PRODUCTION ENGINEERING ARCHIVES

The role of safety in service quality in the opinion of traditional and digital customers of postal service

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Abstract
One of the factors allowing to shape safety and quality of a postal service is an opinion of its customer. In the following paper, the analysis of the impact of a customer's perception of safety on the service quality assessment has been presented. Research results presented in the paper refer to opinions of traditional and digital customers of postal services. The presented analysis is enriched by a theoretical framework of service quality, the explanation of the concept of safety, and a complementary characteristics of traditional and digital postal services. Afterwards, safety attributes of the postal services have been proposed, explained and highlighted. Subsequently, the results presented in the paper refer to the validity of particular chosen safety attributes of postal services.

1. Introduction

Safety may be defined as an ambiguous issue that has been evolving over the years. In history, as a natural human need, it conditioned social and civilizational development, and was perceived as the lack of threats for people and countries. As time passed, safety began to be considered in the context of state safety, safety of institutions, human rights, and a lot more. Nowadays, safety is an aspect of the value system that should be ensured and cared for (Czupryński, 2015).

It may be identified as the right, need and determinant of survival that can be understood in many ways in terms of subject (national, international), object (cultural, ecological, economical etc.), space (local, global), and process (Rosicki, 2010).

According to the theory of service quality, one of the factors that shapes its value is safety. Quality of services is a multidimensional issue, defined in many ways and characterized by a developed methodology (Ahrholdt et al. 2014).

It can be determined in product-based approach (technical, measurable service attributes), process-based perspective (compliance with standard), opposite-demand way (meeting needs and expectations), philosophical viewpoint (degree of perfection), and value-based attitude (cost/benefit ratio) (Kowalik and Klimecka-Tatar, 2018). Service quality may be based on projects, users, operations, values, it also may refer to the product, type, realization, and performance (Ganesh, Haslinda, 2014). Primarily, service characteristics (diversity,

immateriality, customer participation in service delivering) causes subjectivity and a wide range of criteria depended on a number of individual service quality factors (Ingaldi, 2018; Kowalik and Klimecka-Tatar, 2019).

Safety appears in the form of attributes matched to a particular service. In case of postal services, the service safety factors could be understood in different ways depending on whether customers use a traditional or a digital service.

Digital services have developed in recent years. As electronic banking is constantly developing, other, new types of services are becoming available online. The use of electronic form of communication has forced postal operators around the world to adapt the services to the needs and expectations of customers who use the Internet on a daily basis (Ingaldi and Ulewicz, 2018). Postal services basically include sending and receiving letters, parcels, and courier services. After 2010, the first e-shipments were launched, but the process of digitizing services is still ongoing. Currently, some postal services are fully available online (a scanned letter) and some partially (posting and paying for letters or parcels physically delivered to the posting point). The offer of digital postal services includes opportunities provided by the digital platform such as posting and monitoring letters, parcels, and courier services, creating a postage stamps or postcards and the purchase of offered items.

Moreover, a contemporary customer expects a multi-channel service (Lipowski and Bondos, 2016). Customers make

use of a choice of service channel that is available at particular process stages (Kawa, 2017; Piotrowicz, Cuthbertson, 2014). Nevertheless, there is still a large number of customers who opt for such a type of services being performed in a traditional way.

In a simplified way, in the case of services, not only postal ones, traditional and digital customers may be distinguished. Digital customers are characterized by a high level of digital competences that are defined as a set of information and IT competences. Information competences include information search skills, understanding search results and assessing their credibility and usefulness (Smoląg and Kulej-Dudek, 2015). IT competences consist of skills at using a computer, or electronic devices, the Internet, software, and applications, as well as creating digital content. Presence in on or the other group of customers depends on a number of factors, including age, gender, socio-economic status, and demographic aspects (Eigenraam et al., 2018; Reichstein and Harting, 2018).

