Information Needs Matrix as a Tool for Improvement of Customer Service Process in a Manufacturing Company – A Case Study

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Abstract:

Purpose: The aim of the paper is to present the concept and analyse the possibility of using the matrix of information needs as a tool improving the process of customer service. Moreover, the paper presents the procedure of its implementation and use on the example of a production company from the furniture industry operating in Poland.
Design/Methodology/Approach: The paper uses the concept of case study. It presents the essence of the matrix of information needs as a tool to improve communication between departments in the company. The procedure of implementing this tool in a production company was also presented. Additionally, the paper is based on the analysis of literature concerning information needs and logistics customer service in companies.
Findings: The result of the work is an information needs matrix as a tool for improving the effectiveness of the customer service process in a company. The procedure of preparation and implementation of such a matrix was presented on the example of a production company operating on the furniture market in Poland. Other results include the identification of challenges and problems in the implementation process of the information needs matrix.
Originality/Value: The described matrix of information needs is a very important tool for improving the effectiveness of communication between departments involved in the customer service process. In this manner, the implementation of the matrix contributes to the improvement of the efficiency of the whole service process. The matrix should be based on a detailed analysis of the information needs of each participant in the process and take into account the specificity of the company.

Keywords: Information needs, information needs matrix, customer service, customer relationship management.

JEL codes: 015, 031, 032, M12.

Paper Type: Case study.

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1. Introduction

The problem of many contemporary companies is that traditional organizational structures are not adequate to the process approach, which is used in the practice of company operation. This particularly applies to business processes, which in their scope cover several functional departments in a company. In this instance, the problem with cooperation between functional departments is particularly noticeable. This is most often related to communication and information flow. An example of a business process in which various functional departments in a company are involved is the customer service process.

Customer service, understood as a set of activities aimed at effective and efficient execution of an order placed by a customer, is considered a key and effective instrument of competition. Growing competition forces companies to constantly search for new solutions in the area of sales and customer service. One of these solutions is the concept of the so-called information needs matrix, the application of which contributes to improving communication between departments in a company and thus to improving the efficiency of the entire service process.

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2. Theoretical Background

2.1 Information Needs in the Company's Information System

Information management is treated by most authors as one of the most important elements of a company's strategy (Macharzina, 2003). The considerations in this area focus mainly on the problems concerning various sources of information. Meanwhile, it is the information needs that influence the demand for information and, at the same time, create information streams and, more broadly, the entire information system (Kowalik and Sobolewska, 2017). Thus, information needs form the basis of the entire strategic information system of a company.

Consideration of information needs should start with defining them. Numerous studies on information needs can be found in the literature. A need is defined as a feeling of a state of lack. Thus, an information need arises when a gap is identified between the information currently available and the information necessary to perform a certain task (Case, 2002). In this situation the existing knowledge is insufficient to fulfil the goal.

For the purposes of this paper, we will assume that information needs are the necessary data sets that describe the economic processes taking place in companies

Information Needs Matrix as a Tool for Improvement of Customer Service Process
in a Manufacturing Company – A Case Study

338

and their environment, enabling the objectives of that company to be met at a satisfactory level (Nicholas, 2000; Mruk *et al.,*1999)

Several classifications of information needs can be distinguished in the literature. According to perception, information needs can be divided into objective needs and subjective needs. Objective needs are those that are considered sufficient to realise a certain issue. Subjective needs, on the other hand, are needs that a person considers necessary in a given case to solve a problem. Nicholas (2000) points out the difference between desired information, i.e. information that a person would like to have, and the actual need for information.

In turn, from the point of view of the management level, the following needs can be distinguished: absolute, basic and actual. Absolute needs reflect the whole complex of issues related to the functioning of the company. Basic needs are the needs of a specific group of people, department or unit, resulting from the tasks set before them. Actual needs, on the other hand, are needs which make it possible to solve a specific problem (Mruk, 1999).

In turn, Marti (1996) distinguishes 3 types of information that influence the shape of the user's information needs themselves. These are:

1. information that is sought but not entirely necessary,
2. information that is necessary and sought,
3. information is necessary but not sought.

Many authors are also concerned with defining the methods used to identify information needs, pointing out the advantages and disadvantages of using particular methods (Vaori, 2006). The problem of individual feelings of particular information users is of great importance here. This is because it affects the cost of acquiring information, and thus the efficiency of the entire information system in the company.

