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Application of the servqual method to highlight the significance of customer satisfaction in the process of shaping quality of services and the nature of required innovation

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ABSTRACT

The contemporary market for products and services is marked by intense and continually increasing competition, ongoing economic and technological shifts, and customers who are steadily more demanding and informed. The growing competition and the awareness of the 21st century customers require to link the new and more aware customer requirements with innovation in the services sector. The best source of information regarding changing demands comes from customer feedback, which guides modifications aimed at enhancing quality. Through their level of satisfaction, the customer imparts information about the extent, nature, and range of innovation required to fulfil their expectations. The article suggests a model utilising the Servqual method, which helps to indicate sectors within service enterprises that require modification or advancement, as well as the essence and category of said alterations. Suggestions for innovation are linked with the maximum value of the calculated indicator (RAi). The analysis of the data shows that the greatest scope for enhancement is in the E1 enterprise, where RAi in all domains exceeds the value of 30. The second business which requires quick alterations is E6. Two companies (E1 and E3) require innovation in the area related to "responsiveness".

Keywords: quality, servqual, services, innovation.

INTRODUCTION

The role of a customer in shaping products and services has undergone a significant evolution. The modern customer is increasingly aware of their needs and has an ever-growing knowledge and skills. Increasing competition and the awareness of the 21st century customer mean that the customer does not want and does not have to adapt their needs to what the market offers, because it is the market that must adapt its products and services to their needs, their perception of quality. The combination of quality and [1, 2] significantly affects the success and profitability of an organisation [3, 4], as well as customer satisfaction [5, 6] and customer retention [6]. It contributes to market share and return on investment [7], thus becoming a key strategic component, as well as influences the reduction of production costs and enhancement of productivity [8].

The assessment of service quality, and methods of measuring it, have drawn the attention of numerous researchers [9, 10] due to its inherently elusive, non-concrete, and even abstract nature. Conducting customer satisfaction research is a crucial aspect of a company's operations, aiding in the ongoing increase in the quality level [11, 12]. It is crucial for service institutions to continuously assess and measure customer satisfaction, as it provides valuable insights into how well a service-based business is meeting the quality expectations of their customers and how is it perceived by the customers. Customer satisfaction level serves as a measure of service quality and simultaneously drives the efforts towards constant improvement of the business and to enhance its market position. Nevertheless, there is still no universal method, while each current method has its own set of pros and cons. The search for methodologies which

permit for the identification of customer requirements and to meet them to the maximum possible degree. The objective of these methodologies is to minimise the discrepancy (or the gap) between the customers' anticipations of the service and their actual perceptions (the service received), thereby satisfying customer requisites to the maximum extent feasible and consequently contributing to the prosperity of the enterprise. Consumers find it challenging to express their service requirements, complicating the definition and quantification of an abstract idea. Sources of increasing importance of services can include [13]:

- The increase of societal wealth.
- Increasing levels of education of consumer (associated with increased aspirations and expectations).
- The increase in free time (the social pressure to extend the amount of free time leading to a greater need for transportation, IT and telecommunications services).
- Strong integration of production activities with service activities in modern sectors of economy.

Both manufacturing and service businesses must not only consider the customer's point of view in their product and service designs, but also largely rely on their expectations. A company that disregards a customer must expect that others will exploit this gap. The terms 'traditional needs' and 'standard customer' are giving way to the 'individual needs' of the customer. These elements are heightening the requirements and anticipations imposed on the products, services, and market conduct of their providers. Economic globalisation, technical and technological advancements have resulted in modifications in the relationship between customers and suppliers. There has also been a shift in how the customer's role in business processes is perceived. The customer does not solely serve as a source of economic value expressed in financial value, but has also transitioned to become an engaged party in the ongoing procedures. Consequently, the supplier's role in relationships with the customer has undergone a transformation. A company must not only generate value based on its own resources and expertise, but it also needs to satisfy the demands of the customer. That is why understanding the customer's needs is so crucial. The customer shapes the service, triggers alterations, extra functionalities and innovations. Getting feedback for products is less challenging than for services. Owing to the traits of services (intangibility, temporariness, diversity, indivisibility, heterogeneity), methods to enhance its quality are constantly being sought. Improvement in service quality is inseparably connected with broadly defined change. An innovation represents a value and/or quality produced by a specific kind of change, namely, an innovative change. This kind of innovation can also represent a mutation or a value/quality shift from other systems – it is however important for it to constitute a novelty for the specific system [14]. Multiple definitions of innovation exist, some of which originated in the 1970s; [15, 16]. The following definition still appears relevant and comprehensive: "Innovation consists of the generation of a new idea and its implementation into a new product, process or service, leading to the dynamic growth of the national economy and the increase of employment as well as to a creation of pure profit for the innovative business enterprise. Innovation is never a one-time phenomenon, but a long and cumulative process (..)" [17]. Furthermore, the drivers of change and innovation in both manufacturing and service businesses have been the object of numerous studies [18÷20]). In a broad context, innovation is perceived as a purposefully introduced changes that consist in substituting current solutions with enhanced ones that yield economic and social advantages. There is an absence of studies demonstrating the correlation between customer expectations in various sectors of service quality and the type of innovation required to satisfy them.

The purpose of this article is to suggest a model allowing to indicate service areas which require innovation utilising the Servqual method. The research outcomes allow for the identification of innovation paths for service companies based on customer perceptions of service quality. The objective was achieved using the Servqual method. The service was rated by customers of six different service providers in five areas. The authors believe that the Servqual approach allows for the identification of sectors which require innovation for the purpose of enhancing customer satisfaction and in turn, increasing the competitiveness of a business.