2. Experimental

The purpose of the study was to determine the validity of chosen attributes of postal services safety and the meaning of safety in shaping postal services quality. Validation has been carried out on the basis of the opinion of respondents. In the conducted research, the respondents were traditional and digital customers of a postal service. Traditional customers are defined as people using postal services in a traditional way: at post offices, branches of post offices, and postal agencies, while digital customers are people using digital postal services.

The research methodology of this study includes the following stages: theoretical part (literature analysis), and research part (construction of the questionnaire, conducting a survey, and results analysis).

As the most important, of postal service safety, the following attributes have been selected:
- personal data protection (data protection against loss, leakage or unauthorized access) - during the provision of postal service (posting: at post offices or electronically using digital postal service platform; transporting, and delivering) of the items (letters or parcels);
- confidentiality of correspondence- postal secret resulting from Article 41, Section 1 of the Postal Law Act, which includes information provided in postal items, information
  on the performance of postal orders, data on entitles using postal services, and data on the fact and circumstances
  of providing postal services or using these services);
- infrastructure safety- data centre and IT solutions safety;
- preventive activities- conducting awareness-raising activities to prevent decline of information safety.

The questionnaire was carried out electronically in November 2019 among sixty respondents referred to as customers using traditional and digital postal services. The survey was made for the Polish group of respondents because questionnaire's legal basis refers to the Polish law. The number of respondents defined as traditional customers depended on the number of completed questionnaires received from digital customers so as to make a comparison. The representative group does not meet the requirements for reliable results - this is a pilot study which is to verify the research problem and check the research tool.

The structure of survey respondents is shown in Table 1.

Table 1. The characteristics of respondents - percentage structure of respondents' features

Age	Digital customers, %	Traditional customers, %
18-24	20	30
25-39	40	26.67
40-60	40	23.33
60<	0	20
Total	**100**	**100**

Differences between percentage of particular age groups result from a greater popularity of traditional postal services among older respondents and better digital competences as far as younger people are concerned.

The questionnaire consists of five statements whose rating were made by five point Likert scale in which 5 means „strongly agree'' and 1 means „strongly disagree''.

3. Results and discussion

The first statement concerns the assessment of safety (understood subjectively as all the selected features) as the most important factor in the quality of postal services (Fig. 1).
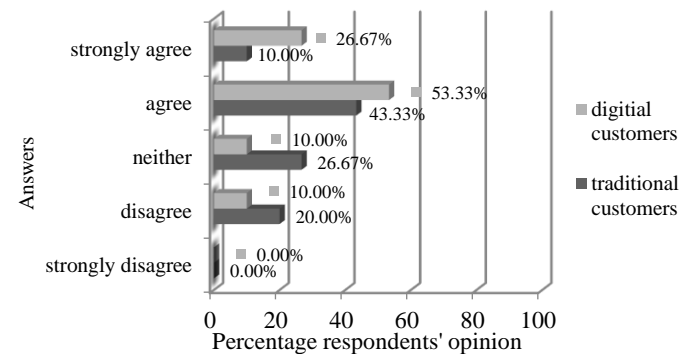

Fig. 1. Safety as the most important factor of postal service quality

According to the data presented in Figure 1, safety has bigger influence on postal service quality in the opinion of digital customers. More than a half of them (53.33%) agree and slightly more than a quarter (26.67%) strongly agree with this statement. In comparison, for traditional customers these values are lower: 43.33% of them agree and only 10% strongly agree. It should also be noticed that more traditional customers have no opinion (26.67% to 10%) or disagree (20% to 10%).