Homburg (2006) indicates that the process of building such a system consists of 4 stages. These are:

1. Identification of the information user,
2. Study of information needs,
3. Identification of the source of information methods for obtaining information,
4. Establishment of a system for the collection, analysis and processing of information.

The identification of information needs in a company also depends on specific conditions and on the specific decision-making situation. In this instance, it is necessary to find answers to the following questions:

➢ what specific information does the user require?
➢ at what level of aggregation is specific information needed?
➢ at what intervals will the user need the information to be updated?
➢ for what purpose is the information generated?

2.2 Information Needs in the Customer Service Process

The customer service process is one of the most important processes in a company. In the vast majority of companies, several different functional departments are involved in the implementation of this process. For example, the sales department, the marketing department, the logistics department or the finance department. It is therefore necessary to coordinate the work within the various departments.

A key element of this coordination is information flow. This requires the development of an effective information flow within the service process. In order to do so, it is necessary to identify the information needs of individual departments and, on the other hand, to check the scope of information transferred between departments. A large amount of internal and external information is required for decision-making in the customer service process. Information should have the following attributes: timeliness, accuracy, relevance, reliability, certainty, unambiguity, continuity, usefulness, comparability, accessibility, consistency and completeness (Rutkowski, 2021).

2.3 Essence of the Information Needs Matrix

An information needs matrix, which is a tool for streamlining the flow of information in an organisation, can be very useful in this instance. It allows confronting the information needs of individual departments of an organisation within the realisation of a given process. Due to the complexity of the customer service process, it is worth considering the use of this matrix in this case.

2.4 Information Needs Matrix Creation Process

The process of preparation and implementation of the information needs matrix, consists of the following stages:

1. Appointment of the project team
2. Mapping the current customer service process in the company
3. Identification of the functions of individual organisational departments within the service process
4. Identification of the information needs of each department
5. Development of the matrix as a database
6. Development of a target customer service process with tasks for individual departments
7. Conducting training in individual departments

*Information Needs Matrix as a Tool for Improvement of Customer Service Process
in a Manufacturing Company – A Case Study*

340

8. Matrix implementation - implementation of a new process in the company in the form of procedures.

Re.1. Appointment of the project team

The first step in the matrix implementation process is to create a project team. The project team should include representatives from all functional departments involved in the customer service process. Very important is that each functional department is represented. This will allow, on the one hand, a more accurate description of the individual work carried out within the service process and, on the other hand, will allow all collaborators to understand the specifics of the work carried out by a related department or organisational unit. Thus, the project team should include people from sales, marketing, logistics and also from the finance department, which is usually responsible for the debt collection process.

Re.2. Mapping the current customer service process in the company

The second stage of work is to map the current customer service process in a given company. It is therefore necessary to describe in detail the individual stages of the service process and the tasks of individual organisational departments of the company. Depending on the specificity of a given company, this process will have a different scope. The process will look different in a manufacturing company, in a trading company and in an online shop. The result of the work at this stage is a detailed description of the entire service process, from sales activities through order processing to returns and complaints handling. An interesting description of mapping and modelling of information and decision-making processes is included in the work on the use of information processes in management (Biniek, 2020).

Re.3. Identification of the functions of individual organisational departments within the service process

In the next step it is necessary to separate and describe in detail the activities of individual departments within the service process. The tasks of the sales department are different from those of the logistics department within the framework of servicing the same customer. The result of this stage is a list of activities performed by individual departments at different stages of service, along with their scope and frequency.

Re.4. Identification of the information needs of each department

In this instance it is necessary to identify and describe in detail the information needs of the individual departments within the service process, necessary for the implementation of the tasks described in the previous point. This involves a precise description of the scope of information needed by a given organisational unit in the service process and who should be the source of this information.

On the other hand, it is also necessary to indicate any information that a given department is obliged to provide to other departments, the frequency of providing this information should be indicated, and at the same time it is possible to diagnose

the current level of satisfaction of information needs of other departments. For this purpose a specially prepared working table is used. It contains the necessary information for the later preparation of the whole matrix. An example is included in Table 1.

