

PostIB as a Logistic Support for the Development of Rural Areas in the Republic of Serbia

Zoran Marković¹, Ivan Tričković², Obrad Peković², Bojan Jovanović²

Abstract-This paper is about the possibilities of implementing an integral information system in the Serbian Post, which would be an e-Marketplace for a wide range of goods and services linking a buyer and a seller, both at home and abroad. Thus conceived e-exchange would have special significance for the development of rural areas where the availability of information resources is insufficient, both because of lower educational structure, and due to poor availability of telecommunications. In this sense, the Serbian Post may provide their information resources and those of the postal network in the entire territory of Serbia.

Keywords – Post, Information System, e-stock exchange, rural areas, commodities.

I. INTRODUCTION

For several decades we live and work in conditions of rapid development of information technologies that pervade all human activity. Information, and decisions made based on them, are a key factor for success in modern business conditions. The combination of timely and accurate information and good logistic support provides opportunities for synergetic effects in the economy of the country, especially when it comes to individual producers, craftsmen and small businesses in rural areas or in areas outside the major traffic corridors and urban areas.

Smaller commodity producers such as craftsmen, people involved in agriculture, tourism or other fields of production, have a problem selling their products or services, which is to say that they have a problem with the distribution of goods, because the amounts are relatively small and there are high transport costs per unit of product. The efficiency of business, among other things, is measured by effective division of labor, effective communication and efficient logistic support. So if a commodity producer or a provider of service has to think only about the quality and quantity of his product, then the product will be more competitive in the market. On the other hand, the subjects that take care of logistics and organization of information flows can benefit from this because their business is based on quantity whereby the economy of the volume of production leads to lower costs per unit of goods or services.

Post of Serbia has all the prerequisites to become an important link in the chain of goods and services, or buyers and sellers. It owns over 1500 postal network units where computers and transportation system are linked into one unique system. Such a network provides the possibilities of

improving the efficiency of supply chains. Experience in creating software solutions, the tradition in the transfer of postal items, remarkable business capacity, usage of network nodes and other specific qualities of Serbian Post open the possibility of the new approach to attractive market segment dominated by the population, small and medium enterprises.

PostIB is one way to streamline the supply chains. All of the aforementioned issues, as far as resources of Serbian Post are concerned, indicate that the project PostIB is feasible and can contribute significantly to the economic conjuncture.

II. STRUCTURE OF POSTIB

PostIB (Postal Information Exchange) is the idea that the resources of Post Serbia are put into operation to increase overall economic activity of the country and increase its own business volume. Namely, Post Serbia has elements of the postal network in all parts of Serbia and that represents a comparative advantage. Each node of the network is an information and transportation system associated with the rest of the network which is also very important from the standpoint of the efficiency of logistics and information flows.

PostIB should be a Web-oriented application, open to outside access, which would serve as the platform for exchange of goods and services. The database would contain the records of goods and services offered on the market, their description, origin, price, quantity, and all the other elements that might be decisive for a buyer's choice to purchase a certain product.

PostIB would manage databases that would be accessible to all interested parties. In addition to the database of supply and demand, it could also manage a database of risky customers and risky suppliers, their credit worthiness, property map and other information that would affect trust and safe functioning of e-stock exchange. Furthermore, statistics on traffic could be kept there as well as the realized prices of certain categories of goods and services, inventories and expected sales period, the time of contracting and a string of other information of interest to the functioning of supply chains. In addition, if the transport logistics of Serbian Post are not used, it is necessary for PostIB to have data on transport enterprises, their capacity and solvency, pricing, storage facilities, their locations, leisure facilities and other resources. PostIB would be a structural part of an integral information system of Post Serbia and in that way allow, in addition to transport and T& T services for asset tracking, secure payment, digital signing of documents, freight forwarding, customs clearance delivery to the designated address, storage, warehousing and many other features that Post has to offer as an integral service.

