

**INCREASE OF EFFICIENCY OF LOGISTICS FLOWS IN SHARING ECONOMY CONDITIONS OF A SPECIFIC COMPANY**

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doi:10.22306/al.v5i3.93

Received: 17 May 2018

Accepted: 15 June 2018

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**Keywords:** logistics flow, sharing economy, efficiency, logistics

**Abstract:** The thesis deals with the description of the connection of sharing economy and the logistics flows in business company. At the same time it aims to examine adjustments of logistics flows in practice, in order for them to meet the conditions of sharing economy and increase efficiency. The goal of the thesis is to create a draft of a system of logistics flows, which would increase efficiency of the company and would be more favourable for the company than the current system of product sales. The thesis is divided into three parts. The first part includes list of the most used key concepts and theoretical foundations and paradigms of logistics in connection to sharing economy. The second part makes use of the systematic analysis in order to analyse the three main logistics flows in detail, especially how they influence the current model of product sales to the end-use customers; and lists advantages and disadvantages of the current system. The third part focuses on the possible drafts and adjustments of logistics flows. Gradually, efficiency of flow of material, flow of information and flow of finance is increased. Simultaneously, the proposals for platform for sharing and a micrologistic shared model are drafted.

**1 Introduction**

In these days it is very hard to think about company, which does not have correct visualisation of logistics flows in logistics schemes of processes. Truly, the logistics is the main key to success, because it can divide all the flows separately and can improve each other. Trends like informatization, application of new selling processes and others are pushing companies to do innovations in their selling channels. One of these trends is sharing economy. So, it is necessary for increasing efficiency, make visualisation of all logistics flows in condition of sharing economy. Conflicts from side of government to providers of sharing economy are pushing transformation of sharing economy into the big corporate companies. Because big companies can guarantee legal form of sharing business. Slovak market are copying the trends from the western market (USA, Great Britain). That is one of the reasons why we can wonder, that one day sharing economy will have a place to work in Slovakia. For sure, this will not be possible without connecting it with logistics and detailed description of its principles, rules and flows.

In next subheads we will deal with theoretical ideal states of the connection between sharing economy and logistics.

The ideal model of the shared economy presupposes a high level of informatization, the main engine will be the information flow. Most activities take place in the digital environment in minimum time intervals. In the information flow (Figure 1), the main subjects are the producer and the customer. The sales platform works as an online marketplace where it is possible to meet and trade between these two subjects.

However, the question is why producer does not sell products directly to people? The answer to this question may be, given the problem, that the producer does not have a customer database and therefore has no one to offer. While a corporate corporation (a particular firm) has it and can offer many other benefits to this database.

**2 Theoretical analysis of the topic**

Sharing economy is the phenomenon that has begun to influence the direction of the whole economy and logistics operations a few years ago. "Top economists have prognosis that sharing will cover more than 50% of market and will have a big influence to the business models [1]." It is necessary to consider if the adaptation to the models of sharing economy is possible, and if it is at the strategic level of the plan also profitable.

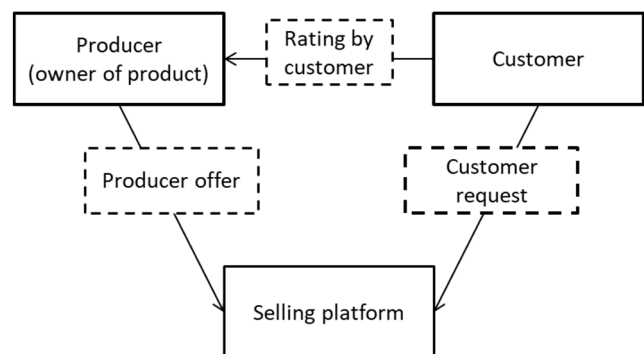


Figure 1 Informational flow and sharing economy [2]

For our thesis, however, the flow of materials is simply a distribution, because it is a business company, not a production company. Even though the flow of material (Figure 2) in the shared economy is illustrated by a

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relatively simple scheme, it is a complex distribution problem. It is necessary to take into account how the product will be distributed to the customer and how the issue of warehouse management will be addressed. There are a number of types of distribution strategy and their mutual combinations that could be chosen for the given problem.

