

Complaint Analysis as Part of Service Quality and Safety Management

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Abstract. Quality and safety of products and services are very important factors influencing customers' decisions about the purchase. They affect the level of customer satisfaction, but also their safety during consumption. A great deal of information about customers' perceptions of products can be inferred from the complaints they file. Complaint indicators can easily be used to analyze the quality of services available on the market. The purpose of the research was to analyze complaints filed by customers of a chosen e-shop from Poland. The analysis was based on data from January 2017 to December 2021. An analysis was made of the number of complaints filed in relation to the number of orders placed. The percentage of complaints recognized by the manufacturer and the reasons for filing complaints were presented. This analysis should be a starting point for the researched e-shop for improvement measures to raise the level of customer satisfaction.

Introduction

Product quality and safety are important aspects considered by customers. Many scientists have conducted researches to evaluate the quality of products [1,2], the technology of their production, which affects the final result [3,4], the use of materials during their production [5,6], production machinery and equipment [7,8], or safety during their use [9,10]. Only such an approach allows to offer products of the highest quality and influence customers' satisfaction level.

A peculiar situation in terms of quality can be seen in the case of services due to the lack of strictly defined service parameters that can be easily measured. In this case, completely different methods of quality assessment are used, which take into account different types of attributes related to the service in question. However, complaint analysis can be used for both tangible products and services. A complaint can be defined as a directed expression of dissatisfaction to an organization, related to its products or the complaint handling process itself, where a response or solution is expected or required [11,12]. Complaints are a way for a customer to communicate with an enterprise to notify of inadequate quality of products or services, and are an important element of management in an organization [13].

A complaint is an expression of customer's dissatisfaction directed to a service provider, third parties or consumer protection authorities [14]. It is a set of behavioral and non-behavioral reactions, some or all of which are triggered by the customer's dissatisfaction with the purchase of a service or product [15]. Complaints can also be viewed as actions that directly express dissatisfaction with the performance of services that do not meet acceptable or tolerable standards [16]. Customers complain when they experience service performance that falls below their expectations and the dissatisfaction, they feel stems from this [17,18]. Thinking of complaints, people often have a negative attitude toward this term because of the claim-compensation overtones it carries. However, it should be acknowledged that it is one of the most important sources of information about the quality of a product or service that a company can use. If an enterprise treats complaints as a mere problem to be gotten rid of as quickly as possible, it has little awareness of the role of complaints in quality assessment. Often the way complaints are reported



and handled by the enterprise also does not have a positive effect on its image in the eyes of the customer.

The challenge is to use complaints data to make decisions that result in substantive action. By using complaint data to address design, marketing, distribution, and after-sales use and maintenance issues, a basic understanding of customer preferences and market behavior is gained. Moreover, a complaint should not be viewed as something very negative. Complaints allow to point out weaknesses in the product, reasons for customer's dissatisfaction, so that a response from the company is possible. A worse situation is when a customer is dissatisfied, tells other customers about it, describes it on various online forums, but does not report it to the enterprise. The result is bad publicity for the enterprise and the inability to improve, as well as the inability to influence the dissatisfied customer.

Understanding the need for such analysis will provide a framework for interpreting the data and extrapolate them to the entire customer base. The framework will allow organizations not only to quantify the consequences of these complaints, but also to prioritize and allocate limited quality assurance resources to mitigate problems. Some argue that complaints made at the time of a problem are less costly than systematic sampling and inspection, and provide more timely information than what is typically available in warranty data [19,20].

Complaint handling encompasses the first contact with the customer during the complaint, as well as a set of company actions during the complaint handling process. Since service and communication with customers have a direct impact on customer satisfaction and loyalty, for a company this part of complaint management is a very important part of quality management [21,22].

The reported complaints make it possible to ascertain not only the existence of problems, but additional analysis of them makes it possible to indicate their causes as well. This is a clue to determining the location of the problem or other, less obvious reasons for its appearance. Due to in-depth analysis, it is possible to indicate where such an error occurred and on which side (e.g., manufacturer, carrier, vendor, etc.), who or what was at fault. This makes it possible to analyze the entire production process of a given product [23].

Many companies use various types of indicators to analyze complaints, which are regularly calculated and compared. Indicators can be, for example, the fraction of product units returned to the manufacturer in the form of quality complaints, the causes of quality complaints (complaints relating to a specific cause), or the cause of complaint recognition (positive handling of complaints due to a specific cause). These indicators can be very useful, but companies using them must be very careful, especially when it comes to the reasons for advertising complaints or the reasons for recognition of complaints, because the same service can be advertised several times, in the same service the same reason can be recognized several times and the same problem can be rectified.

Complaints should be handled and resolved as quickly as possible, even if they may seem annoying, time-consuming and costly, otherwise they can lead to reputational damage caused by bad publicity. Dealing with customer complaints is often the last chance that an organization has to change customer attitudes and offset customer dissatisfaction [24]. Researchers emphasized the potential of complaint management and service improvement systems to increase customers' satisfaction [25]. All information from customer complaints must be analyzed to enable strategic planning to improve the quality of offered services [26]. Considered and resolved, they should be a driver for improving customer satisfaction rather than a consequence of dissatisfaction [20], but also a motivator for improving one's own operations.