It has already been mentioned that the Serbian Post has over 1500 posts of which almost 1400 points have well-connected IT resources, which can be made available to

¹Zoran Marković is with Public Enterprise of PTT Communications "Srbija", Takovska 2, 11000 Belgrade

² Ivan Tričković and Obrad Peković and Bojan Jovanović are with Faculty of Technical Sciences, Trg Dositeja Obradovica 6, Novi Sad; Serbia; E-mail: ivantricko@gmail.com; obradpek@eunet.rs; bojanjov@uns.ac.rs

interested parties. In Figure 1 we see the backbone of Postnet network, which to a large extent, coincides with the transport network. The plan of Post Serbia is that in the recent future all posts would be computer linked to an integral information system (PostTIS) and to increase the capacity of the network, building its own fiber optic network and series of other investments that will raise the level of IT capacities of Post Serbia. The access to PostIB application would be enabled through the Internet with the previous registration of the user categories. The categories of users are important in many respects and the most important is the structuring of e-stock exchange, the speed of the search base, market segmentation and the like. For rural areas, where residents do not have Internet access or do not use it, post offices would be the place for making evidence of and registering users, database search, arranging transactions, the reception of goods for the transfer, payment, etc.. The role of Post Office workers would not only be to make the information resources available, but also to carry out training and provide all other assistance to interested parties. In this way, the availability of PostIB would be in all parts of Serbia equal for all areas of business, under equal conditions, without discrimination for all the structures of society.

Certainly such a project has to be supported by the Serbian government and the mechanisms that control the flow of goods and services, taxes and fees, so that the trade of goods and services through PostIB would be put into legal channels.

Besides working on a software solution, according to the known principles of Web applications, relatively small investments in IT resources are required. Certainly a small investment compared to potential benefits both for the Post of Serbia, and for the country but also for all participants in supply chains, that is buyers and sellers. The application itself would be distinguished from conventional applications of electronic commerce and have the elements that can be seen in social networks. The contents would vary and that includes good monitoring and the moderators who would care about the acceptability of the content.

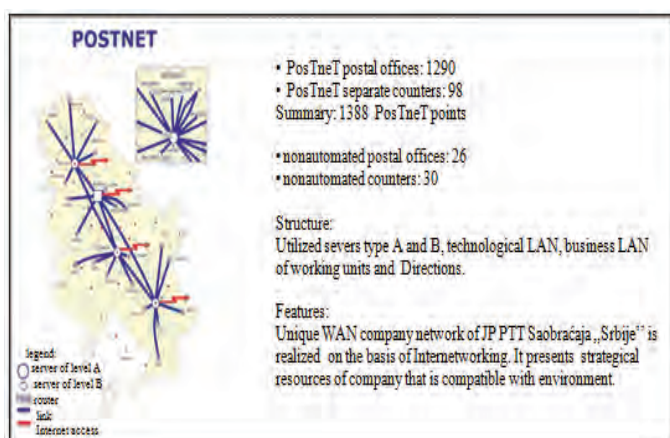


Fig. 1. Backbone of PostNet network

III. THE DIFFERENCE BETWEEN E-STOCK EXCHANGE AND ELECTRONIC COMMERCE

When e-exchange is mentioned people usually think of e-commerce, which is not wrong, but there are major differences between these two notions. Namely, electronic commerce has all the classic elements of trade, which differ in form as follows:

1. Product
2. Origin
3. Marketing
4. Way of receiving orders
5. Way of receiving money
6. Delivery
7. The possibility of returning the product
8. Guarantee
9. Technical Support

Therefore, electronic commerce must involve a legal person who owns a storehouse, has range of merchandise, developing sales marketing, means of communication with the customer, the modalities of payment and delivery and other aspects of the contract by approach. There is an offer of goods and the buyer must agree to the terms of purchase, price, dates and so on. There is a one-way communication where a customer receives information about the goods or services and makes decision about buying. The organization of electronic commerce involves organization of the warehouse, entry and exit of goods, inventory records, which creates costs that eventually a buyer will have to pay. It is virtually the same process as the wholesale and it essentially removes the retail from the supply chain and communication with the customer is done electronically. The total cost of all this reduces the product price because it avoids the retail margin.

Because of its characteristics electronic commerce in recent years experienced an expansion regardless of the shortcomings that are present. The main disadvantages are security payments and still not sufficient use of Internet to purchase goods and services.

On the other hand, e-stock exchange, in the way it can be realized through PostIB, has completely different characteristics. There is almost nothing of the aforementioned characteristics of electronic commerce except the delivery of goods only in the case when a buyer and a seller chose the channel of distribution through the Post of Serbia. PostIB is means of two-way communication between a buyer and a seller. They are free to communicate and negotiate the terms of transaction, mode of transport of goods and payment. Logistical resources of Serbian Post are available to everyone but there are transactions where the Post is unable to carry out the logistic part of the work. The post as the carrier of PostIB has no storage of goods-- goods stay with producers. It also does not have a center for ordering and marketing. This work is done by vendors on their own and can be said that such concept cuts out wholesale and retail trade from the supply chain and, thus, the prices of goods and services continue to decrease. Producers take care about quality and quantity, method of packaging, marketing and shipping to the customer. The buyer selects the goods available, negotiates the terms of

*This work is result from the research in the framework of the project TR 36040

the transaction (which is not the case with e-shopping) and pays a price that is lower.