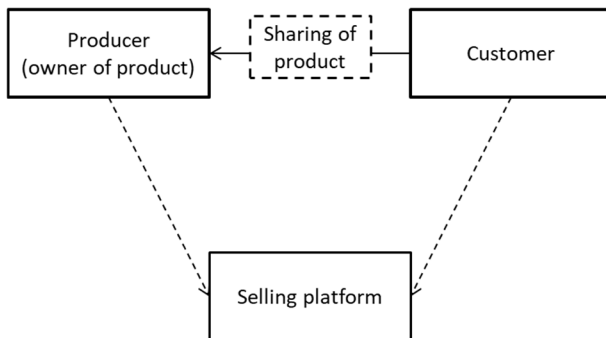


Figure 2 Material flow and sharing economy [2]

The financial calculation of the models of the shared economy is illustrated by a simple scheme (Figure 3). The schema is applied to our specific problem. It is to be imagined that there is a production company on the side of the company that generates a kind of non-commodity product in our case. It is business, so both sides should have their profits from taking a part in model. Customer sends a payment in a digital form that consists of the following components:

- The price of the product determined by the producer (owner) - calculated for the given period, while in the shared economy the principle of micropayments where charges are charged for different variables in different time periods.
- Cost of assembly, claim, bureaucratic load - in an ideal model, the product is sold as a service.
- Fee for connection.

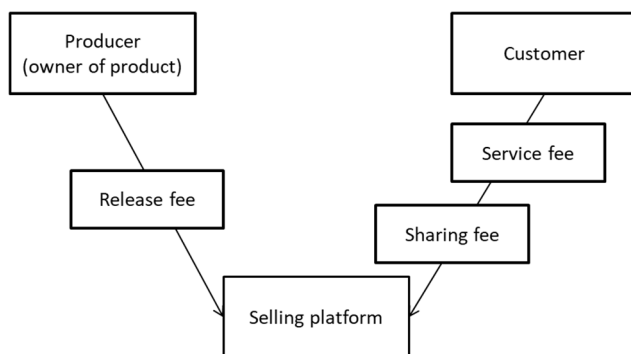


Figure 3 Finance flow and sharing economy [2]

### 3 Analysis of current state

The type of analysis we have chosen is a system analysis, it is necessary to define the system, the system elements, and the links between the elements of the system

[3]. For the purposes of our work, the determination of subjects for system analysis is as follows:

- The system and its subsystems - a product portfolio at different levels

By using system access and one of the main principle, abstraction, we can show the system in the product portfolio. It is a scheme where at first glance are only products divided by categories and types. Simplified say products are offered in certain packages that follow from the point of view of customer satisfaction. At the same time, we can clearly illustrate how the system is winding and where it is influenced by logistical flows.

- Elements - individual products located on the last level of the system.
- Links - logistics flows.
  - Flow of material - physical flow of products from manufacturer, warehouse and storage to one of the sales channels to the customer.
  - Information flow - invoices, information about ownership, product information, it is also possible to include the assistance services that each product includes.
  - Financial flow - commercial and financial models and their application to the market.
  - Flow of humans - the movement of people influencing the overall functioning of the system.

For making an analysis we chose most rented product, which is LED light bulbs.

#### 3.1 Analysis of material flow

In case of material flow, there is nothing to change for LED light bulbs. It is without any process without additional value for distribution. It goes directly from warehouses of producers to one of the selling channels and then directly to the customers hands.

So we made analysis of material flow for other products, what we want to share in future. Distribution typology is star, and it is the worst scenario for distribution. You can see it at the Figure 4. And total distance is 1138 km to go.



Figure 4 Distribution network - current state

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**3.2 Analysis of material flow**

The most important part of informational flow is ownership. Just ownership of a product defines the differences between the shared economy and other types of business, like renting and others. In the figure (Figure 5), red is a part of the ownership of the manufacturer, the blue part of the property being owned by the company, and green is the possibility of purchasing the product directly by the customer after the specified time. It follows that in the current state, even if the product is at the customer, its owner is still a firm.

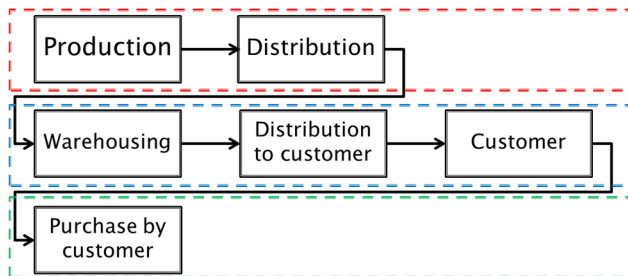


Figure 5 Distribution network - current state

**3.3 Analysis of financial flow**

Financial flow has a characteristic as an operational leasing. It is because of after time of renting is done, customer have an option to purchase a product. Also customer has to pay every month payment for having product at house (Figure 6).

