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Analyzing the SERVQUAL Method for Senior High School Education's Gaps and Factors

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Abstract: The research's aim is to assess the services offered by Greek public secondary education schools, with the intention of identifying any discrepancies between students' expectations and their perceptions of the final services provided. The gaps discovered indicate that the school's educational services are not meeting student expectations in the five quality dimensions of the SERVQUAL model. To be specific, the average expectations are 4.44, perceptions are 3.11, and gaps are -1.33. The schools examined had a greater discrepancy in the dimensions measuring safety and emotional understanding, which was observed. The fact that the 5 factors are correlated with each other indicates the model's reliability. However, in relation to the independent variables of gender, age, and class, there appears to be a positive correlation across all factors, which is very weak and not statistically significant. In contrast, a low negative correlation appears to be present between only the demographics being considered. Therefore, demographic characteristics do not affect the quality of education in secondary schools. Our findings benefit decision-makers by assisting them in taking corrective actions necessary to enhance the quality of services provided by schools as part of a continuous improvement process in order to achieve a higher level of excellence.

Keywords: *Quality, secondary education, SERVQUAL, service evaluation.*

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Introduction

The education system is highly dependent on students, which is truly the most direct and vital factor (Al-Adwan & Al-Debei, 2024). Their learning and development are the primary focus, and everything in the system is designed around it. Without students, schools, teachers, curricula, or any other resources dedicated to education would not be necessary (Sheng et al., 2024). The services provided by schools are directly experienced and benefitted by them. When defining and improving the quality of education, it is important to consider their point of view, needs, and expectations. The needs and expectations of students vary based on their personal capabilities, interests, and perspectives. By highlighting their needs and encouraging active participation in the decision-making process, educational practices can be tailored, and outcomes can be satisfied. Student participation in the decision-making process can be achieved through various mechanisms, such as the creation of student school councils, participation in events and educational programs designed for them, and conducting student satisfaction surveys to evaluate services. In general, the active involvement of students as stakeholders in improving the quality of education leads to the creation of an educational environment that is more democratic and effective and better serves the needs of all stakeholders (W. C. Smith & Benavot, 2019). This signifies that students are viewed as equal partners in ensuring and improving the quality of education. It is their responsibility to actively participate in quality management and internal quality assurance processes, offering their views and concerns. The involvement of pupils is necessary to ensure satisfaction with the services provided, which is a significant challenge for the secondary education system (Beerkens & Udam, 2017).

The secondary education industry faces significant challenges, particularly among private schools, mainly because of increased competition and the need for excellent service quality. The provision of high-quality services has been established as an essential pillar for the success and development of secondary education systems, as many researchers have pointed out (Ali et al., 2024; Bouranta et al., 2021; Saravanan, 2018). Deming's ideas in the 1950s led to the emergence of Total Quality Management (TQM), a critical management system that aims to continuously improve

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quality and customer satisfaction. Adopting a culture of quality and using measurement models that evaluate both product or service quality and customer satisfaction is necessary for an organization to achieve its quality goals. One such model is SERVQUAL (service quality), developed by Parasuraman et al. (1988, 1991) and is widely used to measure service quality. SERVQUAL is a tool that measures customer satisfaction and can be utilized by various organizations and businesses, including education, health, and others.

Management can evaluate the performance of their organization in all aspects of service delivery based on its five dimensions, infrastructure, reliability, responsiveness, assurance, and understanding (Goumairi et al., 2020). By identifying potential gaps and focusing on improving weaknesses, management can identify potential gaps. However, as Đonlagić and Fazlić (2015) point out that the successful implementation of the model requires the availability of sufficient information about customer expectations and perceptions. To effectively understand the needs and expectations of its customers, the organization must possess data collection and analysis systems.

The quality of educational services provided to students, parents, and the community can be improved by examining SERVQUAL (a model for measuring service quality) in secondary schools. SERVQUAL was created to assess service quality in business settings, but it has been adapted to educational institutions because it provides a structured way to evaluate customer (student and parent) satisfaction (Akhlaghi et al., 2012; Rasheed & Rashid, 2024). In the absence of reliable customer satisfaction assessments, effective improvement measures may not be achieved.

The literature suggests (Athanasiadis & Papadopoulou, 2024; Wider et al., 2024) that the best way to measure service quality in various service domains is by analyzing the difference between quality expectations and perceptions of service. The SERVQUAL model's applications and measurement outcomes in Greece, particularly in high schools, have not been thoroughly examined. In order to select the most appropriate method of measuring service quality in this sensitive segment, more empirical data is required.