Table 1. *Example of a sales department information needs table*

INFORMATION NEEDS TABLE			
DEPARTMENT NAME	**SALES DEPARTMENT**		
INFORMATION SOURCE - which department you are looking for information from	**CONTENT - What** information does the Sales Department need from other departments to effectively serve the customer to the fullest extent?	**FREQUENCY** How often should the information be provided? - please enter the relevant letter M - monthly, T - weekly, D - daily B - ongoing (in case of a specific order or event)	**SUFFICIENT LEVEL OF COMPLIANCE WITH INFORMATION NEEDS** (please enter a number) 2 - sufficient, 1 - insufficient, 0 - complete lack of
LOGISTICS DEPARTMENT	1. Information 1	D	2
	2. Information 2	B	0
	3. Information 3	T	1
COMPLAINTS DEPARTMENT	4. Information 4	T	1
	5. Information 5	B	1
	6. Information 6	D	0
FINANCE DEPARTMENT	7. Information 7	T	2
	8. Information 8	T	0
	9. Information 9	T	1

Source: *Own study.*

The above table should be prepared by all the departments involved in the customer service process, as follows from the description of the process carried out in the previous step.
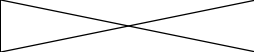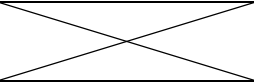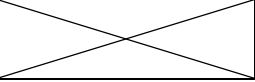
Re.5. Development of the matrix as a database
The next step is to prepare a matrix, which is the resultant of the previously conducted work and contains information contained in tables prepared by individual departments. The matrix contains detailed information that individual departments should pass on to each other within the framework of the customer service process in the enterprise. An example is included in Table 2.

Additionally, as part of the ongoing work it is also possible to prepare a special application which will allow individual employees to better exchange operational information within the service process. Such an application may be particularly useful in large companies with several locations, where the customer service process is particularly complex. This applies in particular to manufacturing companies, which serve different customer segments.

Table 2. *Information needs matrix template*

TO WHOM / WHO	**SALES DEPARTMENT**	**LOGISTICS DEPARTMENT**	**FINANCE DEPARTMENT**
SALES DEPARTMENT		• Information 1	• Information 1

Information Needs Matrix as a Tool for Improvement of Customer Service Process
in a Manufacturing Company – A Case Study

342

		• Information 2 • Information 3	• Information 2 • Information 3
LOGISTICS DEPARTMENT	• Information 1 • Information 2 • Information 3		• Information 1 • Information 2 • Information 3
FINANCE DEPARTMENT	• Information 1 • Information 2 • Information 3	• Information 1 • Information 2 • Information 3	

Source: *Own study.*

Re.6. Development of a target customer service process

The next step is to verify and correct the current service process. On the basis of the information collected in the matrix, a verified target customer service process should be prepared. Depending on the situation of a particular company, it will be either a correction of the existing process or, in special cases, it may be necessary to change the entire service process into a new one. It will include new tasks for the communication of information by the different departments in the company. This new process should be agreed, reviewed by representatives of the individual departments and approved by the board.

The best solution is to develop a new process in the form of a procedure approved by the board. At the same time, the tasks resulting from this new process should be included in the job descriptions of the individual people involved in the service process.

Re.7. Conducting training in individual departments

Another important step is to carry out implementation work, which usually takes the form of workshops or training sessions during which new tasks resulting from the new customer service process are discussed. This stage is particularly important because the new process will only work if it is understood and accepted by the individual employees involved.

Re.8. Matrix implementation - implementation of a new process in the company

The final step, after training, is to implement the new process. This should take the form of a board decision.

3. Example of Using an Information Needs Matrix in a Manufacturing Company

The matrix described was used in one of Poland's leading furniture manufacturing companies. It is worth noting that Poland is one of the world leaders in furniture production. The value of Polish exports in this product group, is about 11 billion euros. 40% of it goes to the market of German-speaking countries (DACH).

The analysed company developed very dynamically in the period 2016-2020. This development was mainly due to the increase in demand for furniture both in the domestic and foreign markets, an increase in the number of active customers of the

company resulting in an increase in production. Almost 80% of sales constitute exports to Western Europe, mainly to German-speaking countries. The company's key customers are predominantly distribution companies and retail chains that distribute furniture and home furnishings. The companies usually have multiple locations in different countries. In this situation, the supplier is forced to contact multiple locations of the same retail chain, as possible operational service problems may occur in different locations.