BACKGROUND

In the Servqual method, discrepancies between customer expectations for the service

and their perception after the service is provided are subject to [21, 22]. The complex nature of services requires the evaluation of their quality from multiple perspectives (areas) [23, 24]. The specifics of the services may cause these areas to vary [25, 26]. The study examines the expectations and viewpoints of customers in five key sectors, which in a way, characterise a specific service area [27]. Various ways of interpreting service expectations and perceptions are demonstrated in Figure 1.

According to the authors of the method [10, 28] it is possible to assess service quality on the basis of aspect evaluation in five areas for each service business. According to Parasurmaman et al. [31] their validity is as follows: (1) reliability, (2) assurance, (3) responsiveness, (4) materiality, (5) empathy. The characteristics related to this area are referred to as reliability. In addition, it indicates that organisations are making efforts to fulfil their promises and focus on outcomes. The SERVQUAL service quality model recognised reliability as its first dimension. Keeping promises is most often associated with this area. Another area is assurance. Assurance has been defined as the politeness and knowledge held by the employees, together with their ability to gain the trust of the customers [29, 30]. Assurance implies communicating with customers and hearing them out, irrespective of their educational status, age or nationality. This area, often referred to as expertise, is a significant characteristic of employees that should not be ignored when evaluating service quality [31]. He asserts that assurance reflects the attitudes and behaviour of employees, in addition to the personnel's

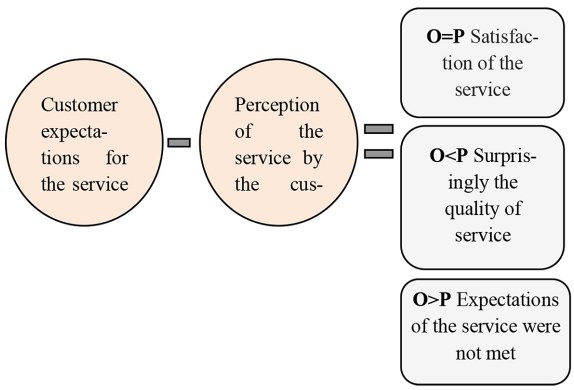

Figure 1. Opportunities for interpretation of the fifth gap between the expectations of the service and notion after being provided the service

ability to deliver competent services in a welcoming environment. Another area is Responsiveness/Reaction to something. This area provides information regarding delivering precise updates to customers regarding the completion date of tasks, dedicating unwavering attention to them, advertising services, and catering to their requests, including reacting promptly to customer inquiries. In the SERVQUAL 1994 study, responsiveness was identified as the third dimension.

The final two sectors are materiality/tangibility and empathy. Materiality/tangibility (tangibility) – tangible items such as furnishings, equipment, and the neat appearance of personnel are included in this area. This is the tangible representation of the service that customers will utilise to evaluate its quality. This encompasses infrastructure and devices utilised for providing services. Empathy – the customer's perception that they are receiving individualised treatment, and that their order or service is given priority by the organisation. The customer feels special.

The purpose of a customer satisfaction survey is to gather insights about whether the customer is content with the service, thereby allowing to identify any gaps. Understanding the gaps is the source of transformation and innovation, holding the potential to enhance customer satisfaction. Numerous definitions of innovation exist [32, 33]. They vary in the extent of this concept, the type and scope of modifications. They all agree that it is a change which aims to improve [34]. Pursuant to the management encyclopedia, innovation (derived from the Latin word innovatio, meaning renewal), involves a series of actions that result in the creation of new or enhanced products, technological procedures or organisational frameworks. The interpretation of innovation is broad in the definition, encompassing areas extending beyond technology. The literature does not contain many studies discussing the methods that trigger the necessity for innovation, particularly within the service sector. In the literature [35÷37] there is considerably more data on product innovations than on service innovations. Given that evaluating the quality of a service is more challenging than evaluating the quality of a product, it is also more difficult to implement changes or innovations that would enhance the service and consequently, its quality [38, 39].

MATERIALS AND METHODS

The study was carried out for six service businesses: a business providing food services (E1), a catering business (E2), a business providing courier services (E3), a transportation service business (E4), a language school (E5), and a hotel (E6). The research employed the Servqual method, carried out among the customers of six distinct service businesses (E1, E2, E3, E4, E5, E6). The study was carried out among service providers from six service businesses. The study was conducted between 2020 and 2024. In total, 505 individuals utilising various service providers were examined. Specifically, we received 88 questionnaires from the persons who used the services rendered by business E1, 78 from E2, 96 from E3, 76 from E4, 79 from E5, and 88 from E6.

The study utilised the gap quality model and the Servqual technique. Service quality model by Parasuraman et al. (1985), pinpoints five distinct inconsistencies (gaps) between the anticipated and actual service quality experienced by customers in the framework of business-to-consumer interactions (Fig. 2) The characteristics of the individual gaps [28 ÷ 31] are listed in Table 1.