Thus, the objective of this study is to assess the quality of educational services in secondary schools using the SERVQUAL model.

Literature Review

The SERVQUAL model was conceived by Parasuraman and others in 1988, where they outlined five essential factors or dimensions for evaluating service quality, particularly from the customer's viewpoint. These dimensions are universally applicable to a variety of service sectors, including education (Athanasiadis & Papadopoulou, 2024; Demis Alamirew, 2024; Gupta & Kaushik, 2018; Taraza et al., 2024), and encompass:

1. *Tangibles:* Physical aspects such as facilities, equipment, and personnel appearance. Classrooms, technology, and campus infrastructure are all part of education.
2. *Reliability:* The capacity to deliver the promised service with reliability and precision. The consistency of teaching quality and adherence to schedules are both indicators of reliability in schools.
3. *Responsiveness:* A willingness to assist customers and provide prompt service. This could pertain to the speed with which teachers or administration respond to student and parent inquiries in educational settings.
4. *Assurance:* The ability of employees to inspire trust and confidence, along with their knowledge and courtesy. This is a reflection of the expertise and demeanor of teachers and staff in educational institutions.
5. *Empathy:* Delivering care and personalized attention to customers. The meaning of empathy in education is to comprehend and address the specific needs of students. Competence, caring, and understanding of students are among the distinct items in this dimension. Empathy and emotional intelligence are vital for building meaningful relationships, comprehending others, and managing one's own emotions.

In service industries such as healthcare, banking, hospitality, and education, the SERVQUAL model has been proven to be effective (Athanasiadis & Papadopoulou, 2024; Sann et al., 2023). For example, in the education field, the model can determine if service quality perceptions are higher or lower than expected by comparing students' perceptions and expectations. Students' experiences and perceptions are used to assess educational quality and often focus on aspects related to the education process (Rahman & Nasrin, 2024). Frequently, efforts to improve education quality tend to focus on issues such as program content, instructor's abilities, and student preparation, leaving out educational aspects. To meet global quality expectations, schools must consider all important service quality factors. Assessing the overall educational quality of schools, whether public or private, requires the inclusion of a service framework. Improving the overall quality of services should be a priority for government authorities in public secondary schools, where pupils often struggle to meet their basic needs. Research like that of Redman and McElwee (1993), Adams (1994), and Galeeva (2016) underlines this. Regardless of the educational content provided, the quality of public sector services is essential. The government, as the primary provider of services in the public sector, is accountable for ensuring the quality of these services. Efforts to improve educational quality should include not only the educational process but also the broader experience of students at school (Espinosa et al., 2023; Sharif & Sidi Lemine, 2024).

It is important to fully consider all the factors that influence the quality of services in public secondary schools. Improvements in infrastructure, individual student concerns, staff quality, and management responsiveness are among them. McElwee and Redman (1993) and Espinosa et al. (2023) emphasize the importance of assessing service quality in understanding students' perceptions and adopting improvement initiatives. The objective is not only to keep students in school but also to enhance the overall level of education. To improve and develop the educational environment, it is important to measure student satisfaction with service quality beyond mere retention. It is crucial to pay attention to school administration as well, as their performance has a direct impact on the student experience and the quality of the services provided. The evaluation and measurement of service quality is often the focus of education research, particularly in higher education.

Quantitative surveys based on SERVQUAL's original format are often used in secondary education studies, but the questions are tailored to the school environment (Alemu, 2023; Sweis et al., 2016). In addition, the application of the SERVQUAL model in secondary education across different countries (Butt & Rehman, 2010; Hazilah Abd Manaf et al., 2013; Yildiz & Kara, 2009). In these studies, it was found that students have a positive and significant perception of administrative service, tangibles, delivery teaching, and assurance. Additionally, secondary education receives less attention than research in higher education. It is important to (Cuthbert, 1996; Sahney et al., 2004; Taroum & Masaud, 2024).

SERVQUAL quality determinants are the basis for the widely selected independent variables that measure service quality, which are reliability, responsiveness, assurance, empathy, and tangibility. Students at the university level believe that affordable academic staff is crucial to their success. Reliability is an important factor that encompasses the consistent performance and execution of the service within the allocated time, as well as the provision of accurate information and services to students. The perception of quality varies depending on stakeholders. However, students themselves are an important source of return information that can be used to improve services in educational institutions (Karatas et al., 2016; Redman & McElwee, 1993).

