioning: to be in accordance with consumer demands, limitations defined by the local and national legislature, and limitations and conditions on the road.

On top of these three conditions, there are three clear factors that have, or may have in the near future, an unavoidable influence on the need for the development of consolidation centers:

- Lack of workforce,
- Further development of e-commerce,
- Environmental protection.

These factors, which can be classified as social, economic-technological, and

environmental factors, have been apparent for a while, but their importance grows with time, so it is only now that they are receiving the attention they warrant.

4.1 Lack of Workforce

Experience has shown that the conditions of the job market from the point of postal-logistic operators have changed drastically and negatively. The possibility of easily finding professional staff and having a simple hiring process is a thing of the past. The root of the issue can be found in the high rate of migration abroad, but we must also not forget the amount of compensation employers are prepared to offer.

The first independent regulatory body which managed postal services in the Republic of Serbia began working on February 1st 2010, and that year marks the beginning of the liberalization of the postal market in the country. According to official data [19], 45 operators are currently active. This information should imply a competitive market. However, if we take the definition of the oligopoly market – a situation where the number of suppliers is so low that each one of them has a direct impact on price and competition – and add to it the impact on employee compensation, it poses the question of what kind of a market that really is. Currently, not a single operator in Serbia has stood out, nor is prepared to stand out in that sense.

CCs would at least somewhat enable the overcoming of the lack of workforce issue caused by migrations primarily owing to the optimization of the process of delivery, exchange, and sharing of human resources.

On the other hand, using CCs as access points where a service is realized, transportation rationalization, and better utilization of flexible transportation capacities would lower the overall transport expenses, [20] which would also aid in solving the second listed issue.

If we consider the number of working hours couriers would require in order to conduct delivery for each separate courier service provider in an urban area and then add the expenses of vehicle exploitation, it becomes clear that a consolidation center network is much more efficient.

4.2 Further Development of E-Commerce

With the urban population increase, the development of e-commerce, and the increase in the number of e-commerce platforms, the expectations of consumers to receive what they want, when, where, and how they want it has increased as well. Although the internet has led to lower logistic expenses in terms of information transfer and money flow, it also poses higher demands for faster distribution of physical products.

E-commerce has not entirely replaced traditional shopping, but its growth in Serbia has been recording unprecedented results. In terms of online card payments in Serbian dinars, 2020 saw an increase of over 100% compared to 2019. Turnover realized through payment on delivery is not included in the graph [21].

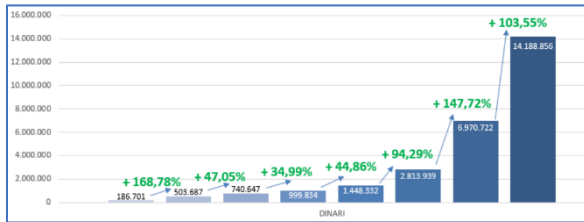


Fig. 3. Growth trend of the number of card transactions in online stores in Serbia

The pandemic has furthered accelerated this trend, but it is expected that these consumer habits are here to stay, as well as that the attitudes of consumers towards e-commerce in Serbia have changed permanently.

Further growth of the scope of electronic commerce leads to an increase in the number of delivery vehicles with a mandatory route optimization based on IT technologies, as well as hiring new staff. Amazon has hired 450,000 people since the beginning of the pandemic and is planning to hire 125,000 more all across the US [22].

In accordance with the idea of following the latest global trends, postal operators can find an interest in the sharing economy and forming a joint consolidation center.

Let us use the Belgian and Dutch Posts as an example – they are developing a project based on the desire to enable coordination of the operations of several logistic enterprises that offer delivery services in central urban zones. Parcels from multiple carriers are consolidated at warehouses outside city centers for the post to deliver the last mile, similar to the Postal

Service's Parcel Select service. The Belgian Post estimates that their project saves about 30 percent of the total miles driven [23].

Collaborative logistics can help posts fortify their position as the last mile delivery partner of choice, especially in congested downtowns. By leveraging IoPT, the Postal Service could develop collaborative logistics platforms to manage last-mile deliveries [23].

4.3 Environmental Protection

The constant growth of the urban population, high population density, and economic activity are primarily causing a high level of air pollution. According to the report from the European Environment Agency, urban areas inhabited by over 70% of the EU population see high levels of pollution that are mainly attributed to the high level of emissions from road traffic and residential combustion in urban areas [24].

Many cities have opted to introduce low emission zones or congestion fees. The city of London has developed a strategy in this area to ensure that 80% of all commutes in city zones are done by foot, bicycle, or public transport by 2041 [25].

In the Republic of Serbia, the Law on Air Protection, among other things, states that agglomerations with high air pollution must have Air Quality Plans [26].

As a consequence of the abovementioned issue, there is a need to reexamine and redefine transportation logistics, as transport in city areas is very difficult and, in some cases, impossible.

One possible solution are consolidation centers, which would enable the sharing of data on request numbers with the goal of lowering the mileage and the number of vehicles used, directly increase traffic safety, lower carbon emissions, and enable the optimization of the utilization of warehouses, defining of key routes and their optimization, and loading area utilization of a joint vehicle.