The specific nature of furniture distribution by western retail chains with multiple locations requires very good coordination of the supplier's customer service activities. It is necessary to coordinate the activities of the sales department, order processing department, production department and the finance department, which handled payments and debt recovery.

However, with the steady increase in turnover, problems began to emerge that mainly concerned the operational level of management. In particular these were:

- Customer complaints related to quality and timeliness of delivery,
- Insufficient flow of information between the sales department, the logistics department and the production department, which had a negative impact on production efficiency,
- Mutual complaints from employees in different departments related to ongoing customer service issues,
- Excessively long response times to customer enquiries,
- Contacting both sales department staff and customer service staff on the same issue with the customer,
- Creating reports which no one uses,
- In many cases, the information needed to make a decision is missing,

In this situation, as part of the work related to the implementation of the Sales and Operation Plan, the company's board audited the processes in the areas of marketing, sales, production and order processing. The analysis of the processes and the results achieved revealed the weaknesses of the existing service system. These were the result of:

- Errors in existing customer service procedures, especially in terms of communication with customers,
- Lack of knowledge of current procedures by certain members of staff,
- The attitudes of some members of staff and the lack of willingness to cooperate with others,

As can be seen, these problems were largely due to poor departmental communication and errors in procedures. This affected the efficiency of the entire customer service process. In this situation, in order to improve communication in the

Information Needs Matrix as a Tool for Improvement of Customer Service Process in a Manufacturing Company – A Case Study

344

company, in cooperation with external consultants, it was decided to use an information needs matrix.

The implementation of the matrix in the company followed the procedure described earlier in this paper. To implement the project, the company's board of directors appointed a project team consisting of managers and key personnel from the departments involved in the service process and external consultants.

The first step was to conduct a workshop with staff from the various departments involved in the service process. The aim of the workshop was:

1. To identify the activities of the various functional departments in the service process,
2. To identify information needs arising from these activities,
3. To identify the current level of satisfaction of current information needs.

The data collected during the workshop made it possible to map the actual course of the service process in the company ("as is" status). Moreover, the tasks and activities of individual departments within the service process were identified, as well as the information needs of each department, resulting from their activities in the service process.

The result of this work was the development of a matrix in the form of a database based on a ms excel sheet. A detailed analysis of the information contained in the matrix allowed us to:

1. Develop a new reporting system that takes into account the real information needs of the departments,
2. Develop a target customer service process with tasks for individual departments ("to be" status).

After verification of the results by functional department managers, the final results were presented for approval to the company's management board. The positive decision of the board allowed to start the work related to the implementation of the results. The implementation consisted of the following:

1. Implementation of a new service process in the company through appropriate changes to existing procedures,
2. Conducting workshops and trainings in individual departments.

Additionally, as part of the implementation work, a special application was prepared to complement the existing CRM module. This application enables continuous exchange of information between persons involved in the process of customer service in the company. It allows the current entry of information on the status of service of a given order within individual departments.

Furthermore, it is also possible to post enquiries to individual departments and information on the degree of completion of individual works.

4. Conclusion

The information needs matrix eliminates undoubtedly a serious problem in modern management consisting in the inadequacy of organisational structures to the needs of the process approach, which is used in an increasing number of companies. As a result of the work carried out, after the implementation of the information needs matrix a clear improvement of the customer service process has been observed.

Following the implementation of the entire project, a definite improvement in communication between functional departments and between the company and its customers has been identified. In particular, this concerned:

- reduction of information flow time between departments,
- reduction in the time taken to provide information to the customer,
- improvement of the quality of information transfer between departments,
- improvement of the quality of information provided to the customer,
- elimination of unnecessary reports.

These elements consequently led to an improvement in the efficiency of the customer service process and improved customer relations, which was reflected in customer satisfaction surveys conducted by the company. Moreover, the advantage of the described solution is that it can be used practically in all types of companies.

The changes taking place on the market and the intensifying competition force companies to constantly monitor and improve their service processes. Of course, implementation work must take into account the specific characteristics of individual industries and companies.

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Information Needs Matrix as a Tool for Improvement of Customer Service Process in a Manufacturing Company – A Case Study

346

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