The quality of services provided by an educational institution can be significantly impacted by the maintenance of its physical facilities (Alsheyadi & Albalushi, 2020). Facilities' comfort and functionality can have an impact on students' experiences and improve their positive perception of the school environment. In addition, enabling students to interact with other classmates or receive support from teachers and mentors is critical to cultivating a positive atmosphere at school. In this context, the school administration has a crucial role in creating a friendly and caring environment, both by example and by the standards it sets. The school's mission should prioritize perseverance in achieving this goal. Despite reform efforts in the education sector, sometimes these efforts are not effective due to their limited visibility or inability to be implemented in practice. In order to improve the quality of educational services, it is important that the administration focuses on the specific needs of teachers and provides the necessary support, especially in areas with particular difficulties (Tomkovick et al., 1996). It is crucial that society recognizes teachers as professionals in education and trusts their professional judgment in everyday classroom situations. In addition, emphasis should be placed on student preparation, tailoring the approach to each student according to their needs (Gheyssens et al., 2022; Yang et al., 2024). Furthermore, any society must prioritize the continuous improvement of service quality and sustainable development (Gheyssens et al., 2022; Murali et al., 2016; Vuković et al., 2022). To sum up, secondary education should prioritize identifying and managing the needs of students and constantly search for ways to enhance its services. In an environment that is confronted with many challenges, such as competition and striving for excellence in service quality, student satisfaction is a crucial issue (Ali et al., 2024; Amin & Khuwaja, 2020; Owusu-Frimpong et al., 2013; Saravanan, 2018).

To develop appropriate strategies for improvement and progress in the educational field, it is crucial to evaluate the quality of services in Secondary Education by measuring student satisfaction. The quality of teaching, the effectiveness of educational programs, and the overall experience of students at school are all impacted by student satisfaction. The systematic collection and analysis of this data helps to identify the needs and weaknesses of the education system, providing the basis for the implementation of practices and policies aimed at improving the quality of education and promoting educational success and student satisfaction (Athanasiadis & Papadopoulou, 2024). In order to manage the quality of services, it is essential to understand customer expectations, how they are formed, and their importance in relation to the quality of the services provided. Businesses can tailor their services to ensure customer satisfaction and increase trust and loyalty to the business using this approach. (Minh, 2020; Uzir et al., 2021). Trust and loyalty are critical in the educational sector, especially when assessing and enhancing service quality. The assessment of quality in educational institutions goes beyond academics; it also encompasses factors such as administrative support, resource accessibility, engagement, and student well-being (Latif et al., 2021). Trust and loyalty are often the main factors in measuring and fostering service quality in this sector.

In higher education, customers place reliability as the most important dimension of service quality (Al-Refaei et al., 2024; Rozak et al., 2022). Responsiveness and empathy are identified as the dimensions with the highest negative gaps between expectations and perceptions. This means that while customers place great importance on the reliability of the services provided, there are significant deficiencies in the areas of responsiveness and empathy where the services they receive do not fully meet their expectations. These findings suggest the need for improvement in these areas and for

achieving a higher level of customer satisfaction in empathy, but the tangible dimensions are less significant. Communication and interaction with staff have a significant impact on customers' perception of service quality (Owusu-Frimpong et al., 2013). Rasli et al. (2012) found that the biggest difference between customer expectations and their actual experience lies in empathy, while the smallest difference lies in tangible dimensions. This discovery indicates that customers highly appreciate the personal care and attention they receive from service providers. Empathy, which involves comprehending customer needs and wants and providing personalized support and attention, is a crucial factor in customer satisfaction. On the other hand, customers' perception of service quality is more affected by tangible dimensions like facilities and equipment's physical appearance. Based on these findings, it is suggested that service providers should focus more on improving empathy aspects to better meet customer expectations and enhance customer satisfaction. This highlights the significance of improving communication and reliability in the services provided. To understand customer needs and ensure they are adequately addressed, communication is crucial, while reliability is crucial to achieving trust from customers. Enhancing customer satisfaction and trust can be achieved by continuously improving communication and reliability, as highlighted by these findings (Osman & Saputra, 2019).

