

Service Quality in Voluntary Property Insurance: A SERVQUAL-Based Approach for Poland and the USA

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Abstract

This study investigates the evolving dynamics of service quality in the voluntary property insurance market, focusing on the integration of Polish and USA insurance companies within their respective internal and external environments. The primary aim is to evaluate the competitiveness of this market from the perspective of individual clients, with a specific emphasis on improving service quality. Employing a SERVQUAL-based framework, this research diagnoses key factors influencing service excellence and explores the processes involved in enhancing the quality of voluntary property insurance services in both Poland and the USA.

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A key achievement of this work is the comprehensive analysis of literature, identifying definitional criteria and conceptual underpinnings related to service quality improvement. The findings highlight potential areas for action and unresolved issues in the ongoing efforts to elevate the standards of property insurance services. As a result, a novel model for improving the quality of insurance services has been developed and described. This model introduces a new perspective on service quality, offering new tools for measuring, analysing, and assessing the improvement process. The study provides valuable insights into service quality enhancement, offering a practical, research-driven framework that insurers and policymakers can leverage for advancing customer service standards in voluntary property insurance.

Keywords: service quality, voluntary property insurance, quality management, service improvement, insurance market.

JEL Classification: G22, G41, M11, M21.

Introduction

The knowledge surrounding the competitiveness of services offered by property insurance companies is still developing and requires further investigation in several key areas. This is evidenced by the absence of uniform literature on the subject, which creates a significant research gap that this study seeks to address. The selection of this topic is closely tied to the ongoing integration of property insurance companies, which has driven changes in the process of improving customer service quality within both internal and external environments. One notable outcome of these changes, along with the increasing integration of property insurers, is the intensifying competition between Polish and foreign insurers, both in the domestic Polish market and abroad.

Additionally, recent global events - including the 2007-2009 financial crisis, the COVID-19 pandemic, and the ongoing economic instability caused by the war in Ukraine - have underscored the importance of service quality improvements in the property insurance sector. Given this context, the need to measure and enhance service quality in the property insurance market has become increasingly critical. To this end, the study aims to develop and verify a model, along with specific indicators, to improve the quality of individual voluntary property insurance services. This model will serve as a key tool for analysing the individual voluntary property insurance market.

The proposed framework methodology for evaluating service quality is outlined in the study's title and seeks to bring the concept of service quality improvement closer to practical application. It provides a structured approach for assessing service quality, detailing the research process cycle, scope, evaluation methods, and application guidelines. Moreover, the methodology for improving service quality presents a detailed solution, outlining procedures and techniques for enhancing the quality of services - specifically, property insurance services.

A central focus of this research is the study of customer behaviour, particularly the fundamental factors influencing decision-making in the purchase of individual voluntary property insurance contracts. The study also seeks to address the identified research gap by examining the shortcomings in existing methods for assessing the quality of individual voluntary property insurance services. To accurately evaluate the influence of various factors on customer behaviour and track changes over time, a systematic approach to research is necessary.

In accordance with the study's objectives and research question, the hypothesis posited is that increased competitiveness in the voluntary property insurance market is directly linked to the quality of service delivered by the insurance company's personnel. To assess service quality effectively, the authors have developed a proprietary method for improving the quality of services, along with a customer service quality indicator.

The research was conducted over a two-year period from 2020 to 2022, with a nationwide scope covering Poland and the north-eastern United States. The study employs a theoretical-empirical methodology, using cause-and-effect analysis, comparative analysis, and deductive reasoning. In the empirical portion of the research, the authors apply a proprietary model for improving service quality, based on the SERVQUAL method (five-gap model).

1. Research Overview

In accordance with the method proposed by Tranfield et. al. (2003) and further developed by Matthews & Marzec, (2012) the authors conducted a search of key scientific works related to the process of improving service quality, including individual voluntary property insurance services. The starting date for the study was chosen as 1991 because, firstly, it marks a period of significant changes in the socio-economic system in Poland and the emergence of the first research and scientific articles on the subject, and secondly, it represents the transition at the turn of the 20th and 21st centuries to a new stage of operational management called the "post-lean age" before the second decade of the 21st century (Pilkington & Meredith, 2009; MacCarthy et al., 2013).

