



COST OF PHYSICAL DISTRIBUTION AS A COMPONENT OF CUSTOMER SERVICE COST OF COMPANIES IN THE LOWER SILESIA REGION

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Abstract:

The cost of customer service is one of the fundamental notions employed in modern logistics. Its significance is fairly evident, particularly in the context of changes on international markets (globalisation), the broad implementation of modern customer service philosophies on the company level, the pressure to maintain and improve the logistic effectiveness of the service, and the apparent disparities between the level of service and customer expectations. This paper presents empirical findings gathered from the survey of production companies operating in the Lower Silesia region in Poland. The survey was designed to examine the cost of physical distribution separately from other cost elements, as an important determinant in the process of improving customer satisfaction and meeting their expectations. The research methodology was supplemented by numerous literature sources, survey analyses, and deduction/induction methods.

Keywords:

costs, customer service cost, cost of physical distribution.

THE COST OF CUSTOMER SERVICE

For companies operating in production segments, customer service procedures typically generate a sizeable amount of costs related to the provision of the specific needs generated by the logistics system (Ficoń, 2001, pp. 379-381). Proper calculation and isolation of customer service cost is of great significance for improving customer satisfaction and increasing sales volume. Customer service cost is typically segmented into three major groups of costs:

- ◆ **the cost of resource depletion**—this represents the costs related to the loss of potential sales revenues due to product stock depletion, shipment delays, poor quality of the remaining resource pool, order withdrawals; this also includes the forecasted loss of sales revenues from the diminishing of customer trust and deterioration of the company's reputation;
- ◆ **the cost of ineffective service**—this group represents the portion of costs resulting from poor quality of customer service, servicing errors, poor localisation of storage facilities, arbitrary and disorganised use of transportation resources, the cost of emergency shipments and delay compensation, poor technical support for product storage and handling procedures, inflated network of retail outlets, empty running, etc.
- ◆ **the cost of physical distribution**—the costs incurred in relation to the servicing of customer orders, maintenance of storage facilities, maintenance and restocking of reserves, and transportation (Twaróg, 2003, pp. 81-90).

THE COST OF PHYSICAL DISTRIBUTION (KDF)

The most important areas that affect *the cost of servicing customer orders* include the following: the costs of communication with customers prior to the transaction (telephone calls, e-mail), the costs of documentation (trade offer design, catalogues,

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agreement forms), the costs incurred in order maintenance, the costs of invoicing and settlement of dues, and the costs incurred in maintenance and operation of IT systems used in order maintenance (Pfohl, 1998, pp. 269-274).

In company practice, it is typically assumed that the *cost of maintaining and restocking of product reserves* represents the most significant item on the list of costs related to customer servicing. This portion of costs includes capital costs, costs of storage, costs of servicing, and costs of risk, where:

- ♦ capital cost – the potential loss for the company resulting from the ‘freezing’ of capital in reserve stockpiling, to the effect of limiting the available pool of capital for other, more productive endeavours;
- ♦ stockpiling cost – the cost of maintaining suitable reserves on stock, particularly the costs of storage space renting, lighting, heating, air-conditioning, and security;
- ♦ costs of reserves servicing – the costs dictated by the need to insure or (in some cases) cover the fiscal burden of the reserves kept in stock.
- ♦ the cost of risk – this portion of cost represents losses incurred by the depletion of stockpiled product value caused by mechanisms outside the entity’s control (such as ageing of the whole stock or parts thereof, drying up, crumbling, economic deterioration of products or parts, *etc.*) (Krzyżaniak, 2002, pp. 15-16).

Those companies that outsource their shipping procedures to external transportation and handling providers should make sure to identify the cost of keeping the reserves in transit, *i.e.* to separate this part of cost from the cost of stockpiling. It seems that this approach is of particular importance when timely deliveries are perceived as a major determinant of service quality.