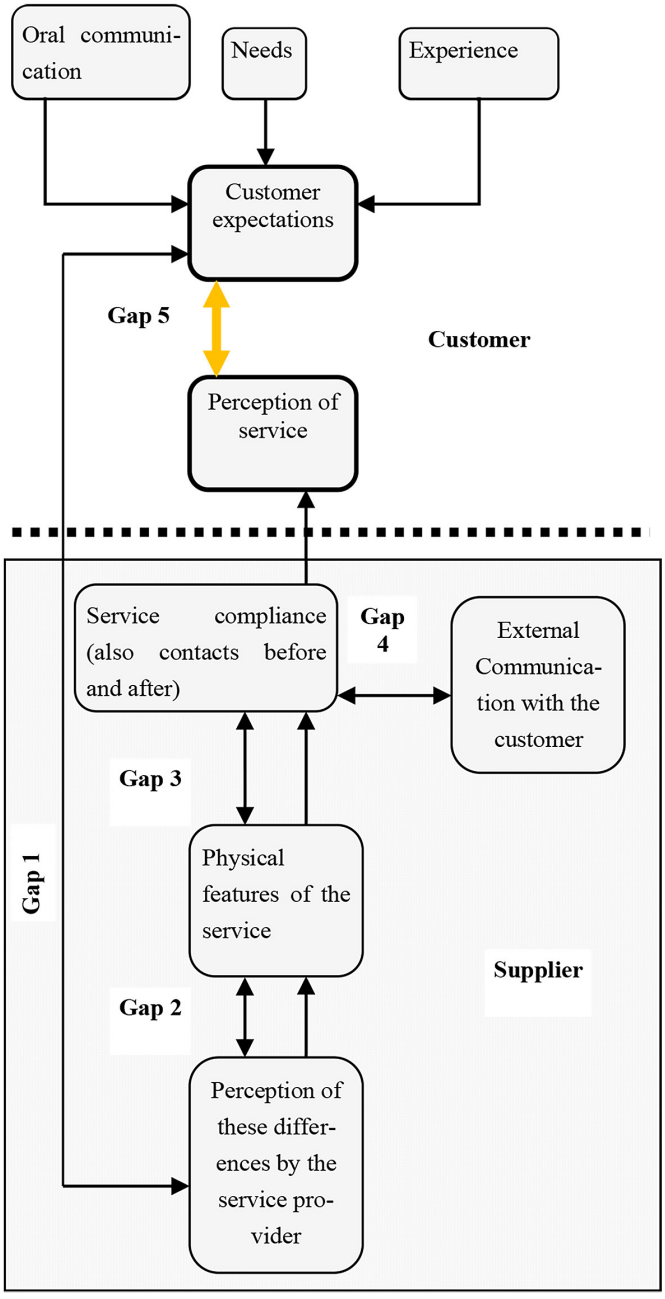

Figure 2. Gaps in the service quality model. Source: [10, 38, 39])

Table 1. Characterization of the gaps

Gap	Characteristics
Gap 1	Determines the difference between customer expectations and perception of these differences by the service provider
Gap 2	Is defined as a difference between perception of customer expectations by enterprise managers and physical features of the service
Gap 3	Represents the difference between the specification of the quality of services and actually provided services
Gap 4	The difference between the provided service and information about this service obtained by the customer
Gap 5	Means the difference between customer expectations and his or her actual perception of the quality of purchased services

A seven-point Likert scale of 1–7 was utilised in the study (where 1 means 'I disagree' and 7 means 'I strongly agree'). For each business, twenty-two claims were drafted that were grouped into five sections (Table 2). The difference between the perceived service quality received (P) and the prior expectations of it based on past experiences (O) is shown in Table 4. This is the mean deviation for each of the five sectors calculated using the formula:

$$A_A = \frac{\Sigma(P-O)}{n_{SA}} \quad (1)$$

where: A_A – average for the area; P – customer's view on the quality of service; O – expectations of the customer regarding the quality of the service; n_{st} – number of statements in the area. Average $A_{Reliability,}$ $A_{Assurance,}$ $A_{Responsability,}$ $A_{Tangibility,}$ $A_{Empathy}$

An example of the analysis for one of the companies analysed (a courier company) is presented in Table 3.

The overall Servqual arithmetic mean was calculated using the formula presented below:

$$S = \frac{\Sigma_{A_i}}{5} \quad (2)$$

where: A_A – average for the area; S – overall Servqual arithmetic mean.

The type and scale (level) of innovation should be suggested based on the findings based on Servqual surveys. Ongoing process enhancement must be taken into account. In our pursuit to meet customer satisfaction and enhance the business competitiveness, we must bear in mind that the enhancement process needs to be ongoing, hence the inclusion of the PDCA (plan, do, check and act) cycle in the model.

The Servqual method is used in a model to choose the investment type and level, as shown in Figure 3.

The four key aspects are related to the service itself, the process, the organisation, or marketing. They will assist in identifying if the business requires incremental small innovations, such as minor enhancements to current services, aesthetic modifications intended to set apart products and boost the competitiveness of the company. Average (incremental) innovation – refers to the reorganisation of the company caused by the upgrading of a product or technology. Radical innovation is a major step forward in the development of a service, process, or system. It typically involves creating something entirely new which then becomes accepted by customers as an alternative to existing or services.

The results of the analysis will indicate the direction of innovation and its level (incremental or radical). This relationship is presented in Figure 4.

In contrast to incremental innovations which only build upon existing technologies and processes, radical innovation creates new ones from scratch. Significant (breakthrough) – are formed

Table 2. Streamlined version of the Servqual method

Statements	Areas	P	O	Servqual P-O
1 ⋮	Reliability			$A_{Reliability.}$
⋮	Certainty			$A_{Assurance}$
⋮	Response to something			$A_{Responsibility.}$
⋮ ⋮	Materiality			$A_{Tangibility.}$
⋮ 22	Empathy			$A_{Empathy}$
Total arithmetic mean Servqual				Σ(P-O)/5

Table 3. Servqual sheet for a courier company (E3)