PostIB should also enable the customer base where the market needs are recorded and where sellers and manufacturers can respond with their offers. Two-way communication would not end there but rather just initiate a direct link between a buyer and a seller as it happens in social networks. If we take Facebook as the parallel then we could have the registration of buyers and sellers, they could form a list of "friends" (the base of their customers or suppliers), organize blogs and forums for sharing knowledge and so on. Each would have its own page where they advertise a product or service, publish their ads, comment on the appearance, etc. When there is a new registered user who is interested in the same field (for example, rural tourism and wine production, purchase of philatelic stamps, service of chain saws and the like) previously registered users would get a notification about it in an email or on their mobile phones. In fact, all areas of human activity can be a subject of trade through PostIB even used computers, cell phones, automobiles, agricultural products and so on. It certainly does not exclude the possibility that the Serbian Post would offer its own goods and services, or that it would use some of its resources to rationalize the business between buyers or sellers when the Serbian Post is included in the logistic chain.

According to recent research Online Retail is setting new records, as in the fourth quarter of last year the volume of trade over the Internet reached 43 billion dollars. Internet traders can be satisfied, because the trading volume increased by about 11 percent compared to the same period of 2009. In addition to record sales in the three-month period, the holiday season was particularly good, as many holiday days set a new record when it comes to the volume of electronic commerce. In the first quarter of 2010, the volume of e-commerce was increased by about 10%, while in the second and third quarter increase was slightly smaller and amounted to about 9%. It is interesting that in the past decade, the volume of increase of e-commerce remains fairly stable at 20 percent annually. The exception was 2008 and years of recession. The strength of this sector at the global level is obvious, and analysts predict that they will return to the rank of a standard two-digit growth on an annual basis, especially now that many think that the recession and the crisis are behind us. In any case, in 2011, one foresees two-digit growth. The most represented sectors in the field of electronic commerce are computer software, consumer electronics, computers and peripherals, toys. All these categories have recorded an annual increase of about 15 percent. The most significant names of e-commerce continue to hold up in the same proportion as the 25 largest Internet stores achieved 68.4 percent of all sales. It is interesting that this figure fell by 5.6 percent from the fourth quarter of 2009. This could be an indicator that small and medium-sized Internet retailers also fail to recover from the economic crisis.

When we have in mind and when we consider the additional benefits provided by PostIB concept, it is clear that the future supply chain is reduced to a direct relationship between supply and demand (the classical trade is increasingly avoided), and also the logistical support in the area of transport and payment.

IV. LOGISTICAL ROLE OF SERBIAN POST IN THE CONCEPT OF POSTIB

The main activity of Serbian Post is the reception, transport and delivery of postal items. Postal items can be roughly divided into items containing information and items containing merchandise or other items. The information in most cases can be received, transmitted and delivered electronically, while goods must be packed, received, transported and delivered engaging a number of different resources. The first category of postal items include letters, postcards, brochures, direct mail, referrals and communications in which the only valuable thing is information and carrier of information (usually paper) has no value or it is negligible. The second category of postal items are letters and packages containing merchandise or other objects that have practical value. So the very content of the mail item has value and the information is only accompanying this shipment.

The current volume of the first category of items is not compromised by implementing PostIB but greatly encourages electronic exchange of information. However, it is important to note that the increased communication across PostIB generates an increased number of postal items containing goods.

If we look at the traditional reception, transport and delivery of goods through the postal items then we can note the following:

- Compliance with regulations on packaging and addressing,
- Defined place of receipt of shipments,
- Defined fees and costs,
- Non-standard terms,
- Low reliability (loss, theft and damage).

However, this approach is logical when it comes to the general offer of universal postal services contract by approach, while in the commercial sector the way of functioning from reception to delivery of such items should be reconsidered. PostIB, as the commercial segment of the Post of Serbia should define the special provisions relating to packing, of addressing and delivery of consignments containing goods, in order for the transfer to be effective, safe and fast. Reception of such items can be made in postal network units or at the vendor and packaging can be adjusted to type and characteristics of the goods. Shipment generated through PostIB, in some areas may be outside of regular postal flows depending on the volume of turnover, characteristics of goods, special requirements in terms of speed, temperature, humidity and so on.