The cost of stockpiling represents the portion of costs related to the requirement of keeping ample stock of products and other items on reserve. This includes both the cost of ordering new stock and the cost of setting up the required production processes. The cost of stockpile orders is generated from the pile of orders placed with external suppliers, and – as such – do not reflect the cost of any internal production processes related to reserve stockpiling. Stockpiling costs typically include one-time payments related to the placement and realisation of orders placed with external suppliers, the costs of stock reviews, the costs incurred in the preparation and realisation of order-related documents, the costs of supplier selection procedures, the cost of order realisation and processing of external documentation, the cost incurred in the verification and scrutiny of supplied produce, and the cost of settlement preparation and procurement (Twaróg, 2003, pp. 84-85). The cost of setting up the required production procedures represents outlays associated with any modifications to production lines required as part of the restocking process. These involve both the cost of machinery utilisation,

and the personnel outlays incurred in association with the production set-up procedures (Lambert, 1993, pp. 110-125).

The cost of storage space maintenance is, first and foremost, related to the adopted strategy of storage space handling. Companies running their own storage space need to include the full running cost of storage facilities, irrespective of their effective storage load. This includes, most of all, the fixed cost of depreciation (both the facilities, and the equipment), insurance, equipment maintenance and repairs, personnel remuneration (*e.g.* security personnel), the running cost of energy used for lighting, heating and air-conditioning. Non-fixed or volatile costs for companies using their own storage space include outlays associated with product reception, unloading, storage, and dispatch. This group includes the cost of product identification and sorting, the cost of energy and material consumption, product insurance, labelling, packaging, handling and transition, documentation, supervision, and commission. For companies choosing to outsource their storage needs to external service providers, the cost of storage space maintenance – in the form of rental or per-use payments – are, for the most part, non-fixed. In practice, the **cost of transportation** represents the dominant share in the total cost of physical distribution. This may include the running cost of own transportation services or those outsourced to external service providers, such as the cost of vehicle lease or purchase, capital cost, the cost of fleet deterioration, vehicle insurance, exploitation costs, *etc.*

TOTAL COST OF PHYSICAL DISTRIBUTION

Based on the above-given distinction of cost groups, one may postulate a formula to represent the total cost of physical distribution. This particular segment of costing in logistics can be represented as follows:

$$KDF = KO + KT + KM + KZ + KU$$

where:

KO – cost of order servicing,

KT – cost of transport,

KM – cost of storage maintenance,

KZ – cost of reserve stockpiling,

KU – cost of lost sales revenues (Twaróg, 2003, p. 86).

P. Kotler (Rutkowski (*ed.*), 2000, pp. 30-32) defines KDF as follows:

$$D = T + FW + VW + S$$

where:

D – global cost of physical distribution;

T – global cost of transport;

FW – global cost of product stockpiling;

VW – global cost of reserves handling;

S – global cost of lost sales revenues.



A similar approach can be found in the formula postulated by M. Christopher:

$$\text{TDC} = \text{TC} + \text{FC} + \text{CC} + \text{IC} + \text{HC} + \text{PC} + \text{MC}$$

where:

TDC – global cost of physical distribution of goods;

TC – global cost of transport;

FC – global cost of product stockpiling;

CC – global cost of communication (information processing, invoicing, *etc.*);

IC – global cost of reserves;

HC – global cost of shipment handling;

PC – global cost of protective packaging;

MC – global cost of physical goods distribution management (Twaróg, 2003, p. 86).

At the same time, some researchers suggest that the level of customer service is related to the cost of product stockpiling, storage infrastructure, handling, transportation, processing of orders, and cost of dispatch.