Statements	P-O
TANGIBILITY	
1. Couriers are garbed in suitable, neat, company-representative clothing	
2. The vehicles of couriers are labelled and identifiable	
3. The InPost app works reliably	
4. The application is simple and intuitive to use	
5. The parcel lockers operate efficiently, they do not jam, they are not damaged and consistently maintained clean	
6. Information relevant to the customer can be quickly and conveniently located on the company's website	
Arithmetic mean (A_i)	
RELIABILITY	
7. The parcels that are delivered always get to the correct individuals and the proper address	
8. Packages that are delivered are maintained in a suitable condition (not bent, undamaged, positioned with the topside pointing up)	
9. Besides ensuring the parcel is correctly delivered, the company also caters to the requirements of the customers (adheres to the stipulations mentioned in the "additional shipping guidelines")	
10. The customer consistently receives e-mails detailing the dispatch of the parcel, its intended delivery location, its storage in a parcel locker, the parcel collection date, and the capability to track it	
Arithmetic mean (A_i)	
TIMELINESS	
11. The business adheres to the anticipated parcel delivery times	
12. The business promptly replies to emails and phone calls	
13. Couriers aim to deliver packages at times which closely match those given over the phone	
Arithmetic mean (A_i)	
COMPETENCE	
14. Customer trusts couriers to deliver parcels safely	
15. Couriers provide package delivery with respect, either "hand to hand" or using other previously agreed methods	
16. If the previously chosen parcel locker runs out of space, the customer is promptly updated about the change in the delivery address.	
17. In the event of unforeseen circumstances, you can arrange with the courier for a different delivery address or time.	
18. The helpline personnel is knowledgeable and capable of addressing any query.	
Arithmetic mean (A_i)	
EMPATHY	
19. The operating hours of the helpline enable communication without the necessity of, for instance, taking a day off	
20. Each customer is treated on an individual basis	
21. Couriers demonstrate willingness to help in delivering packages to individuals who are unable to do so on their own	
22. Individuals working on the helpline comprehend customer requirements and have the capacity to provide assistance in a suitable manner	
Arithmetic mean (A_i)	
ΣA_i	

Table 4. The results of the averages A_R, A_A, A_{RS}, A_T, A_E for each of the areas

Area	E1	E2	E3	E4	E5	E6
Reliability	-1.95	-0.33	-0.16	-1.29	-0.28	-1.58
Assurance	-2.3	-0.33	-0.18	-1.05	0.18	-1.94
Responsiveness	-2.1	-0.59	-0.13	-0.21	0.15	-2.21
Tangibility	-2.5	-0.26	-0.14	-0.55	-0.27	-0.58
Empathy	-1.97	-0.3	-0.28	-1.01	0.16	-2.15
Av Servqual	-2.16	-0.36	-0.18	-0.82	-0.012	-1.69

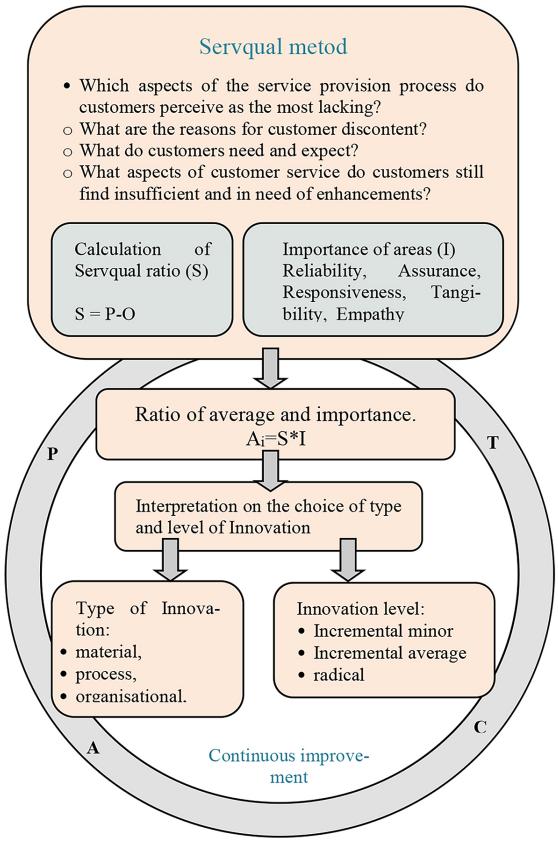

Figure 3. A model for selecting the investment type and degree utilising the Servqual technique

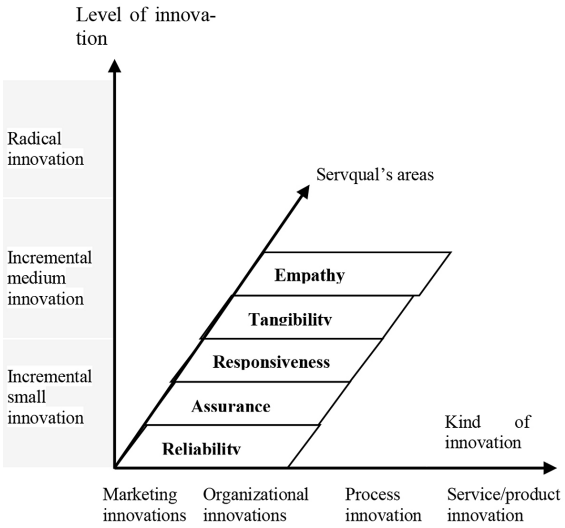

Figure 4. Diagram of the correlation between Servqual domains, innovation level, and innovation type

through extensive research and development works over time. They relate to a strategic shift and may affect the entire economic sector.

RESULTS

The findings of the disparities between perceptions and expectations across each of the six enterprises are shown in Table 4 (average of the discrepancies for each field).

Table 5 illustrates the average significance of the areas (as pointed out by the respondents in the surveys) for customers.

The average Servqual scores and the significance of each of the five sectors for the examined businesses are shown in Figures 5÷10

The analysis of the Figure 5 suggests that responsivenes is the most important area for the surveyed enterprises No. 1 in the food industry, while empathy is the least valued. The area of reliability was rated highest (-1.95). This implies that the best alignment between customer service expectations and their perceptions exist in this area. Tangibility is an area of great importance to customers and it is also the one causing the most disappointment. For this reason, planning for innovation should primarily focus on this area.