Another four statements refer to the chosen attributes of postal service safety. To begin with, respondents were asked about the meaning of personal data protection (Fig. 2).
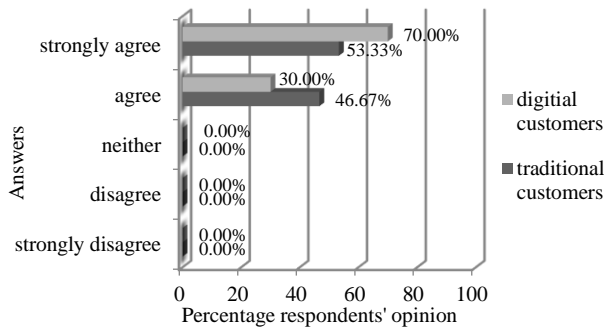
Fig. 2. Personal data protection as important factor of postal service safety

The third statement is: Confidentiality of correspondence is an important factor of postal service safety (Fig. 3).
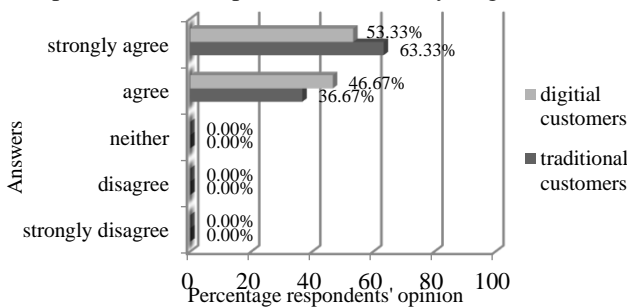

Fig. 3. Confidentiality of correspondence as important factor of postal service safety

From the received data it appears that confidentiality of correspondence's meaning in postal service safety is as strong as personal data protection's. 63.33% of traditional customer and 53.33% of digital customers strongly agree, and, sequentially, 36.67% and 46.67% agree. Also in this case, no one is neutral or disagree. It is worth noticing that, in comparison to previous statements' assessments, the percentage of *strongly agree* answers increases for traditional customers and decreases of digital customers. It means that this aspect is more important for traditional customers and digital customers pay more attention to data protection.

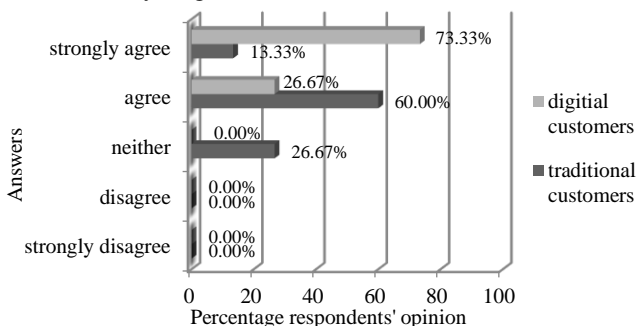The penultimate statement refers to the meaning of infrastructure safety (Fig. 4).

Fig. 4. Infrastructure safety as important factor of postal service safety

The data presented in Figure 4 significantly differ from those previously discussed. The answer most often chosen by

traditional customers was „agree'' (60%). Just over one in ten (13.33%) strongly agree that infrastructure safety is an important factor of postal service safety. An issue worth noticing is a relatively high percentage of neutral responses (26.67%). Digital customers seem to have a much different, more explicit view on this issue. 73.33% of digital respondents strongly agree and 26.67% agree with this statement. It should be underlined that no one of them is neutral.

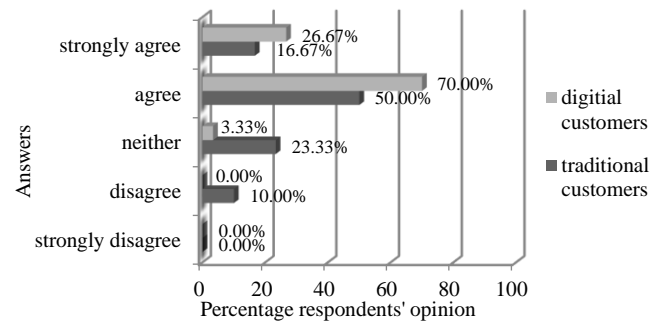The last statement evaluated by the respondents concerns preventive activities (Fig. 5).