The selection of works was based on two criteria. The first criterion was related to ensuring due diligence in writing this study according to the set goal, while the second was to ensure sufficient quality of scientific articles that the authors refer to during writing. The selection of these works was based on the Scimago Journal & Country Rank (Scimago Journal & Country Rank, 2023). The focus was solely on works from the 3- and 4-star categories and the 2-star category, with a high Impact Factor (IF) index. Titles, abstracts, and keywords were searched for terms such as "commercial insurance," "voluntary insurance," "continuous improvement," "quality improvement," and "process improvement" in works up to December 31, 2022. References to each term related to insurance and quality improvement in each selected article serve as justification. According to the authors, the inclusion of these terms, along with the quantity of scientific articles, unequivocally relates to each of the terms mentioned above.

It is important to note, at the outset, what quality is. According to Czubala et. al. (2012), service quality is a set of characteristic features of goods or services during their acquisition that contribute to satisfying customer needs.

Among the many definitions of excellence found in the analysis of the above literature, and corresponding to the assumptions of this study, excellence is understood as the full realization of the intended goal. This means that there is no absolute excellence, as service provider goals may vary. According to this perspective, excellence undergoes systematic changes and evolves over time because goals change; thus, excellence leaves no room for doubt. When such doubts arise, it means that the object being assessed is not yet perfect or has ceased to be perfect. Another concept is "quality improvement." This notion has been borrowed from the Deming cycle (PDCA⁴) (Deming, 1997). Keeping in mind this cycle, it is impossible to overlook the methodology of problem-solving at an insurer based on W.E. Deming's loop in the process of improving service quality. This served as the starting point for developing the authors' method for assessing the improvement of service quality in the studied issue (Ozeki & Asaka, 1990; Hair, Jr., Howard, & Nitzl, 2020; Suresh, & Vasantha, 2020; Przybytnowski, 2022), which was used for the empirical research conducted. According to S. Borkowski (2021), improvement can be described as an action whose results today are better than yesterday's, and tomorrow's will be better than today's.

Before discussing the results of empirical research, it is essential to mention the concepts of continuous improvement (CI) (Garvin, 1988), process improvement (PI) (Amundson, 1998; Choo et al, 2007; Schroeder et. al., 2008), and quality improvement (QI) (Choo, et al., 2007; Hill et. al., 2001; Kaynak, 2003). These concepts are often used interchangeably in the literature (which is incorrect), although they largely overlap. However, it is important to note that these concepts imply a common goal, which is the improvement of operational performance. N. Bateman (Bateman, 2005) defines in his work that "systematic quality improvement is perceived by extending process improvement." Anand et. al. (2009) write, "continuous improvement" is achieved through repeated creation of "process improvement." A similar situation can be observed between "quality improvement" and "process improvement," where quality management practices are applied in operational processes to identify and achieve "process improvement" in terms of, as stated by Garvin (1988), customer-oriented criteria (Matthews & Marzec, 2012; Aggarwal & Tanwar, 2021; Przybytnowski, 2022).

A key contribution to the identification of the individual voluntary property insurance process, as underlying research for QI, CI, and PI, is that they indicate the direction needed to support their integration. Therefore, Schroeder et al. (2008) stated that without applying consistent assumptions for theoretical research of the studied service, it will be challenging to measure the deepening direction of the obtained data. They also provide guidance on how to stimulate actions that impact the improvement of quality, how these actions will be embedded at the organizational level through the implementation of appropriate procedures, and how they stimulate the necessary awareness to analyse various forms of actions related to quality improvement. Since customer loyalty is one of the key factors, Upamannyu et al. (2021) and Shlesinger & Shulenburg (1993), as well as Rahman et al. (2014), suggested that the image of any organization and the quality of the service they offer influence their decisions related to the choice of service. Citing literature (Wang et. al., 2003; Ehigie, 2006; Shayestehfar & Yazdani, 2019; Camilleri, 2021), a moderating variable between the level of service quality, customer satisfaction, and the economic outcomes of the company is loyalty. This is based on the belief that the quality of service that customers receive from the service provider will be proportional to the price paid for that service (Holliday et al, 2021).

⁴ The authorship of this cycle is attributed to W. Shewhart, who in the 1950s developed an algorithm for actions related to correcting the course of out-of-control processes. In the following years, Shewhart's student, and later collaborator, W.E. Deming, further developed this cycle.

2. Method for Evaluating Quality Improvements in Individual Voluntary Property Insurance Services

The method for assessing the improvement of the quality of individual voluntary property insurance services aims to evaluate quality from the customer's perspective (without neglecting the "voice" of the property insurance company's employee), as listening to the service recipient's voice is a way to analyse and improve quality. The proposed model will serve as a universal tool related to the process of improving the quality of individual voluntary property insurance services, and, as a result, effective quality service management.