The Figure 6 analysis reveals a minimal variance between the expected and perceived service in all the examined areas. The largest is in the area of responsivenes (-0.59). The sectors most significant to the survey participants received high ratings.

The courier service company received high ratings from those surveyed. The discrepancy between the anticipated and the observed service varies from -0.13 to -0.28 (Fig. 7–10). It must be kept

Table 5. Importance of the areas for the companies under analysis

Area	E1	E2	E3	E4	E5	E6
Reliability	17.1	26.98	22.35	28.74	22.82	43.21
Assurance	19.21	14.32	18.32	16.84	21.22	13.82
Responsiveness	27.35	17.15	25.08	16.36	21.86	17.31
Tangibility	20.24	26.12	14.11	22.85	17.68	14.33
Empathy	16.1	15.43	20.14	15.21	16.42	11.33
Sum	100	100	100	100	100	100

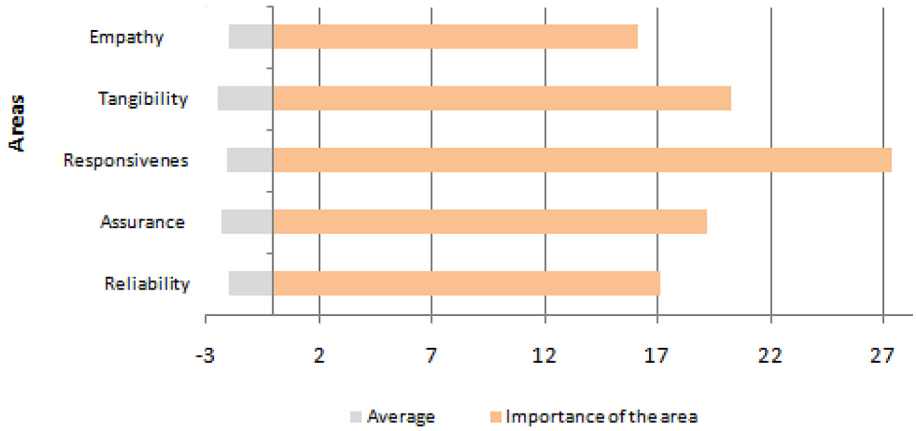

Figure 5. Servqual scores (P-O) and the significance of sectors for a food industry business (E1)

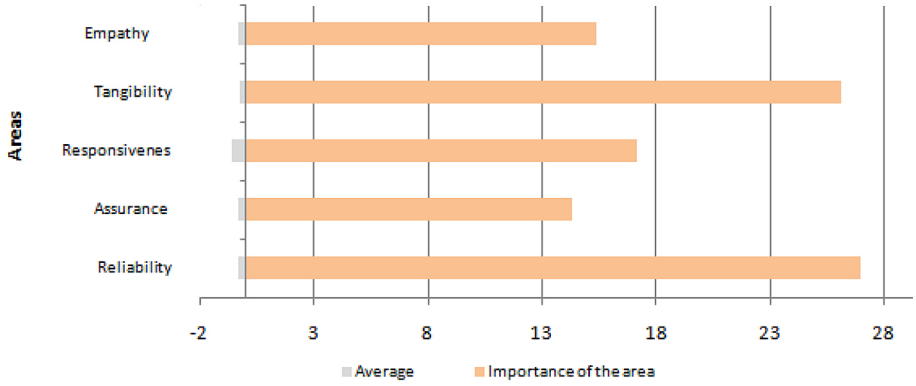

Figure 6. Servqual scores (P-O) and the importance of areas for the catering business (E2)

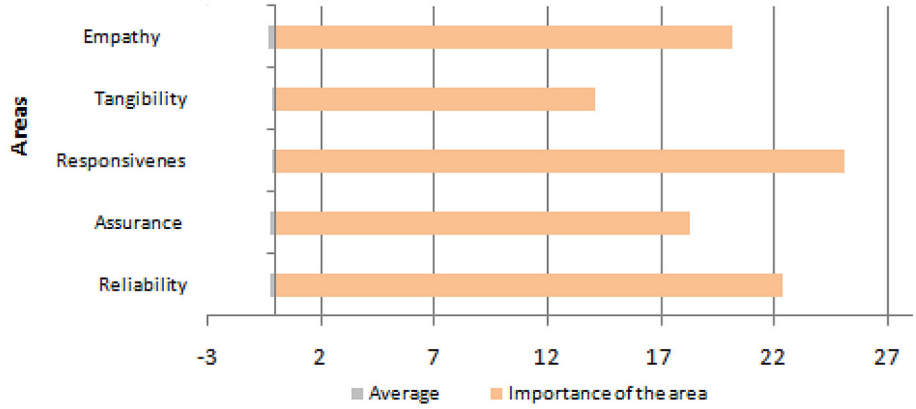

Figure 7. Servqual scores (P-O) and the importance of areas for the courier services company (E3)

in mind that the Servqual method is distinguished by its capacity to exceed customer expectations, which is achievable through ongoing development and the implementation of innovations. Innovations will yield the most significant effect in the sectors which are of utmost importance, namely: responsiveness, reliability, empathy.

In the E5 company, the service rendered surpassed the expectations of the customer in three sectors (empathy, responsiveness, assurance). Attention should be paid to the two remaining areas – tangibility and assurance.

The analysis of the results for the hotel (E6) indicates that it excels in meeting expectations in the area of tangibility, however, it reaches the lowest results in the category of responsivenes. with respect to significance, the reliability area is of the key importance to the surveyed customers.