Fig. 5. Preventive activities as important factor of postal service safety

Both traditional and digital customers appreciate the meaning of preventive activities in postal service safety. A Half of traditional customers agree that this is very important aspect, 16.67% of them strongly agree, and 23.33% is neutral. It should be noticed that for the first time a negative answer appeared (every tenth disagree). Most of digital customers (70%) agree with high validity of preventive activities, 26.67% strongly agree, and 3.33% is neutral.

To expand comparison, Table 2 presents the arithmetic average of the ratings of the given statements for both groups of respondents.

Table 2. The characteristics of respondents- percentage structure of respondents' features

Aspect	Arithmetic average	
	Digital customers	**Traditional customers**
safety in quality	3.97	3.43
data protection	4.70	4.53
confidentiality of correspondence	4.53	4.63
infrastructure safety	4.73	3.87
preventive activities	4.23	3.73

According to the data presented in Table 2, digital and traditional customers perceive the meaning of safety in postal services differently. Safety strongly affects postal quality in the opinion of digital customers - the average rating of this indicator according to the opinion of digital customers is 3.97, whereas for traditional ones only 3.43. For the group of digital customer the most important safety aspects are infrastructure safety and data protection (the highest average rate 4.73). Traditional customers as the most valid attributes of postal services safety point out "confidentiality of correspondence" and

"data protection" (the average rate 4.63 and 4.53 - respectively). However, it is worth noting that values achieved by other attributes are much lower.

The obtained results may be interpreted form different angles. First of them, age structure of the respondents. Average age of traditional customers is higher than digital customers and, in accordance with service quality theory, customers' requirements have been evolving over time and are depended on a lot of factors, including age.

Another explanation is the characteristics of each type of customer. Digital customers are faced with other aspects of postal services safety than traditional customers. On the Internet, safety is the foundation of actions. What is more, it causes the appreciation of the infrastructure than provides it. Preventive activities also take a different form. They are constantly changing and are conducted on a larger scale.

4. Summary and conclusion

The results presented in the paper shows that safety strongly affects postal service quality. However, in the opinion of digital customer, the meaning of safety has greater value.

Particular groups of respondents perceive chosen aspects of safety in different ways. For traditional customers confidentiality of correspondence and data protection are the most important. Infrastructure safety and preventive activities have achieved arithmetic average lower than four, so they should not be perceived as valuable as the previous two. Digital customers as the most valid point infrastructure safety and data protection, but it should be noted that all the attributes are above four. Furthermore, average values for entirety of attributes are higher for digital customers that for traditional customers.

The obtained results are in accordance with the theoretical foundations (Kawa; Reichstein, Harting; Smoląg, Kulej-Dudek) that differentiate the features of traditional and digital service and characteristics of customers using them. Its limitations are based on an unrepresentative group of respondents and the subjective choice of factors (characteristic for the Polish operator). The novelty of this work is studying the safety aspects affecting postal services quality with the division of customers into digital and traditional.

The possibility of comparing the survey with surveys conducted among customers of other nationalities is a questionable issue because different legal requirements for postal operators and different approaches to the quality of services and its attributes and to the aspects of safety.

The paper may be the basis for further research into postal service safety. An extension of the research could be to assess the current state of particular safety aspects and, subsequently, according to the theory of quality management, conducting research on improvement.

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从传统和数字邮政客户的角度来看，安全在服务质量中的作用

關鍵詞	摘要
邮政服务 安全 服务质量	能够影响邮政安全性和质量的因素之一是客户的意见。 在下面的文章中，已经对客户的安全感知对服务质量评估的影响进行了分析。 本文提出的研究结果参考了传统和数字化邮政客户的观点。 所提供的分析通过服务质量的理论框架，对安全性概念的解释以及传统和数字邮政服务的互补特征而得到了丰富。 之后，已经提出，解释和强调了邮政服务的安全属性。 随后，本文中提出的结果涉及邮政服务特定安全属性选择的有效性。