An essential aspect of the research using this method will be to determine which factors have a decisive impact on the level of improvement in the quality of individual voluntary property insurance services, and then assess customer satisfaction through the prism of these factors.

In the ideal perfection of the quality of individual voluntary property insurance services, the starting point always assumes a value of 0 as a boundary condition. This affects the choice of the model and the method of researching the quality of the service under examination. In the insurance practice, it is never possible to achieve such a line in the process of improving the quality of individual voluntary property insurance services, but only to approximate that line, i.e., to approximate it based on statistical data. By combining them, we obtain a broken line with inflection points at empirical observation points:

$$(x_1, y_1), (x_2, y_2), \dots, \dots, (x_n, y_n) \tag{1}$$

Based on them, it is possible to determine a line that is reasonably well-fitted and reliable – approximating the model. The method that naturally suggests itself in this case to obtain the line is the method of least squares (MLS) and the model of simple linear regression. In the system of observations, it takes the form of:

$$y_i = \alpha x_i + \beta x_i + \varepsilon_i \quad \text{gdzie } i = 1, \dots, n \tag{2}$$

where: α and β - structural parameters of the model, ε – random factor,

Estimators of the structural parameters of this model determined by this method, i.e., the so-called least squares estimators, take the form of:

$$\hat{\alpha} = \frac{\sum_{i=1}^n (x_i - \bar{x})(y_i - \bar{y})}{\sum_{i=1}^n (x_i - \bar{x})^2} \tag{3}$$

$$\hat{\beta} = \bar{y} - \hat{\alpha}\bar{x} \tag{4}$$

where: $\hat{\alpha}$ - rate of service improvement (how the quality of the service changes - improves + / - are the magnitude of the increase between periods (how the quality of the service changes, like in a system of one variable, changing +/-); $\hat{\beta}$ - initial level of acceptability

$$\bar{x} = \frac{\sum_{i=1}^n x_i}{n} \tag{5}$$

$$\bar{y} = \frac{\sum_{i=1}^n y_i}{n} \tag{6}$$

The phenomenon under study (improvement in the quality of individual voluntary property insurance) is influenced not only by time but also by other factors derived from the indicators presented later in the paper: quality of customer service and 22 statements (items) addressed to customers of property insurance companies. For this reason, observations, i.e., empirical points, will never align along a specific, not necessarily model, straight line, but will form, after their connection, a mentioned above broken line. The standard measure of deviation from the sought-after straight line is the sum of squares of errors, i.e., the sum of values $(y_i - \hat{y}_i)^2$. Independently, in this case, one can also adopt the sum of areas marked on (ideally equal to "0"), i.e., $\sum P_i$. In this case, direct interpretation is much easier (though significantly more difficult in numerical procedures).

One can also attempt to conduct an analysis of the sensitivity of individual points (factors) by eliminating individual statements or areas or their parts/groups, which would significantly contribute to the assessment of their impact on the phenomenon under study (the process of improving the quality of individual voluntary property insurance). The goal of sensitivity analysis is to identify the most critical assumptions and assess the risk that may occur in the service under investigation.

Generalizing the situation, i.e., one-way modelling, can be modelling a multidimensional case in which the influence of not one but many factors is considered. The appropriate tool here may be multiple linear regression modelling. In the observation system, it takes the form of:

$$y_i = \beta_0 + \beta_1 x_1 + \beta_2 x_2 \dots \dots \dots \beta_k x_k + \varepsilon_k \quad (7)$$

where: $\beta_0, \beta_1, \beta_2, \dots, \beta_k$ – structural parameters.

With its help, by systematically eliminating individual factors, one can observe their impact or influence on the entire considered issue. Keeping this in mind, the goal of quality management systems in the process of improving voluntary insurance in a property insurance company is continuous, systematic action, the result of which could be, for example, improving communication at various management levels, and consequently enhancing the quality of the examined service by minimizing gaps between what the customer perceives and what they expect (Przybytnowski, 2022; Smętek et. al, 2023).

In conclusion, this method includes a built-in mechanism of corrective actions, ensuring that most deficiencies identified based on obtained data are rectified before they are noticed by the customer. On the one hand, the foundation of presenting this model is stable grounds obtained through studying customer needs and expectations; on the other hand, this model undergoes systematic evolution, aiming for continuous improvement of mechanisms in the implementation of the process of improving the quality of the examined service

3. Research Methodology

For the purposes of further considerations, it is necessary to define the concept of "determinant" – any factor whose role is to specify (determine) something (Szymczak, 1980), for example: the direction of development (Szymczak, 1978). Meanwhile, Kopaliński (1983) defines a determinant as a signifier or distinctive feature. In the Dictionary of the Polish Language, two parallel concepts used by scientists can be found: "determinanta" and "determinant" (Szymczak, 1978; Szymczak, 1980).