The prices of services for shipments of goods must be flexible and include more factors in the formation. They must be stimulating, with a low profit margin in order to lower the cost per unit of transport and to maximize the total profit with quantity of business. It is important to establish the maximum reliability of the items containing goods, or that the loss or damage is at its minimum.

For example, consider two cases. A farmer in a remote village wants to improve vegetable production, but at his place there is a poor choice of seeds. He went to the nearest

post office and with the help of Post workers and PostIB finds high-quality seeds offer. Since the trip to a big city, where there is a distributor of such goods, is expensive and time consuming, solution is to send chosen seed goods via PostIB. Possible options to pay for the ordered goods is immediately or when it arrives in the mail. For a day or so, our farmer gets his seed with a minimum of expended funds and time. PostIB can be used to inform about the specifics of the selected seeds, agrotechnics which must be applied, herbicide or pesticide to order, and finally to post a trade surplus that he has produced, sell it under the best conditions again with a minimum commitment of time and money. In addition, one should expect higher yields, and therefore higher profits for him and everyone in the chain: the supplier of seeds, the Post and the vegetable buyer because the price is proportional to the invested costs that are naturally lower in this case.

The second case is a car mechanic in a small town that fixes almost all types of cars, and he is the only one in the town. With no shop for spare parts he also does that. Imagine what his warehouse would look like if it had at its disposal all the parts of all the cars maintained. Of course it is not possible. The solution is PostIB. If he has no Internet, he can use a nearby Post and there he can use the PostIB application. Needed spare parts will arrive by mail soon and everyone will be satisfied. A car owner did not have to search for the spare parts on his own, the mechanic has chosen a part that is required with minimal loss of time and price of services is much lower. So again, everyone in the chain can be satisfied.

It is possible to specify a number of similar examples where the synergy of information flow and logistics in supply chains are shown and where postal resources and PostIB produce a new value, new possibility and opportunity for profit.

We can notice several segments of business of Serbian Post, which allows efficient concept of PostIB. It does without saying that the IT resources and their availability are very important as well as the education of the population and industry on the advantages and benefits that we all can accomplish by doing business over PostIB concept. However, when all other possibilities of Serbian Post are included then these benefits are even multiplied. Possibilities of postal transport network are very large and so far consist of one exchange Post office, two international departments, three customs posts, three regional PLC (postal and logistics center), 14 local PLC, 37 transshipment point, 4122 postal counters, 3585 delivery regions, 2756 mailboxes and over 15,896 postal compartments. The territory is divided into 107 542 address segments that allow unambiguously defined coordinates of the recipient and organization of transport logistics for nearly 1,000 trucks. Figure 2 shows the main transport flows in the Republic of Serbia.

Another important segment of logistics in the functioning of PostIB is security of payment. Namely, electronic commerce is still not able to solve the problem of security of electronic payments. The Post of Serbia, as the holder of the national payment system, has mechanisms to make the payments for goods and services more secure for the buyer and seller. A long tradition of paying on delivery ensures that the seller will definitely get his money. Business cooperation with commercial banks allows transfer of funds to be made

on-line from one account to another, to form a referral payment at home or some other possibility. All other payments, such as PDV, taxes, customs fees, etc. can also be done at the Post Office. This means that in most cases the seller or the buyer can rely on Post of Serbia and PostIB when they need to solve their business problems.

In addition to offering storage capacities, commissioning, packing and addressing along with distribution of goods the offer becomes more attractive and interesting.



Fig. 2. Network for transport postal items

V. CONCLUSION

The idea of PostIB represents essential new approach to supply chain and provides many benefits for end participants in the chain. On the other hand the concept of PostIB creates opportunities to initiate appearance of postal items containing goods and thus achieve remarkable commercial results. The special importance of this concept is reflected in the opportunity to develop rural areas, increasing their competitiveness in the market, stopping the negative demographic processes through higher employment and creating a new economic perspective. The Post as a state institution has an obligation to maximally contribute to that aim and PostIB is one way to make it happen.

REFERENCES

- [1] P. Watson, K. C. Gupta, "EM-ANN Models for Microstrip Vias and Interconnects", *IEEE Trans., Microwave Theory Tech.*, vol. 44, no. 12, pp. 2395-2503, 1996.
- [2] B. Milovanovic, Z. Stankovic, S. Ivkovic and V. Stankovic, "Loaded Cylindrical Metallic Cavities Modeling using Neural Networks", *TELSIKS'99, Conference Proceedings*, pp.214-217, Nis, Yugoslavia, 1999.
- [3] <http://business.benchmark.rs>