Finally, Parasuraman et al. (1988) emphasize that understanding customer expectations is the first and most critical step in providing quality service. Better outcomes for organizations and increased customer satisfaction can be achieved by improving service quality in the dimensions of reliability, empathy, and assurance. Using the SERVQUAL model's five dimensions, it is possible to measure the level of quality of services in an educational organization. Improvements in the different aspects of service quality are required due to the negative gap in all dimensions. The negative quality gap in previous studies suggests that it is a common problem in secondary education. It appears that students' dissatisfaction with the quality of educational services has an impact on their school performance and life outcomes. By focusing on improving school quality and coherence of the educational process, programs can help reduce this quality gap.

Methodology

Research Design

Research methodology encompasses the strategies, techniques, and tools employed in collecting, analyzing, and interpreting data in a research study. The purpose of the survey was to evaluate the quality of educational services in secondary education, and SERVQUAL was used to measure customer satisfaction (Acquila-Natale & Iglesias-Pradas, 2020; Arli et al., 2024; Chen et al., 2022). The aim was to pinpoint the shortcomings and weaknesses that require improvement. A five-point Likert scale was used to measure responses to the questionnaire items, with values ranging from ‘strongly disagree' (1) to ‘strongly agree' (5). The collection of all questionnaires distributed was done manually, and the confidentiality of participants' responses was ensured.

Two sections were part of the questionnaire. The first is to gather demographic information from the participants, including gender, age, and educational levels. The second contained the five dimensions of service quality, initially developed by Parasuraman et al. (1988), with minor modifications in the name of the latent dimensions and variables that resulted from a preliminary analysis of five educational experts (pilot testing). As such, the five dimensions have been renamed to reliability, responsiveness, safety, emotional understanding, and tangibility, which cover all essential areas that impact student satisfaction (see Appendix A and B).

Sample and Data Collection

All 263 students who participated in the survey answered the questions because the researcher provided appropriate clarifications. The total number of boys was 109 (41.4%), while girls were 154 (53.6%). There are 255 students between 15 and 18 years old, with only 8 (3%) being over 18 years old. The number of students in first grade is 132 (50.2%), second grade is 86 (32.7%), and third grade is 45 (17.1%). Participants were asked to give their rating of secondary school and to highlight areas where problems were identified or where their expectations were not fully met. The questionnaire was given to high school students in the prefecture of Thessaloniki and Chalkidiki, in Greece. Convenience sampling was adopted when selecting participants for research over other techniques in order to enable all students to participate in the research sample (Hair et al., 2010; Malhotra et al., 2020; A. M. Smith, 1999). All participants were informed about the study's objective, methodology, and their rights as participants, which include the ability to withdraw at any time without any negative consequences. Before the interviews began, each lecturer was given written consent in advance. The guarantee was for both confidentiality and anonymity.

The Cronbach’s coefficient is used to examine the internal consistency of the SERVQUAL model. The Cronbach’ index accepts values in the range 0 and 1 (Diamantopoulos et al., 2012; Tarnanidis et al., 2015; Varshneya & Das, 2017).

The excellent reliability (internal tolerance) of the variables-factors under consideration is indicated by a coefficient that takes values greater than 0.7. For example, the presence of low alpha in a dimension's items could indicate that the items are not capturing the same construct or that the questions are incomprehensible or not specific enough. It's possible that some items may need to be revised or removed to improve consistency. The total Cronbach Alpha is .914.

Table 7. SERVQUAL five-factor model reliability analysis

Scale	Cronbach's Alpha
1st factor [Tangibility]	.91
2nd factor [Reliability]	.89
3nd factor [Responsiveness]	.90
4rth factor [Security]	.89
5th factor [Emotional understanding]	.90

The Cronbach's alpha values are high for all the identified constructs.

Analyzing of Data

To assess educational services' expectations, perceptions, and gaps, the questionnaire was completed anonymously. The sample used consisted of 263 questionnaires completed. The statistical techniques used to achieve the objectives of the survey include demographic analysis with sample characteristics, gap analysis between expectations, and quality estimation (McDaniel & Gates, 2018). The SERVQUAL model dimensions that emerged from every questionnaire in this survey are then analyzed and described. It should be mentioned that the appropriateness of analyzing the data was preliminarily checked for the normality of the dataset used in this study (Hair et al., 2010). The use of appropriate analytical techniques ensures that the results are reliable.

Findings/Results

The questionnaires were analyzed with SPSS and Excel, from which the following are derived.