Examining the verb "determine", in the Polish language it is defined as, for example, to specify or define (Kopaliński, 1983), or as: to specify, to define, to imply, to formalize, to condition, to determine, to define, to specify (Dąbrowka et. al., 1996). Taking into account the literature on the subject, the most popular terms in relation to issues related to identifying determinants of service quality appear to be: factor, item, attribute, determinant, criterion (Śmiatacz & Nieżurawski, 2006; Paulo et al, 2019).

For the purposes of this paper, the following terms will be used: item, factor, attribute. When defining the factor (attribute) of service quality we speak of a specific characteristic, or in other words, a factor that distinguishes a particular service from others. Attributes, along with their combinations, create customer expectations. In situations where they have the ability to meet these expectations, they create value for the customer (satisfaction with the quality of the offered service). Therefore, in this study, it is assumed that the success of the customer lies in discovering significant, real items, as well as their combinations, that fully determine the level of quality of individual voluntary property insurance (Śmiatacz, 2012; Méndez-Aparicio et al., 2020).

In the case of a large number of diverse determinants, their integration aids in presenting them in a unified form, which promotes the effectiveness of decision-making by eliminating the need to analyse each presented attribute determining the quality of individual voluntary property insurance separately. It also enables the comparison and evaluation of a specific attribute (factor) against the average level (Luo & Jennings, 2007; Šostar & Ristanović, 2023).

Taking into account the nature of individual voluntary property insurance, which undoubtedly involves a strong relationship between the insurer and the individual customer, and consequently, the comprehensive impact of the insurance company representative on the insured party (a customer exposed to potential loss covered by the insurance policy), it was assumed that the fulfilment of the examined service's function would occur only when the claims settlement procedure is correctly conducted and compensation is paid promptly, in line with the customer's expectations.

Therefore, the final effect, unlike the so-called immediate effect, encompassed only those customers who had both a voluntary individual property insurance policy and had undergone the claims settlement procedure. This assumption stems from the fact that it would be difficult, if not impossible, to expect a reliable attitude towards a substantive approach to filling out the survey from customers who had not experienced a claims settlement process.

Hence, the focus was on researching customers (sampling) who had a complete experience with individual voluntary property insurance (including a signed policy and claims settlement), allowing for the identification of real items determining the examined service - purposeful selection. This approach is primarily intended to enrich the conclusions drawn from the analysis of the literature on the subject and facilitate the practical application of the research results in the process of improving the examined service's quality.

The temporal scope covered the years 2020-2022 (in a two-year cycle⁵), while the spatial scope had a nationwide character (i.e., included Poland) and also encompassed the north-eastern part of the USA. To assess individual attributes within the five areas, a 6-point measurement scale was applied, where: 1 represented a very unsatisfactory level for the respondent, and 6 represented a very satisfactory level for the respondent⁶. Customers were asked to mark, by placing a cross next to each specified item, the one that best corresponded to their attitude.

The second part of the survey questionnaire related to the assessment of the insurance company by respondents on the above scale, according to their own preferences. The final part of the questionnaire included a metric, containing sets of questions identifying the respondent. The data obtained in this way were subjected to statistical analysis using Statistica StatSoft software (version 13.1), MS Excel, and PQStat Software (version 1.6.6). Using the t-test, a discriminant power analysis was conducted for individual elements of the survey questionnaire. This process eliminated statements that differentiated customers with a positive attitude from those respondents who presented a negative attitude towards a given statement. These studies allowed for an analysis of the reliability of the research tool based on the Cronbach's Alpha coefficient.

3.1 Lowest Quality of Service Offered

Considering the calculation procedure and applying the author's method for improving the examined service quality, one should assume a situation where $P = 1$ and $O = 6$, indicating a gap with a value of 6 – the so-called maximum gap. In this case, (the level of acceptability) will depend on the number of items (factors) aggregated in a given area and the maximum score on the six-point (even) scale. It is essential to note that in the presented model, based on the SERVQUAL method, there are five areas and 22 items, where:

- in the 1st area – material infrastructure of property insurance company – 4 items were aggregated,
- in the 2nd area – reliability of individual voluntary property insurance service – 4 items were aggregated,
- in the 3rd area – reliability of individual voluntary property insurance service – 5 items were aggregated,
- in the 4th area – certainty of individual voluntary property insurance service – 5 items were aggregated,
- in the 5th area – empathy of the distribution employee in individual voluntary property insurance – 4 items were aggregated.