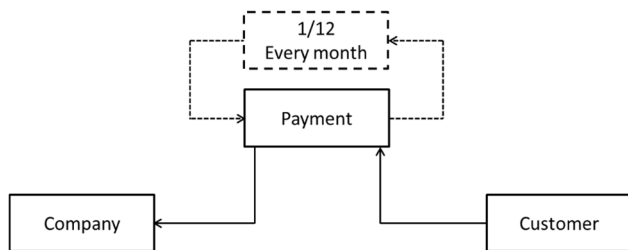


Figure 6 Current business model

Let's talk numbers, if 10% of all customers take product for 12 months it is business turnover 600 000€ and if customer goes for renting light bulb for one year it is business turnover 6€ per year.

**3.4 Summary of analytical part**

Analysis of logistics flows shows deficiencies that may be limiting points for the entire system. Specifically, they were:

- Material flow - star distribution network for other products is least advantageous in terms of time and mileage.
- Information flow - in the environment of the shared economy, the company cannot be the owner of the products that offers them to the customer.
- Financial flow - lease payments have the character of an operating lease, the purchase of the product supports the character of the leasing, and there is no use of product circulation and shortening of the time.
- Unfunded platform that would allow product sharing.

Analysis of logistics flows shows also positive things that are a good prerequisite for applying the principles of a shared economy, namely:

- Material flow - resolved distribution to the product representative.
- Information flow - detailed process-structured activity structure.
- Financial flow - created habit of customers not to own but to sell products.

**4 Design part of solution**

According to summary of analytical part we should try to design solutions that can increase efficiency of logistics flows. So we made it "per partes" for each logistics flows.

**4.1 Design of material flow**

We allocate new stock via software Allocation v. 2.0 (Figure 8). It is type of consignment stock. Geographically, we see that map is divided in two groups. One is on the north with the centre in Prešov and one is on the south with the centre in Košice. Also software confirm what we see on the map and design new stock in Prešov. Total distance with two stocks and two distributional groups is 634 km to go.

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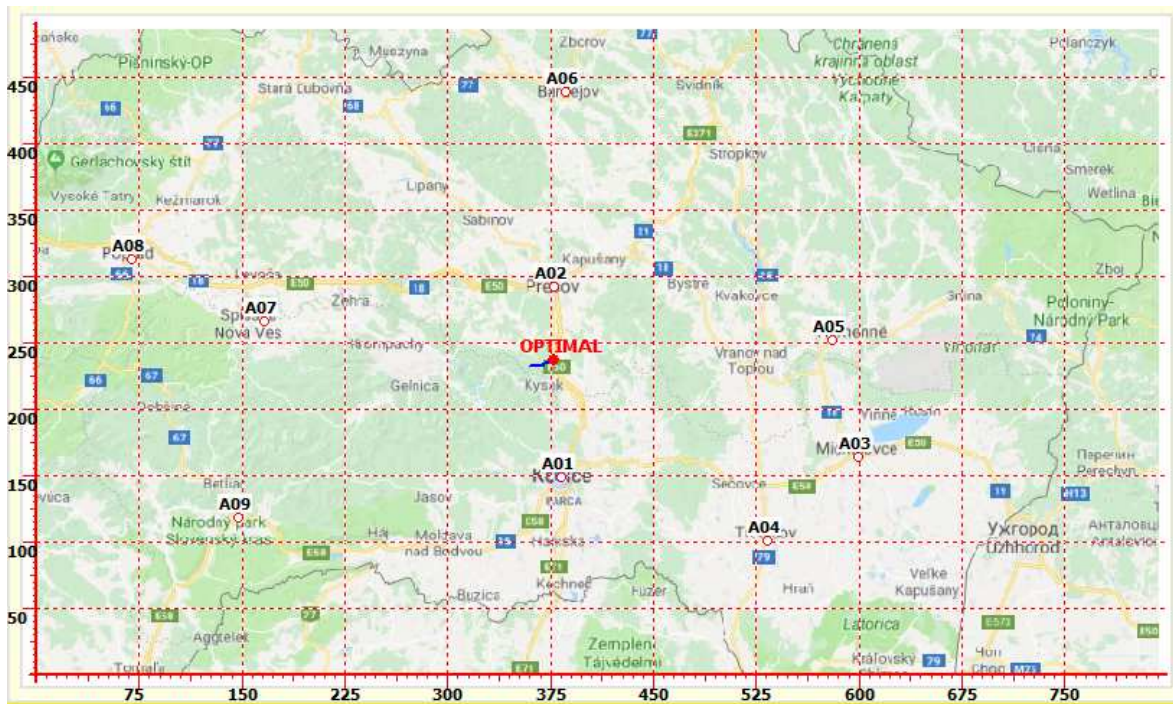