An important aspect of a complaint is to analyze it and notify the customer of its outcome. It should be borne in mind that a properly handled complaint process can positively affect customer satisfaction, despite the fact that the complaint itself implies customer dissatisfaction, and that the outcome of the complaint was negative. As a result, it can prevent the customer from running away

from the particular company whose product he complained about. Most customers pass on their dissatisfaction to relatives or friends, often changing companies immediately before expressing their dissatisfaction with the company [27,28]. And this is something that companies cannot afford to do.

Complaint indicators can easily be used to analyze the quality of services available on the market. The purpose of the research was to analyze complaints filed by customers of a chosen e-shop from Poland. The analysis was based on data from January 2017 to December 2021. An analysis was made of the number of complaints filed in relation to the number of orders placed. This analysis should be a starting point for the researched e-shop for improvement measures to raise the level of customer satisfaction.

The methodology presented in this article can find wide application both for external customers and internal recipients within the company. Quality issues [29-31], as well as the consideration of potential failure scenarios [32-34], prevention methods, or mitigating their consequences, are among the most important tools for managers at all levels. The main risk factors can be attributed to failures resulting from both external factors [35-37], the ingress of unwanted gases or liquids [38-40], as well as wear [41-43] and material defects, especially in joints [44,45]. The main methods of preventing failures include the proper technological and operational selection of materials [46-48], the use of appropriate protective coatings [49,50], and special coatings [51-53], as well as modifying their properties by influencing the morphology of the surface layer [54-56]. The complexity of preventive measures requires, in accordance with the Taguchi methodology, the consideration of interfering factors already in the design stage of the product or service [57,58]. Design of Experiments (DOE) [59-61] approach is useful in identifying the hierarchy of interfering factors, including nonparametric methods [62] and resampling techniques [63]. Properly modified products achieve high reliability, enhance user comfort, and thereby reduce the number of reported complaints. This also applies to products in the machinery industry [64-66], including those with specific requirements for military recipients [67-69]. Ultimately, the correct identification of risk factors enables the reduction of excessive resources, leading to cost reduction [70].

Methodology

The research was conducted using data from one e-shop in Poland. This e-shop sells clothing. It ships its products to both domestic and international customers. As a source of data for the research, a summary of customer complaints from January 2017 to December 2021 was used. Importantly, this period takes into account the time of the pandemic, when the number of orders increased sharply.

Data analysis was carried out in terms of the number of complaints filed and the number of complaints lodged, in addition, the percentage of complaints accepted to complaints lodged was calculated. Then the ratio of complaints lodged to the number of orders was calculated. The next step was to analyze the causes of complaints, in this case the analysis was carried out for the entire period combined. The results of the study were presented overall and for each year of the research period.

Results and Discussion

The results of the total number of complaints lodged and complaints accepted are presented first (Table 1).

Table 1. Number of complaints in individual years of the research period [own study]

Factor	Period (year)					
	2017	2018	2019	2020	2021	2017-2021
Number of complaints lodged [pc]	84	71	76	102	86	419
Number of complaints accepted [pc]	76	68	72	79	77	372
Ratio of accepted to lodged complaints [%]	90.48	95.77	94.74	77.45	89.53	88.78

It can be seen some variability in the number of complaints lodged and complaints accepted by the research e-shop. The largest number of complaints lodged was in 2022, and the largest number were also accepted, but the percentage of accepted complaints to those lodged in 2022 was the smallest. This means that many complaints were unfounded. Perhaps due to the prevailing Covid-19 pandemic and the increase in online shopping, the number of complaints increased.

Table 2. Complaint ratio compared to number of orders for individual years [own study]

Factor	Period (year)					
	2017	2018	2019	2020	2021	2017-2021
Number of orders [%]	5671	5821	5793	6540	6205	30030
Ratio of complaints lodged [%]	1.48	1.22	1.31	1.56	1.39	1.40
Ratio of complaints accepted [%]	1.34	1.17	1.24	1.21	1.24	1.24

Table 3. The causes of complaints during the research period [own study]

No	Cause of the complaint	Number of complaints lodged [pc]	Number of complaints accepted [pc]	Ratio of accepted to lodged complaints [%]
1.	No search engine	1	1	100.00
2.	Sparse product information on the e-hop site	3	3	100.00
3.	Lack of goods in stock	5	5	100.00
4.	Problems with placing an order	3	3	100.00
5.	Virus after visiting the e-shop site	2	2	100.00
6.	Problems with online payment	6	6	100.00
7.	Leakage of customer data	1	1	100.00
8.	Untimely delivery	15	15	100.00
9.	Lost shipment	3	3	100.00
10.	Goods was not delivered	5	5	100.00
11.	Evidence of opening the shipment	6	6	100.00
12.	Damaged packaging	14	14	100.00
13.	Price does not match the one on the e-shop's website	39	38	97.44