This is significant for evaluating individual items and areas because where four items are aggregated, the evaluation criteria will range from 4 to a maximum of 24 points, and where five items are aggregated, the rating scale fits within the range from 5 to a maximum of 30 points. Therefore, in Table 1, criteria for assessing the overall indicator of the improvement process of the examined service quality were adopted, ranging from 1 to a maximum of 30 points⁷.

⁵ The two-year cycle period was chosen due to the nature of contract agreements. Voluntary property insurance contracts have a medium-term nature, typically lasting for 12 months, and often their duration is tied to the fact that a contract entered into in 2023 concludes in 2024. For clarity and accuracy of the research, the two-year cycle better reflects the character, specificity, and essence of the insurance market's functioning.

⁶ The decision to use a six-point scale stemmed from the need to eliminate the central value, as pilot studies revealed that 84% of respondents selected "4 - no opinion," significantly skewing the results. Subsequent research stages validated this choice. The six-point scale is particularly relevant when examining a defined target group, where a neutral response is inappropriate. In such groups, respondents must have a formed opinion about services or products they consciously acquire, such as a car or voluntary property insurance. Therefore, a neutral option is misleading and should be excluded from the evaluation. Responses indicating "no opinion" should be disregarded in these surveys.

⁷ In the application of this method, it is important that these 22 items can be quantitatively aggregated arbitrarily into specific areas, considering the adopted evaluation criteria. However, taking into account the established criteria – the minimum number of items in one area should be three, and the maximum should be six. Therefore, the criteria set in Table 1 provide some flexibility for changes, where the maximum rating scale falls within the range from 1 to a maximum of 30.

Table 1. Criteria for assessing quality improvement in voluntary individual property insurance groups: Classical approaches 3, 8, and 9

Nr.	Value in %	Assessment
1	[0-16,7)	Complete lack of satisfaction with the service offered (definitely not).
2	[16,7-33,3)	Insufficient satisfaction with the service offered (no)
3	[33,3-49,9)	Average satisfaction with the service offered (probably not)
4	[49,9-66,5)	Not very satisfactory (probably yes)
5	[66,5 do 83,3)	Satisfaction with the service offered (yes)
3	[83,3 do 100]	Full satisfaction with the service offered (definitely yes)

Source: author's own work

Therefore, in variant I, the level of acceptability \tilde{b} depends on the product of the number of items in a given area and the maximum point on the scale in the perception criterion (P) and (O). In this case, we have possible results (ranges) with the difference: $O - P$ for each area - I maximum number of ratings: 20, II maximum number of ratings: 20, III maximum number of ratings: 25, IV maximum number of ratings: 25, V maximum number of ratings: 20. This adds up to a total maximum of 110, which also results from the product of items (refer to tables 17 and 18), where for expectations (O) we obtained 132, and for perceptions (P) - 22, hence $132 - 22 = 110$, which can be expressed as:

$$\tilde{b} = \sum (O - P) \tag{8}$$

where: \tilde{b} - level of service acceptance by the customer, O – level of expected service quality, P – level of perceived service quality.

The minimum level of service acceptance by the customer can be influenced by various factors related to the quality level of the provided service that a customer would be willing to accept, such as:

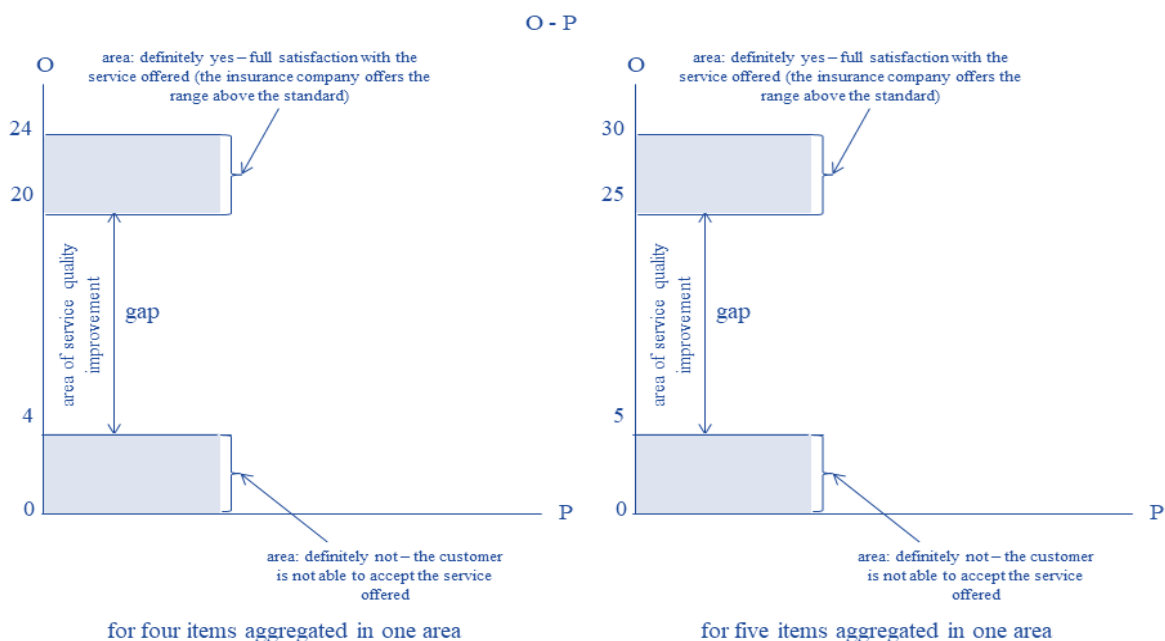
- Loyalty – the strength of the customer's connection with a particular insurance company.
- External honesty – the likelihood of spreading negative opinions from a dissatisfied customer about the service to other service consumers.
- Internal honesty – the customer directs their dissatisfaction with the offered service directly to the insurance company's personnel.

3.2. The Best Offered Service (Excellent)

Taking into account the above calculation procedure, applying the author's method of improving the examined service quality, one should assume a situation where, for example, $P = 6$ and $O = 6$. We then have the so-called perfect service, i.e., no gap. In that case, (the level of acceptability) will depend on the number of items (factors) in a given area and the maximum score on a six-point scale.

Taking into account the earlier considerations (subsection 3.1), assuming 5 areas and 22 aggregated items, we have in the first area – 4 items, the second area – 4 items, the third area – 5 items, the fourth area – 5 items, and the fifth area – 4 items. Therefore, variant I: the level of acceptability depends on the product of the number of items in a given area and the maximum points on the scale in the perception criterion (P) and (O). Then we have possible results (ranges) with the difference: $O - P$ for the area: I difference will reach the value – 0, II difference will reach the value – 0, III difference will reach the value – 0, IV difference will reach the value – 0, V difference will reach the value – 0, giving a total maximum of 132, which also results from the product of items, where for expectation (O) we obtained – 132, and for perception (P) – 132, hence $132 - 132 = 0$. As a result, we obtain (see Figure 1).

Figure 1. An example of the ideal level of offered service



Source: author's own work.

Keeping the above in mind, this method can be used as an alternative to the Customer Satisfaction Index (CSI) measurement method. This method is a convenient measurement tool because the examined issue allows for consolidating all obtained results into a single number – all results should be averaged. It is most convenient to present all calculations in percentages of the maximum achievable result, according to the formula:

$$\hat{b}_{max} = \sum_{i=1}^N * c_{i max} \tag{9}$$

where: \hat{b}_{max} – the maximum result that can be achieved; $c_{i max}$ – the maximum possible rating of the *i*-th factor.

Taking the formula into account, we calculate \hat{b} percentage according to the formula:

$$\hat{b}_{\%} = \frac{\hat{b}}{\hat{b}_{max}} * 100\% \tag{10}$$

where: $\hat{b}_{\%}$ – the value of the indicator in percentage; \hat{b}_{max} – the maximum indicator we can achieve.

Thanks to such an approach, there is the possibility, on the one hand, of comparing while changing the hierarchy of importance of individual items indicated by customers without changing the number of customers, and on the other hand, analysing among various respondent groups for the same service (Hill, Alexandra & 2003). This model, expressed in percentages (Table 1), is much simpler to interpret compared to the classical index. However, it should be remembered that these criteria are not universal and should be adapted to the specificity of the examined service. Considering the procedure for analysing customer satisfaction or dissatisfaction using the conducted research with the author's method, it consists of the following stages: analysis of collected data, calculation of the percentage level of acceptability, and determination of priorities related to improving the examined service along with the costs of improving individual factors influencing the realization of the respondent's expectations.