Dimension: Tangibility

By using SPSS to analyze the questionnaires, the mean values and standard deviations for each question related to the tangibility dimension for both expectations and perceptions were discovered. These values are illustrated in Table 1, Tangibility, together with the gap between them.

Table 1. Comparison of the Mean and Standard Deviation Scores of the Tangibility

Question code	Tangibility	Expectations		Perceptions		Gaps	
		Mean	Std. Deviation	Mean	Std. Deviation	Mean	Std. Deviation
A1	The ideal school should have modern equipment	4.58	0.874	3.43	1.160	-1.15	1.24
A2	The school must have proper facilities	4.83	0.514	3.82	1.035	-1.01	1.02
A3	Access to school should be easy	4.44	0.884	3.39	1.270	-1.05	1.5
A4	School employees must have a clean appearance	4.16	0.966	3.37	1.207	-0.79	1.5
A5	The school must be reliable in the timely distribution of books	4.41	0.895	3.77	1.130	-0.64	1.37
A6	The content on the e-class website must be complete	3.80	1.194	2.84	1.310	-0.96	1.72

Table 1 exhibits:

- The highest average value in relation to expectations in the tangibility dimension is 4.83, as observed in question A2. Should the school have adequate facilities (classrooms, courtyard, toilets, etc.)

- The lowest average value in relation to expectations in the tangibility dimension is 3.80 and is observed in question A6 (The content on the e-class website must be complete and regularly improved and updated with new information regarding courses and procedures).
- The highest average value in relation to perceptions in the tangibility dimension is 3.82, as observed in question A2 (Does the school have appropriate facilities (classrooms, courtyard, accessible toilets, etc.). And very close is the average value (3.77) of question A5. The school is reliable in the correct and timely distribution of books at the beginning of the school year.
- The lowest mean value related to perceptions in the dimension of tactility is 2.84, as observed in question A6 (The content on the e-class website is complete and is regularly improved and updated with new information from the courses and procedures).
- The largest discrepancy between perception and expectation is 1.15, which appears in question A1. The ideal school should have modern equipment (computers, projectors, and interactive whiteboards).
- The smallest deviation between perception and expectation is 0.64, which appears in question A5. The school must be reliable in the correct and timely distribution of books at the beginning of the school year.

Dimension: Reliability

In Table 2 below, the mean values and standard deviations for every variable-question related to the reliability dimension are presented in the questionnaire analysis.

Table 2. Comparison of the Mean and Standard Deviation Scores of the Reliability

Question code	Reliability	Expectations		Perceptions		Gaps	
		Mean	Std. Deviation	Mean	Std. Deviation	Mean	Std. Deviation
A7	Teachers must adhere to the timetable	3.81	1.323	3,01	1.236	-.80	1.62
A8	Teachers need to transfer knowledge	4.57	.839	2,98	1.157	-1.59	1.52
A9	Teachers need to respond quickly	4.46	.894	2,78	1.181	-1.68	1.54
A10	Teachers need to be understanding of problems	4.68	.725	3,12	1.176	-1.56	1.34

Table 2 displays the following:

- The highest average value in relation to expectations in the dimension of reliability is 4.68, as observed in question A10. Teachers must understand when the student faces a problem.
- The lowest average value in relation to expectations in the dimension of Reliability is 3.81 and is observed in question A7 (Teachers must be at school beyond their actual working hours (teaching, students' questions, on-call duty, paperwork, etc.).
- The highest average value in relation to perceptions in the dimension of reliability is 3.12, which is observed in question A10 (Teachers showing understanding when students face a problem).
- The lowest average value in relation to perceptions in the dimension of Reliability is 2.78 and is observed in question A9 (Teachers respond quickly to correction in secondary school of writings - updating absences consistently and in a short period of time).
- The largest discrepancy between perception and expectation is 1.68 and appears in question A9. Teachers should consistently and quickly correct written absences in a short period of time.
- The smallest discrepancy between perception and expectation is 0.80, which appears in question A7. Teachers must be at school beyond their actual working hours (teaching, students' questions, on-call duty, paperwork, etc.).

Dimension: Responsiveness

In Table 3, below, the questionnaire analysis shows the mean values and standard deviations for each variable-question related to the response dimension.