RESEARCH FINDINGS

The research was conducted in July and August, 2016, by means of online surveys collected from the representatives of manufacturing companies in the SME (small and medium-sized enterprise) segment, operating in the Lower Silesia region in Poland. A total of 124 surveys were dispatched, of which 76 received a response. The survey comprised the following questions:

1. Does your company isolate the costing segment from customer servicing cost?
2. If not, are there any plans to introduce this approach in the next 12 months?
3. Does your company isolate the following groups from the total cost of customer servicing: the cost of reserve exhaustion, the cost of inadequate service, the cost of physical distribution of goods?
4. Does your company isolate the following groups from the total cost of physical distribution: the cost of customer order handling, the cost of storage space maintenance, the cost of reserve stockpiling and restocking, the cost of transportation?
5. What is the share of each of the above-given costing groups in the total cost of physical distribution?
6. Does your company calculate the total (global) cost of physical distribution?
7. Do you find that the introduction (isolation) of total (global) cost of physical distribution has had a positive effect on operating management in your company?
8. Do you find that the introduction (isolation) of total (global) cost of physical distribution has had a positive effect on cost management procedures in your company?

9. Do you find that the introduction (isolation) of total (global) cost of physical distribution has had a positive effect on the quality of customer service?

As suggested by the responses, 58% of the surveyed companies employed the total cost of customer service as an isolated item on the costing list (Fig. 1), and only 23% of the remainder expressed their intention to follow this approach within the next 12 months (Fig. 2).

For the companies that separate the cost of customer servicing, as many as 97% were found to employ a distribution of such costs into 3 major groups (Fig. 3), and as many as 80% seem to separate the analytical costs (Fig. 4). For companies that use this form of detailed classification (*i.e.* isolation of physical distribution costs, as many as 97% calculated the cost of customer order management (A), the cost of storage maintenance (B), and the cost of transport (D). Only 85% chose to make separate calculations of the costs incurred at reserve stockpiling and maintenance (C). This seems to validate the most obvious conclusion that those companies that separate the cost of physical distribution are, in their entirety (100%), committed to calculating the total (global) cost of this item (Fig. 6). The last three questions of the survey were designed to evaluate the results of the decision to isolate the physical distribution costs in the following areas: operating management, customer servicing, and cost management. Out of all companies that chose to separate the KDF, 91% reported improvements in the area of operating management, 70% in cost management, and 82% in the area of customer servicing.

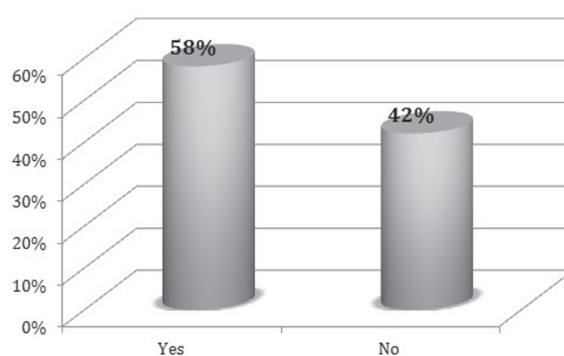


Figure 1. Separation of customer servicing costs

Source: Author's research based on the survey results.

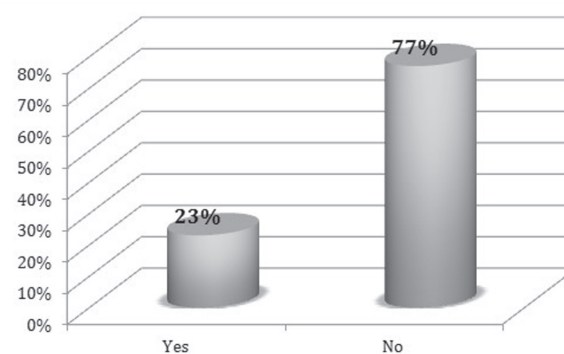


Figure 2. Plans on separating customer servicing costs

Source: Author's research based on the survey results.