Figure 7 Allocation of new stock

**4.2 Design of information flow**

In design of a new informational flow, we had to edit the product ownership. In the new information flow (Figure 8), the owner is almost the producer all the time. You can see this as shown in the picture, where the red colour is the ownership of the producer, blue as ownership of the company, and green as the ownership of the customer. In part of warehousing, we want to make consignment stock, so ownership will be one half by producer and one half by company. Part of the purchasing by customer is more like a making relationship with customer.

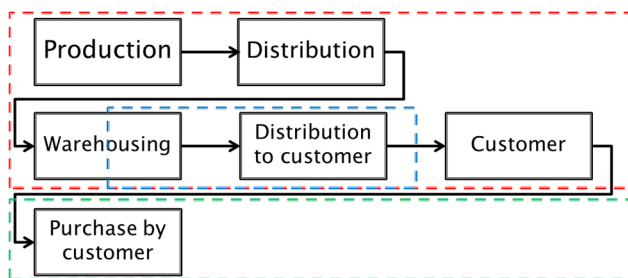


Figure 8 Design of information flow

**4.3 Design of financial flow**

Sharing economy has two very dominant signs, namely it is (Figure 9):

- Circulation of goods - It is typical to spin products in one cycle, where the products already used can be used again. For product circulation, it is necessary to create an input entity for products that would be used as test products. This step also removes the initial uncertainty

of the customer, who may not be convinced of the quality and reliability of the product. Total circulation would be guaranteed by sharing the product for entry testing to customers at a certain price. Such a product would never get into sharing full-fledged products and could produce a profit much higher than full and new products. Schematically, the circulation could be shown as follows [4].

- Shortening time of usage - This includes shortening the time of use of the product, introduction of payment for short periods of time. In the case of long-term sharing, the customer's habit of circumventing the platform arises. For this reason, a short-term share price list should be drawn up when the current price list is rented (sharing). This means shortening the sharing time to the smallest but still acceptable times for the customer [4].

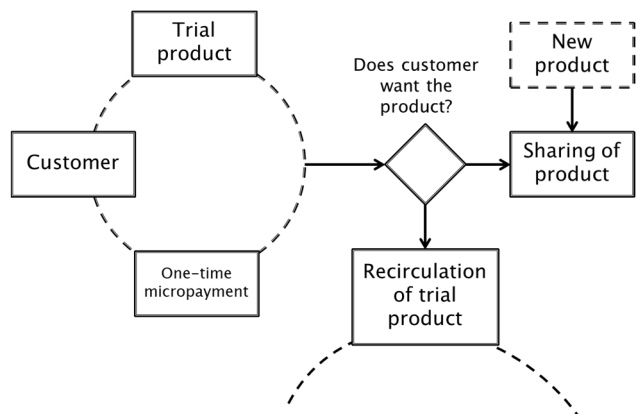


Figure 9 Design of new business model

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Let's talk numbers again. If one bulb will be tested for each month, so it means for full year, it should make a business turnover 8.4 € per one bulb. And if we make a calculation very similar like it was in analytical part, additional business turnover for testing a bulb by 10% of customers is 35 000 €.

## 5 Conclusions

In the material flow we were able to design two distribution groups in the region of Eastern Slovakia with the help of calculations. In the case of the creation of these two distribution groups, the total distance travelled in the Prešov group is 367 km. In the Košice group, this is a typology circle of 267 km. Total savings when using circle-shaped distribution groups is 504 km.

Specifically, we've made a particular company relieve ownership of the product, which reduces the cost of buying and owning products. The company will become an intermediary for energy products without owning just one of the products. In addition to changes in ownership, there was also the need to modify the flow of information using a platform that was not yet created.

In the finance flow, we have been able to increase the turnover of the product's full product load from €6 to € 8.4 per year, resulting in a 40% increase in turnover per bulb. At the same time, the team created space for creating an additional new turnover of € 35,000 per year.

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## Review process

Single-blind peer review process.