14.	Goods damaged during transport	27	27	100.00
15.	Inappropriate color of the goods	19	16	84.21
16.	Inappropriate size of the goods	34	31	91.18
17.	Customer changed his mind	29	22	75.86
18.	Goods do not agree with the order	34	27	79.41
19.	Goods do not match the description	21	17	80.95
20.	Low quality of the ordered goods	44	38	86.36
21.	Goods do not meet expectations	59	47	79.66
22.	Fake goods	18	14	77.78
23.	Problems with returning the goods	24	24	100.00
24.	No cash refund for returning the goods	7	7	100.00
Sum		419	372	88.78

But this was also due to the fact that the lockdown did not allow people to leave their homes, and so customers were able to buy and send back ordered products as complaints, instead of normal returns, because they do not fully know their rights as e-commerce customers. In such cases, the customer has an extended possibility of returns, since they can't touch or try on the product, and photos often don't reflect reality. The fewest complaints were lodged in 2018, and that's when the fewest complaints were accepted, but the percentage of accepted complaints to those lodged was the highest. Customers made more than 400 different complaints throughout the entire research period, almost 89% of them were accepted by the research e-shop.

The ratio of complaints accepted was then calculated by dividing the number of complaints by the number of orders and giving the value as a percentage. On a similar basis, the rate of accepted complaints was calculated. The results of these calculations are shown in Table 2.

The most orders were placed in 2022, and the following year the volume was also high. This was due to the change in distribution channels due to the Covid-19 pandemic. Customers, despite being confined to their homes, still wanted to shop online. Many people, skeptical until then, decided to shop online for the first time. The 2020 habit, but also the uncertainty of the pandemic in 2021, caused customers to continue shopping online. An interesting result can be seen in the case of the number of complaints lodged versus the number of orders. The year the pandemic began was not only a year of increased online shopping, but the ratio also increased significantly, with customers complaining more often about the products they purchased. However, the ratio of accepted complaints to the number of orders was not the highest at that time.

In Table 3 the basic reasons for customer complaints are shown. The frequency of their submission by customers and recognition by the company is presented. In addition, the ratio of complaints accepted to those lodged was calculated.

When the causes of complaints were analyzed, they were classified, first grouped together, and then the general name of the cause was determined. 24 different causes of complaints were identified. The various causes of complaints were divided into four groups: site operation and order placement (causes 1-7); delivery (8-10); condition of shipment and goods (11-22); return of goods (23-24). The most common reasons for complaints would be: Goods do not meet expectations, Low quality of the ordered goods, Price does not match the one on the e-shop's website, and Inappropriate size of the goods. Thus, one can conclude that not all customers are satisfied with the products ordered from the research e-shop. Perhaps a more thorough analysis should be carried out from this angle to determine why this is happening. The problem of inadequately sized goods should be resolved as soon as possible so that there are as few complaints of this type as possible. However, the e-shop is not the manufacturer of the goods it sells, they come from different manufacturers. Therefore, it would be necessary to take this into account somehow, for example, in the size tables for individual goods. As previously highlighted, not all complaints were accepted.

As the main reasons why complaints were not accepted in the documentation were cited: complaint submitted after the deadline, inappropriate use of the advertised goods.

In conclusion, it can be said that the number of complaints is not large and does not affect the overall assessment of the quality of services offered by the research e-shop. It should be added that a large part of the complaints lodged by customers are legitimate.

Conclusions

An inseparable part of producing products and providing services is the process of customer complaints. Complaints are the customer's reaction to their level of quality, even more low level of quality.

The purpose of the research was to analyze complaints lodged by customers of one of the e-shops in Poland. Such analysis made it possible to identify the main causes of complaints, which should be a source of improvement, but also allowed to show the level of complaints in relation to the number of orders placed.

The number of complaints lodged by customers and the number of complaints accepted by the e-shop fluctuated during the period under review. However, their percentage in relation to the number of orders placed was not high. Most often, customers complained about Goods do not meet expectations, Low quality of the ordered goods, Price does not match the one on the e-shop's website, and Inappropriate size of the goods. These are areas of potential improvement for the e-shop. Not all complaints were accepted. As the main reasons why complaints were not accepted in the documentation were cited: complaint submitted after the deadline, inappropriate use of the advertised goods.

The occurrence of complaints can result in a decrease of the customer's satisfaction, and ultimately in customers leaving. This, too, will affect the profit for the company, but can also threaten its failure. Hence the importance of the results of such an analysis for the company's management, but also because of this the need to implement improvement measures in these areas.

Among the limitations of the research is the research period. Perhaps extending the research period would show other causes of complaints. In addition, the research was conducted in a clothing e-shop. This is a very specific type of shop. Certainly, many of the indicated causes of complaints could not be included in research of other types of e-commerce stores, hence the limited interpretive possibilities. It should also be noted that the shop's assortment of products affects the structure of customers, and thus the structure of claimants.

However, it should be noted that the analysis of complaints provides a lot of interesting information about the services provided by the e-shop or the reaction of customers to these services. In addition, it gives information about the level of quality without the need for additional research requiring, in the case of services, customer participation. Therefore, such research is worth continuing and drawing conclusions from it in order to improve the organization's operations.

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