5. Conclusion

The postal sector is characterized by personal and territorial access, which, on top of adequate infrastructure, includes human, technical, and technological resources. The decision of postal operators to strive for sustainable business

operations, implementation of new business models, and diversification of existing products and services are bringing to life a new business philosophy that requires new expertise and different relationships on the market between all interested parties – regulators, service providers, and consumers.

The development of urban areas and increased demand for delivery services among the urban population requires a relationship between city logistics and the postal sector, which is especially important for smaller providers that need a sustainable business model. The encouragement of the development of consolidation centers is one of the ways of increasing the accessibility and efficacy of postal operators and realizing inclusive and sustainable solutions for the community through a new definition of services on the postal market and appropriate regulations.

The presented idea may serve as a starting point for solving a part of the issues in transportation, at least in terms of delivery in city zones, as well as a good basis for a new form of collaboration of competing organizations that promotes inclusion, transparency, and sustainable business models.

References

- [1] Botsman, R. (2013, 21 November). The Sharing Economy Lacks A Shared Definition FastCompany. Retrieved from: <http://www.fastcoexist.com/3022028/the-sharing-economy-lacks-a-shared-definition>
- [2] “10 Ideas That Will Change the World”, *TIME Magazine*, March 17, 2011: <http://content.time.com/time/specials/packages/0,28757,2059521,00.html>
- [3] <https://www.economist.com/leaders/2013/03/09/the-rise-of-the-sharing-economy>
- [4] <https://www.forbes.com/sites/emc/2013/07/30/what-is-the-new-sharing-economy/?sh=cac05ed4360d>
- [5] UPU, “Benchmarking a critical infrastructure for sustainable development 2018”, in *Postal Development Report 2018* <https://www.upu.int/UPU/media/upu/publications/postalDevelopmentReport2018En.pdf>
- [6] Tepić, J. “Transport-logistic characteristics and the flow of goods”, Novi Sad, Serbia, Faculty of Technical Sciences, 2013,
- [7] <https://www.upu.int/en/News/2021/12/UPU-to-promote-circular-economy-in-postal-sector>
- [8] <https://www.upu.int/en/News/2021/12/Posts-the-lifeblood%E2%80%9Dof-the-second-hand-market>
- [9] <https://www.dhl.com/global-en/home/insights-and-innovation/thought-leadership/white-papers/delivering-on-circularity.html>
- [10] Dumnić, S, Ninović, M, Dupljanin Đ, “Logistic cooperation in the sharing economy”, in *XXXIX symposium on new technologies in the postal and telecommunication sectors*, Belgrade, 30.11-1.12. 2021,
- [11] Lazarević, D, Dobrodolac, M, Popović Đ, „Shared mobility concept in parcel transportation systems”, in *XXXIX symposium on new technologies in the postal and telecommunication sectors*, Beograd, 30.11-1.12. 2021,
- [12] Borsenberger, C., Delahaye, H., & Barnéoud, M. „Digital exclusion and the role of Posts have to play to fight against it”, <https://fsr.eu.eu/wp-content/uploads/2021/10/4A-01R-Borsenberger-Delahaye-Barneoud.pdf>
- [13] J. Milutinović. B. Stanivuković, “Performance of large postal operators in the digital environment”, in *XXXIX symposium on new technologies in the postal and telecommunication sectors*, Belgrade, 30.11-1.12. 2021,
- [14] Petrović, V., Stojanović-Višić, B., Jelisavac Trošić, S. „Coopetition strategy on digital platforms – the potential for application in postal services”, in *XXXVI symposium on new technologies in the postal and telecommunication sectors*, Belgrade, 4-5.12. 2018.
- [15] Ritala, P., Golnam, A., & Wegmann, A. „Coopetition-based business models: The case of Amazon. com”, *Industrial marketing management*, vol. 43, no. 2, pp. 236-249.
- [16] Zelenska, I., Švadlenka, L. “The possible contribution of postal service sector to city logistics”, in *VII International Scientific Conference of the Faculty of Transport Engineering*, Pardubice, Česká republika, 6-7.9.2018. pp. 261-267.
- [17] Janjevic, M., Lebeau, P., Ndiaye, A. B., Macharis, C., Van Mierlo, J., & Nsamzinshuti, A. „Strategic scenarios for sustainable urban distribution in the Brussels-capital region using urban consolidation centres”, *Transportation Research Procedia*, vol. 12, pp. 598-612.
- [18] B. Grgurovic, S. Velickovic, “The application of consolidation centers to postal services operations”, in *VIII International Symposium New horizons*, Dobo, Bosnia and Herzegovina, 26-27.11. 2021,
- [19] <https://www.ratel.rs/cyr/page/cyr-postanski-operatori>
- [20] Lin, Jane et al. “Sustainability SI: Logistics Cost and Environmental Impact Analyses of Urban

Delivery Consolidation Strategies.” *Networks and Spatial Economics* 16 (2016): 227-253.

[21] <https://ecommserbia.org>

[22] <https://press.aboutamazon.com>

[23] Office of inspector general, United States Postal Service, *The Internet of Postal Things*, RARC Report, August 3, 2015.

[24] European EnvironmentAgency, “Outdoor air quality in urban areas”, Annual Indicator Report Series (AIRS), 2016.

[25] WYG. Transport for London, *London Freight Consolidation Feasibility Study*, Final Report. 2019.

[26] Law on Air Protection, “Official Gazette of RS”, no. 36/2009, 10/2013, and 26/2021 – state law