4. Research Results

During the research period, in several cases, due to incorrectly filled out questionnaires (e.g., incorrectly completed metrics), some surveys were not taken into account during the data analysis. Each year, 1.500 questionnaires were prepared for the study, and the same number was sent for investigation, with 1.365 surveys in 2020, constituting 91%, and in 2022, 1.367 surveys were received, constituting 91.1% correctly completed

surveys (Table 2). In total, during the period 2020-2022, 2,732 correctly filled questionnaires were received for the study, constituting 91.7%.

Table 2. Structure of surveyed respondents, according to selected metric variables in the years 2020 and 2022 (N = 2732)

Metric variable		Validity of given indications (in numbers)	Validity of given indications (in %)	Validity of given indications (in numbers)	Validity of given indications (in %)
		2020		2022	
Place of residence	USA	664	48,6%	684	50,0%
	Polska	701	51,4%	683	50,0%
Total		1.365	100,0%	1.367	100,0%

Source: author's own work.

For a more comprehensive view of the conducted research, it appears purposeful to present the results characterizing observable variables – perceptions: P1-P22 in the framework of the 3-sigma rule. This will conceptually conclude the above stage of considerations. Due to this rule, it was observed that respondents' answers regarding observable variables – perceptions from the years 2020-2022, both in Poland and the USA, fall within the range $[\pm 3\sigma]$ (99.8%), meaning practically all examined statements in these areas were within a distance of three standard deviations from the obtained mean. The distance of $\pm 1\sigma$ standard deviation from the mean during the study period averaged 76%, at $\pm 2\sigma$ standard deviations – 97%, and at $\pm 3\sigma$ standard deviations – 99.8%. So-called outliers (atypical observations) averaged at 0.1%.

Similarly, an analysis was conducted on the research results related to measures of central tendency and measures of variability for observable variables in the category expected by respondents, 22 items for improving the quality of individual property insurance service, during the study period, with a division into 5 areas of service quality in Poland and the USA. Due to the 3-sigma rule, it was observed that customer responses in both Poland and the USA, related to the examined phenomenon – expected observable variables during the study period, fall within the range $[\pm 3\sigma]$ (99.8%), similar to observable variables – perceptions. This means that practically all examined items in these areas were within a distance of three standard deviations from the obtained mean. Thus, so-called outliers (atypical observations) were at a level of 0.1% during the study period. The distance of $\pm 1\sigma$ standard deviation from the mean was close to 76%, at $\pm 2\sigma$ standard deviations just below 97%, and at $\pm 3\sigma$ standard deviations – 99.8%.

5. Discussion

The above considerations, the presented process of improving the quality of individual property insurance service, have been designed to achieve the highest level of customer satisfaction. The main criteria for shaping and evaluating the quality of the examined service are the analysed criteria obtained based on customer opinion surveys.

Based on the assessment of quality, a proposal for improvement direction has been developed, and the presented method has been designed in a way that allows further configuration for the needs of insurance companies, not only property but also life insurance. Customer involvement in the development and improvement of the quality improvement method for individual property insurance services should ensure the appropriate level of service quality. Considering the above, it must be stated that the initially assumed research hypothesis has been fully realized.

Evidence of this is the fact that this method allows for obtaining a better fit of the research results. It is an effective tool in managing the quality of individual property insurance services by enabling the identification of areas related to improvement and their proper, as well as skilful, management. It can be implemented in a broad range of business activities. This model can serve both researchers and business practitioners in the management process of any industry. However, systematically changing market conditions, evolving needs, and customer expectations necessitate periodic verification of insurance company goals and better, more effective, and more credible interaction with the environment.