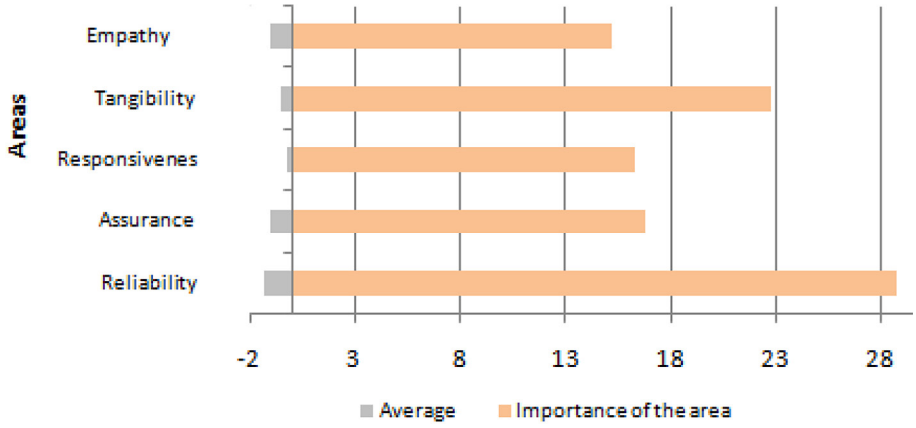

Figure 8. Servqual scores (P-O) and the importance of areas for the courier services company (E4)

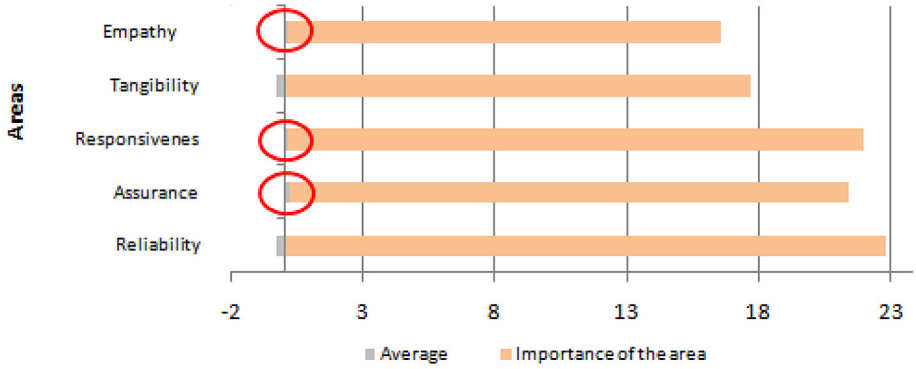

Figure 9. Servqual scores (P-O) and the significance of sectors for a language school (E5)

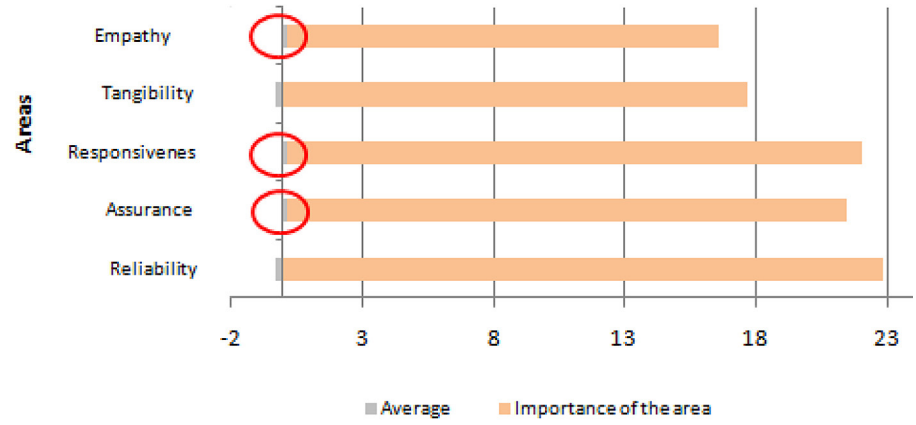

Figure 10. Servqual scores (P-O) and the significance of sectors for a hotel (E6)

In order to indicate the areas which necessitate innovation, first and foremost, the Servqual score was initially multiplied by the weight (the weights are exhibited in Table 5), and the Ratio of average and importance (RA_i) was obtained.

$$A_i = S \times I \tag{3}$$

where: A_i – area; S_i – Servqual score for each area; I – validity

Ratio of average and importance for each area of the service quality investigation for all businesses surveyed is shown in Figure 11. It shows that for four out of the six enterprises E2, E4, E5 and E6, the area of reliability takes precedence. This area also holds the second position of significance in company no. 3. The Figure also shows that responsiveness holds the second most significant position.

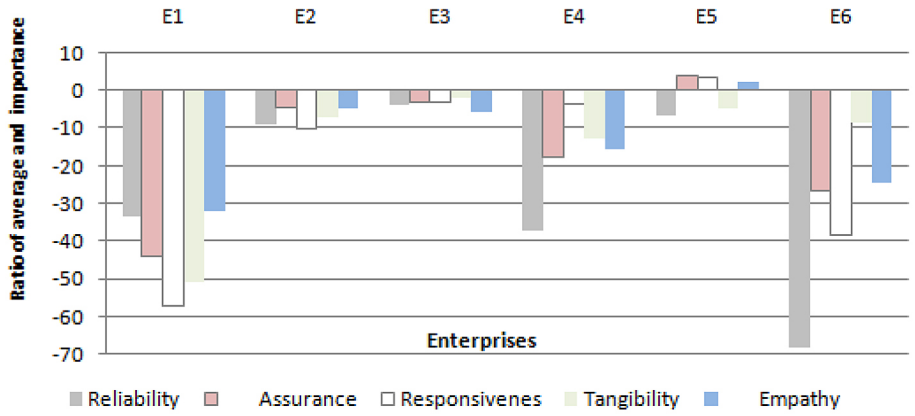

Figure 11. Ratio of average and importance for the specific areas of each of the six companies