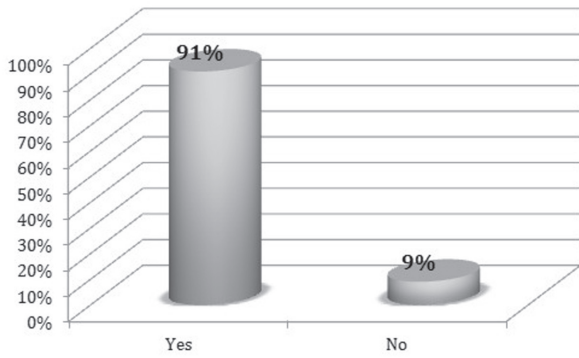


Figure 3. Separation of costs associated with reserves depletion, inadequate customer service, and physical distribution of products

Source: Author's research based on the survey results.

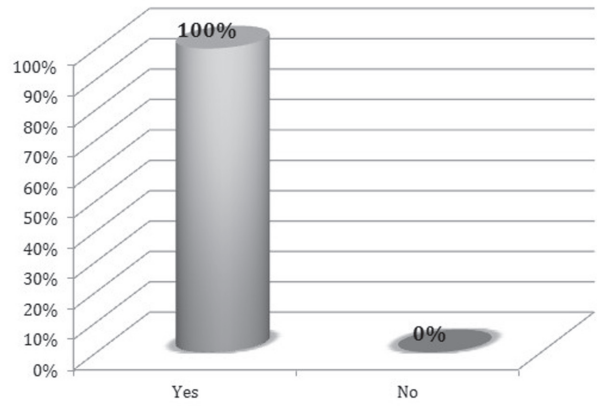


Figure 6. Calculation of total (global) cost of physical distribution

Source: Author's research based on the survey results.

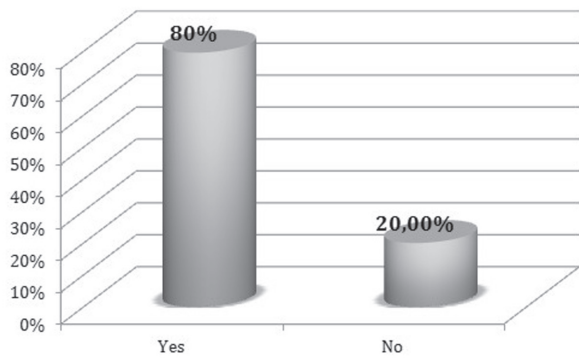


Figure 4. Separation of costs associated with the servicing of customer orders, storage space maintenance, reserves stockpiling and maintenance, and transport

Source: Author's research based on the survey results.

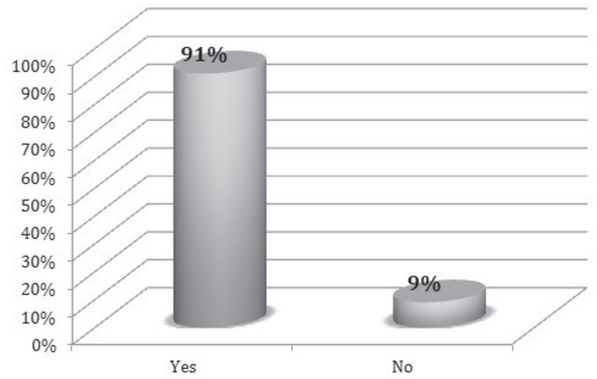


Figure 7. Improvement in the area of operating management

Source: Author's research based on the survey results

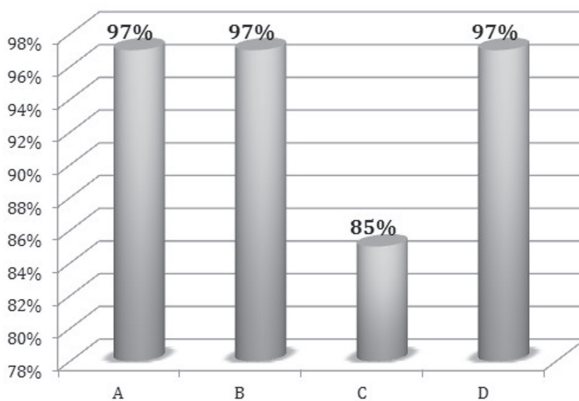


Figure 5. The share of individual components in total physical distribution costs: customer order servicing (A), storage space maintenance (B), stockpiling and maintenance reserves (C), transportation (D).