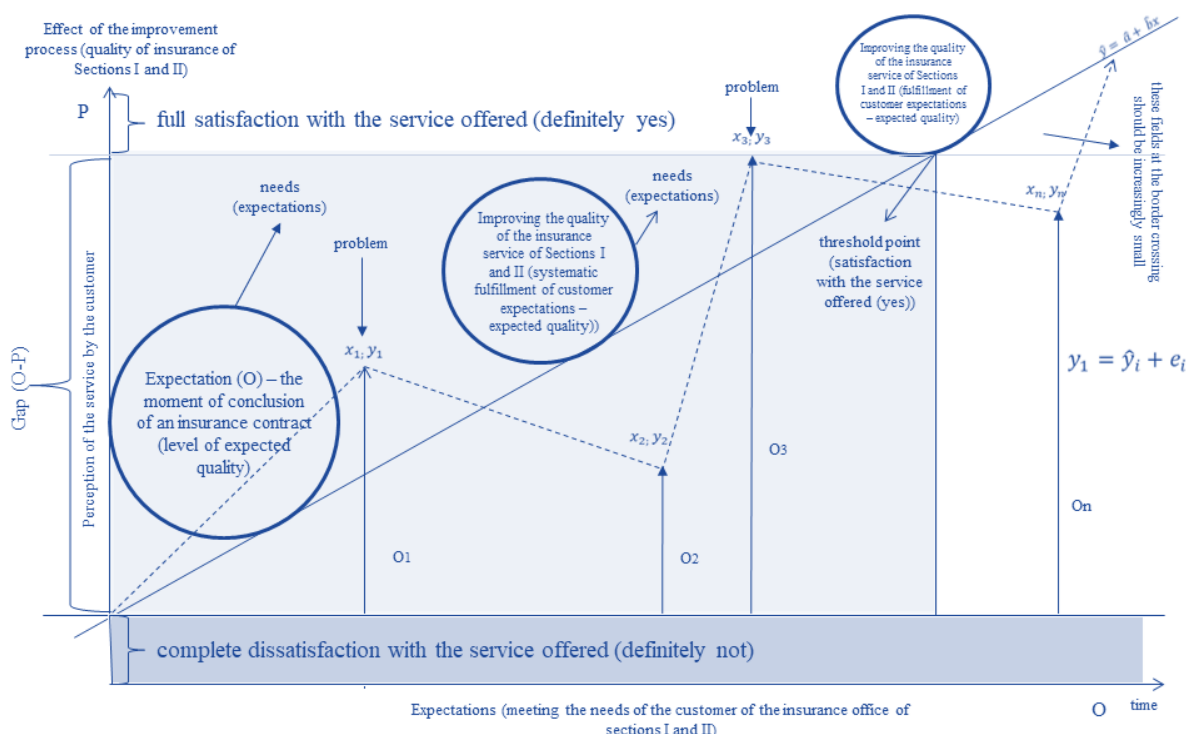
Even perfectly planning and implementing the studied service will not be appreciated by customers if it does not align with their expectations. It should be remembered, however, that improving a specific service within a defined standard has its limits. Therefore, one should avoid situations where the assumed level of quality becomes an obstacle to the further development of the insurance market.

An important achievement of the authors is the conduct of original, multifaceted literature reviews on the definitional criteria and conceptual assumptions related to the issues associated with the concept of service excellence. Based on this, they developed a model for improving the quality of property services along with its description. A new perspective on the definition of quality in insurance services and the improvement of insurance service quality was introduced.

The material presented in the study can be helpful for academics, market practitioners, and experts in analysing the perspectives of the development of the property insurance market, its contemporary functions, identifying directions of change, as well as the impact of customer service quality on the competitiveness of property insurance companies.

The conducted research utilizes the strengths of previous solutions while simultaneously aiming to overcome their limitations. The result is not only an assessment but also a proposal for improvement directions and the adaptation of actions to the specific nature of property insurance companies, as depicted in Figure 2.

Figure 2. Model of improving service quality in voluntary insurance in sections I and II



Source: author's own work based on conducted research.

Conclusions

The study presents a significant contribution through its original, multifaceted literature reviews, which explore the definitional criteria and conceptual foundations related to service excellence in the property insurance sector. This analysis led to the development of a model for improving the quality of property insurance services, complete with a detailed description. Additionally, the research introduced a novel perspective on defining and enhancing the quality of insurance services, providing valuable insights into service improvement strategies.

The findings of this study are particularly relevant to academics, industry professionals, and experts, offering a comprehensive framework for analysing the development and current functions of the property insurance market. It also highlights key directions for future changes, with an emphasis on the critical role of customer service quality in boosting the competitiveness of property insurance companies.

The research builds upon the strengths of existing approaches while addressing their limitations. The resulting contribution is not only an evaluation of current practices but also a set of recommendations for improvement, with solutions tailored to the specific nature of property insurance companies. These proposed improvements are illustrated in Figure 2, offering a practical, adaptable approach to service quality enhancement in the industry.

Credit Authorship Contribution Statement

All authors made significant contributions to the completion of this work. Przybytniowski, J.W. was responsible for the methodological framework, conducting the research, statistical analysis, comprehensive literature review, quality model formulation, and drafting the discussion section, including the preparation of tables and figures. Borkowski, S. reviewed the paper for clarity and academic rigor, as well as compiling the bibliography. Sabat, A. took responsibility for translating the manuscript into English. Dziekański, P. was primarily involved in drafting the abstract and introduction. Gierulski, W. contributed to writing the conclusion and designing the graphical layout.

Conflict of Interest Statement

The authors declare that the research was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest

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