Suggestions for innovation are linked with the maximum value of the calculated indicator (RA_i). The analysis of Figure 11 demonstrates that the RA_i index in companies E2, E3, E5 does not exceed 10, which is an outstanding outcome. It is an excellent result, however, a more precise analysis of these indicators also yields insights into areas that can be enhanced. Monitoring is required in all cases, even if the situation is seemingly stable. The greatest scope for enhancement is in the E1 enterprise, where RA_i in all domains exceeds the value of 30. The area of responsiveness that is of most concern (above 50). The second business which requires quick alterations is E6. The most rapid alterations and advancements are required in the area of reliability (RA_i nearly 70). E1 and E3 companies require innovation in the area related to responsiveness. Recommendations regarding the scope of innovation depending on the RA_i indicator are presented in Table 6. Based on the information presented in Figure 11, an area of innovation can be suggested, as outlined in Table 7.

The analysis of results included in Table 7 reveals that only a single enterprise considers product information paramount (E2). Alternatively, all the businesses examined require the introduction of process and organisational innovation as a foremost priority. The shortcomings experienced by customers relate primarily to the areas of reliability and responsiveness, which require the involvement of responsible personnel characterised with adequate expertise and an individual approach to the customer to improve the area.

CONCLUSIONS

The quality of service is fundamentally tied to client satisfaction, but also to enhancement, which suggests advancement, alteration, and innovation. An analysis of the literature on innovation and innovativeness reveals their evolutionary nature and the non-homogenous definitions provided even by the contemporary scientific

Table 6. Guidelines concerning the extent of innovation based on the RA_i index

Innovation	E1	E2	E3	E4	E5	E6
Material		+				
Process	+	+	+	+	+	+
Organisational	+	+	+	+	+	+
Marketing						

Table 7. The requirements of customers and the type of information required

RA_i	Recommendations	Level of innovation
0÷10>	Monitoring	Incremental minor innovations
(10÷30>	Improvement modelled on previously established products and processes	Incremental average
(30 and more)	They emerge from scientific research activities, pertaining to new products or processes.	Radical

community. Moreover, these ideas are frequently identified with one another and mistaken for originality or creativity. The subject of innovation in services is insufficiently explored in literature, a consequence of the intangible and non-tangible nature of services. Formulating a method that initially evaluates the satisfaction level of the customer with the provided services, pinpoints the dissatisfaction factor referred to as "holes," and thus allows to highlight areas for improvement, the nature and extent of such modifications, makes for a significant addition to the subject literature. The article suggests a model utilising the Servqual method, which helps to indicate sectors within service enterprises that require modification or advancement, as well as the character and category of said alterations. With this aim in mind, deriving from the findings of satisfaction surveys and the values that the participants conferred on different fields (reliability, assurance, responsiveness, tangibility, empathy) developed an indicator ratio of average and importance. Based on the outcomes of the ratio of average and importance ratio, one can consider three kinds of investment by scale (minor incremental, medium incremental, radical) and four types according to their nature (material, process, organisational, marketing). In respect of scale, the following should be mentioned:

- Incremental small – a series of small improvements made to a company's existing products or services. Generally, these low-cost improvements help further differentiate a company from the competition while building on current offerings.
- Incremental averages which are based on the previously developed products and processes. They are associated with their enhancement.
- Radical innovation which involves major changes to products (completely new products), services or technologies which completely replace products formerly utilised in the specific sector. The launch of such innovations in the market triggers a deep restructuring of competition in a given industry.

The paper examines six distinct service enterprises to demonstrate the universal applicability of the suggested model in diverse service businesses. In this case, the advantage lies in focusing on customer satisfaction. In contrast to the quality of products, which must comply with specifications, the quality of services is much more difficult to assess. Feedback from the customer / service recipient is extremely important.

Based on the outcomes from the customer satisfaction level achieved by the application of Servqual analysis and the ratio of average and importance, it is possible to suggest a type of innovation (the sector it aims to target) as well as the level of innovation, which ultimately leads to an enhancement in the quality level and the competitiveness of a particular business.

REFERENCES

1. Crosby, P. B. Quality is Free: The Art of Making Quality Certain, New York, American Library, 1979.
2. Mahmood, S., Ahmed, S. M., Panthi, K., Kureshi, N. I. Determining the cost of poor quality and its impact on productivity and profitability, Built Environment Project and Asset Management, 2014, 4(3), 296–311.
3. Gill, J., Quality follows quality: add quality to the business and quality will multiply the profits, The TQM Journal, 2009, 21(5), 530–539.
4. Khan, J.H. Impact of total quality management on productivity. The TQM Magazine, 2003, 15(6), 374–380.
5. Meidutė-Kavaliauskienė, I., Aranskis, A., Litvinenko, M. Consumer Satisfaction with the Quality of Logistics Services, Procedia - Social and Behavioral Sciences, 2014, 110, 330–340.
6. Brah, S. A., & Lim, H.Y. The effect of technology and TQM on the performance of logistics companies. *International Journal of Physical Distribution & Logistics Management,* 2006, *36(3)*, 192–209.
7. Caceres, R. Ch., & Paparoidamis N. G. Service quality, relationship satisfaction, trust, commitment and business-to-business loyalty, *European Journal of Marketing,* 2007, *41(7/8)*, 836–867.
8. Patel, P. M., Vivek, A. D. Application of plan-do-check-act cycle for quality and productivity improvement-A review. Studies 2015, 2.6, 23–34.
9. Brown, S. W. and Swartz T. AA gap analysis of professional service quality. Journal of Marketing, 1989, 53(April), 92–98.
10. Parasuraman, A., Zeithaml, V. A., Berry, L. L. A conceptual model of service quality and its implications for future research, Journal of Marketing, 1985, 49(4).
11. Carman, J. M. Consumer perception of service quality: An assessment of the SERVQUAL dimensions, Journal of Retailing, 1990, 66 (Spring), 33–35.
12. Cronin, J. J, Jr. and Taylor S. A. Measuring service quality: A re-examination and extension, Journal of Marketing, 1992, 56 (July), 55–68.