Source: Author's research based on the survey results

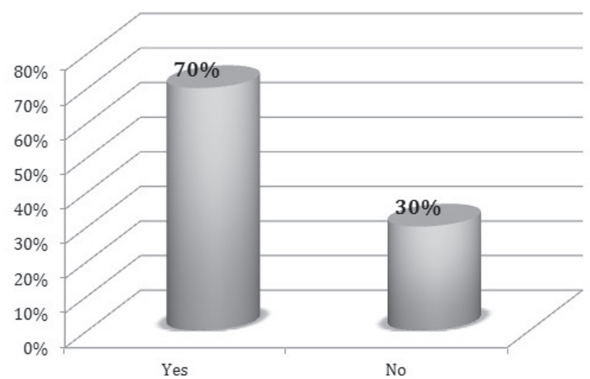


Figure 8. Improvement in the area of cost management

Source: Author's research based on the survey results

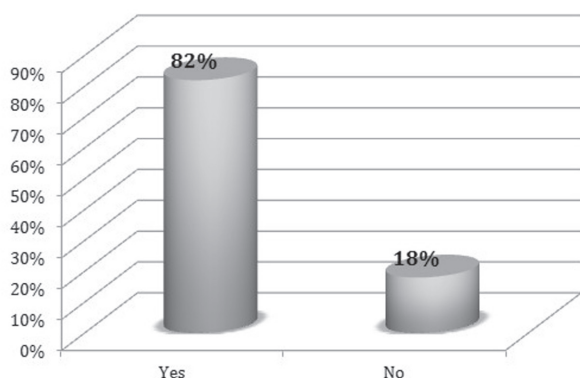


Figure 9. Improvement in the quality of customer service
Source: Author's research based on the survey results.

CONCLUSIONS

Changes taking place in production companies, resulting from the increasingly volatile competition, globalisation and market development, have had the effect of increasing the company's interest in detailed analyses of customer behaviour and costing procedures. According to the survey, those

companies that implemented physical distribution classification costs reported improvements in management in all segments, which in turn translated into improvements in the company's financial performances, customer satisfaction and market position. Owing to the implementation of logistics cost management, a more comprehensive picture of the company's operations can be presented and quicker responses to supplier and customer behaviour are possible.

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UDEO FIZIČKE DISTRIBUCIJE U OBRAČUNU CENE KOŠTANJA USLUGE U PREDUZEĆIMA U OBLASTI DONJA SILESIIJA

Apstrakt:

Cena koštanja usluge predstavlja jedan od ključnih pojmova u savremenoj logistici, imajući u vidu aktuelne promene na međunarodnim tržištima (globalizacija), široko rasprostranjenu primenu poslovne filozofije savremenih korisničkih servisa, pritisak da se održi i unapredi logistička efikasnost usluga, i očigledne razlike između kvaliteta pružene usluge i očekivanja klijenata. Ovaj rad prikazuje empirijske nalaze dobijene na osnovu istraživanja sprovedenog u proizvodnim kompanijama koje posluju u oblasti Donja Silesija u Poljskoj. Studija je osmišljena sa ciljem da se utvrde troškovi fizičke distribucije nezavisno od ostalih troškova, kao važne odrednice u procesu unapređenja zadovoljstva kupaca i ispunjenja njihovih očekivanja. Metodologija istraživanja dopunjena je različitim studijama navedenim u literaturi, anketama i induktivnim i deduktivnim metodama.

Ključne reči:

troškovi,
cena koštanja usluge,
cena fizičke distribucije.