13. Nissan, E., Galindo, M., Mendez, M., The Future of Services in a Globalized Economy, *The Services Industries Journal*, 2011, 31(1), 59–78.
14. Drucker, P., Innovation And Entrepreneurship. Routledge, 2014, 25–36.
15. Rowe A., Boise, B. Organizational Innovation: Current Research And Evolving Concepts. Public Administration Review, 1974, 34(3), 284–293.
16. Kogabayev T., Maziliauskas, A. The definition and classification of innovation. HOLISTICA – Journal of Business and Public Administration, 2017, 8(1). https://doi.org/10.1515/hjbpa-2017-0005
17. Urabe, K., Child, J., Kagono T. Innovation and Management: International Comparisons, Berlin, Boston: De Gruyter, 1988. https://doi.org/10.1515/9783110864519
18. Chapman, R. L., O'mara, C. E., Ronchi, S., & Corso, M., Continuous Product Innovation: A Comparison Of Key Elements Across Different Contingency Sets. Measuring Business Excellence, 2001, 5(3), 16–23.
19. Fischer, M. Innovation, Knowledge Creation And Systems Of Innovation. Annals Of Regional Science, 2001, 35, 199–216.
20. Kaczmarska, B., Gierulski, W., Hnydiuk-Stefan,A., Łobejko, S., Santarek, K., Wiśniewska J. Komercjalizacja wyników badań i innowacyjnych rozwiązań w Polsce, Polska Akademia Nauk, Warszawa, 2018.
21. Jain, S.K., Gupta, G. Measuring Service Quality: SERVQUAL vs. SERVPERV Scales. Vikalpa: The Jurnal for Decision Makers, 2004, 29(2).
22. Borkowski, S., Čorejowă, T. Instrumenty rozwiązywania problemów w zarządzaniu, Wydawnictwo Wyższej Szkoły Zarządzania i Marketingu w Sosnowcu, Sosnowiec 2004.
23. Dziuba, S.T., Ingaldi, M., Kadlubek, M. Use of Quality Management Tools for evaluation of the products' quality in global economy. Globalization And Its Socio-Economic Consequences, 16th International Scientific Conference Proceedings, PTS I-V, 2016, 425–432.
24. Stasiak-Betlejewska, R., Kaye, M., Dyason, M., Stachova, K., Urbancova, H., The Services Quality Level Assessment at the Technical University Using the Servqual Method. ERIES Journal, 2014, 7, 53–58.
25. Ingaldi, M. The Implementation of the Servqual Method in the Courier Services Company. Transport & Logistics, 2013, 13(26).
26. Zeithaml, V.A., A. Parasurman, A., Berry, L.L. Delivering Quality Service. Balancing customer perceptions and expectations, Simon and Schuster, 1990.
27. Czajkowska, A., Ingaldi, M. Identification of the needs and expectations of university students from engineering courses on the example of a university in Poland, System Safety: Human - Technical Facility - Environment, 2019, 1(1), 498–505.
28. Karaszewski, R. SERVQUAL – metoda badania jakości świadczonych usług, Problemy Jakości nr 5, 2001.
29. Czajkowska, A., Ingaldi, M., Analysis of the survey results on the pro-ecological awareness of young people in the aspects of sustainable development, Management Systems in Production Engineering, 2023, 31(3), 312–321.
30. Gronroos, C. Service quality: The six criteria of good perceived service. Rev. Bus. 1988, 9(10).
31. Parasuraman, A., Zeithaml, V.A., Berry, L.L. Reassessment of expectations as a comparison standard on measuring service quality: Implications for further research. J. Mark., 1994, 58, 111–124.
32. Griffin, R. Podstawy zarządzania organizacjami. Wydawnictwo Naukowe PWN, Warszawa, 2013, 424.
33. Kotler, P., Trias de Bes F. Innowacyjność przepis na sukces. Model od A do F. Rebis 2013.
34. Hill, L., Brandeau, G., Truelove, E., Lineback, K. Collective Genius: The Art and Practice of Leading Innovation. Harvard Business Review Press, Boston 2014.
35. Pilav-Velić, A., Marjanovic, O. Integrating open innovation and business process innovation:insights from a large-scale study on a transition economy. Information and Management, 2016, 53(3), 398–408, https://doi.org/10.1016/j.im.2015.12.004
36. Chen, J.Y, X., Mei, L., Holistic innovation: an emerging innovation paradigm. InternationalJournal of Innovation Studies, 2018, 2(1), 1–13. https://doi.org/10.1016/j.ijis.2018.02.001
37. Andergassen, R., Nardini, F. and Ricottilli, M. Innovation diffusion, general purpose technologiesand economic growth. Structural Change and Economic Dynamics, 2017, 40, 72–80. https://doi.org/10.1016/j.strueco.2016.12.003
38. Czajkowska A., Ingaldi M. Application of servqual and servperf methods to assess the quality of teaching services - comparative analysis. Manufacturing Technology, 2021, 21(3), 294–305.
39. Parasuraman, A.P., Zeithaml, V.A., Berry L.L. SEVQUAL: A multiple – item, scale for measuring consumer perception of service quality', Journal of Retailing 1988, 64(Spring), 12–40.