Table 3. Comparison of the Mean and Standard Deviation Scores of the Responsiveness

Question code	Responsiveness	Expectations		Perceptions		Gaps	
		Mean	Std. Deviation	Mean	Std. Deviation	Mean	Std. Deviation
A11	Students need to be informed	4.57	.801	3.25	1.128	-1.32	1.34
A12	Teachers at school should have time to answer	4.44	.831	3.18	1.141	-1.26	1.37
A13	School teachers must show interest in problems	4.49	.814	3.01	1.211	-1.48	1.43

Table 3 exhibits the following:

- The highest average value in relation to expectations in the Response dimension is 4.57 and is observed in question A11 (Students should be informed about when exactly various actions they are interested in will be implemented (conducting written tests, submission of supporting documents, computer)). Here we notice that all questions have average values that are similar.
- The lowest average value in relation to expectations in the Response dimension is 4.44, as observed in question A12. Teachers at school should have time to answer students' questions.
- The highest average value in relation to perceptions in the dimension of Response is 3.25 and is observed in question A11 (Students are informed about when exactly various actions they are interested in will be implemented (conducting written tests, submission of supporting documents, computer). It is evident that the average values of all questions are similar.
- The lowest mean value in relation to perceptions in the Response dimension is 3.01, as observed in question A13. School teachers show sincere interest in solving students' potential problems.
- The largest discrepancy between perception and expectation is 1.48, which appears in question A13 (School teachers must show sincere interest in solving students' problems).
- The smallest deviation between perception and expectation is 1.26 and appears in question A11 (Students should be informed about exactly when various actions they are interested in will be implemented (conducting written tests, submission of supporting documents, computerized).

Dimension: Security

- Table 4 below displays the mean values and standard deviations for each variable-question related to the safety dimension after analyzing the questionnaires.

Table 4. Comparison of the Mean and Standard Deviation Scores of the Safety

Question code	Safety	Expectations		Perceptions		Gaps	
		Mean	Std. Deviation	Mean	Std. Deviation	Mean	Std. Deviation
A14	There must be security and confidentiality	4.62	.771	3.41	1.254	-1.21	1.35
A15	Teachers must have knowledge of the subject	4.56	.798	3.05	1.184	-1.51	1.41
A16	Teachers should apply alternative methods	4.34	.922	3.00	1.177	-1.34	1.41
A17	Teachers must have a peer and polite attitude	4.62	.772	3.00	1.151	-1.62	1.38

The following is shown in Table 4:

- The highest average value in relation to expectations in the Safety dimension is 4.62 and is observed in questions A14 (There must be security and confidentiality regarding students' personal information) and A17 (Teachers must have equal and courteous behavior towards students). Here we notice that all questions have average values that are similar.
- The lowest average value in relation to expectations in the Safety dimension is 4.34, as observed in question A16 (Teachers should use alternative teaching methods).
- The highest average value in relation to perceptions related to safety is 3.41, which was observed in question A14 (Is there security and confidentiality regarding students' personal information?).
- The lowest average value in relation to perceptions in the dimension of safety is 3.00, which is observed in questions A16 (Teachers apply alternative teaching methods) and A17 (Teachers have equal and courteous behavior towards students). Here we note that questions A15, A16, and A17 have similar average values.
- The largest discrepancy between perception and expectation is 1.62, which appears in question A17 (Teachers must behave equally and politely towards students).
- The smallest discrepancy between perception and expectation is 1.21, which appears in question A14. It requires security and confidentiality regarding students' personal information.
- The highest average value in relation to perceptions in the dimension of safety is 3.41, as observed in question A14 (Is there security and confidentiality regarding students' personal information).

Dimension: Emotional understanding

The analysis of the questionnaires revealed the average values and typical values for each variable-question related to the dimension of emotional understanding. These values are illustrated in Table 5 Emotional understanding**.**

Table 5. Comparison of the Mean and Standard Deviation Scores of the Emotional Understanding

Question code	Emotional understanding	Expectations		Perceptions		Gaps	
		Mean	Std. Deviation	Mean	Std. Deviation	Mean	Std. Deviation
A18	Teachers should pay full attention to the student's questions	4.48	.828	2.92	1.140	-1.56	1.35
A19	Teachers must understand the student's needs	4.49	.837	2.90	1.193	-1.59	1.42
A20	Teachers must handle students' complaints	4.36	.917	2.83	1.231	-1.53	1.56

The following can be seen in Table 5:

- The highest average value in relation to expectations in the dimension of emotional understanding is 4.49 and is observed in question A19 (Teachers must understand the particular needs of the student) and with a very small difference, 4.48 in question A18 (Teachers should pay full attention to the questions that students have). Here we notice that all questions have average values that are similar.
- The lowest average value in relation to expectations in the dimension of emotional understanding is 4.36, as observed in question A20 (Teachers must be able to handle students' complaints).
- The highest average value in relation to perceptions in the dimension of emotional understanding is 2.92 and is observed in question A18 (Teachers pay full attention to students) and with a very small deviation followed by A19 and A20.
- The lowest mean value in relation to perceptions in the dimension of emotional understanding is 2.83, as observed in question A20. Teachers are able to manage students' complaints.
- The largest discrepancy between perception and expectation is 1.59 and appears in question A19 (Teachers must understand the specific needs of the student).
- The smallest discrepancy between perception and expectation is 1.53 and appears in question A20 (Teachers must be able to handle students' complaints).

Quality Assessment of Training Services (SERVQUAL)

Table 6 presents the average values and standard deviations of expectations, perceptions, and gaps for all five quality dimensions (tangibility, reliability, responsiveness, safety, and emotional understanding).

Table 6. Comparison of the SERVQUAL Five-Factor Model

SERVQUAL 5-Dimensions	Expectations		Perceptions		Gaps	
	Mean	Std. Deviation	Mean	Std. Deviation	Mean	Std. Deviation
Tangibility	4.37	.562	3.44	.788	-.930	.860
Reliability	4.38	.653	2.97	.937	-1.41	1.11
Responsiveness	4.50	.646	3.15	.927	-1.35	1.09
Security	4.53	.600	3.11	.906	-1.42	1.06
Emotional understanding	4.44	.697	2.89	1.051	-1.56	1.24
General average	4.44	.630	3.11	.920	-1.33	1.07

The Summary Table indicates that the emotional understanding dimension has the greatest discrepancy between expectations and perceptions (-1.56). This is due to the fairly large age gap between teachers and children. The tangibility dimension (-.930) has the smallest deviation, on the other hand. The reason for this is that the equipment in schools has been significantly upgraded in recent years. Interactive whiteboards are now available in all schools. And in addition, the Covid-19 period, by necessity, brought teachers closer to modern education. The safety dimension has the highest average expectation of 4.53. Moreover, the general Expectations index (4.44) and the individual indicators are both very close, but the tangibility dimension has a lower value of 4.37%. It seems that children have high expectations for a higher-quality school. When we look at the students' perceptions, we observe that the dimension of tangibility (3.44) has the highest value, while the dimension of emotional understanding (2.89) has the smallest value.

Next, we analyze the connection between the five quality factors identified by Parasuraman in 1988 and the demographic variables of the study sample. The SPSS program was utilized to implement the Partial correlation method when the correlation coefficients are between 0.5 and 0.7; this means that the variables are moderately correlated (Diamantopoulos et al., 2012). Variables with low correlation are indicated by correlation coefficients with sizes between 0.3 and 0.5 (Hair et al., 2010). A positive relationship is evident when the correlation coefficient is above zero. On the other hand, if the value goes below zero, it indicates a negative correlation. When zero is present, it signifies that there is no correlation between the two variables. For the correlation analysis, we treat the Likert scale (1,2,3,4,5) as quantitative data and the non-continuous demographic variables, such as gender, as a dichotomous variable with two expressions (0-male and 1-female) and education as nominal data. Our technique for measuring the relationship between a continuous variable and a dichotomous variable was the Point-Biserial correlation, a special case of the Pearson correlation. This minimizes the likelihood that any correlation found will be incidental, limiting the interpretation (Diamantopoulos et al., 2012).

Table 8. Correlation of SERVQUAL 5- Factors with Demographic Characteristics

		Tangibility	**Reliability**	**Responsiveness**	**Security**	**Emotional understanding**	**Gender**	**Age**	**Study level**
B- Tangibility	Pearson Correlation	1							
	Sig. (2-tailed)								
B- Reliability	Pearson Correlation	.624**	1						
	Sig. (2-tailed)	.000							
B- Responsiveness	Pearson Correlation	.623**	.696**	1					
	Sig. (2-tailed)	.000	.000						
B- Security	Pearson Correlation	.675**	.760**	.735**	1				
	Sig. (2-tailed)	.000	.000	.000					
B- Emotional understanding	Pearson Correlation	.585**	.703**	.711**	.739**	1			
	Sig. (2-tailed)	.000	.000	.000	.000				
Gender	Pearson Correlation	- .013	.087	.047	.028	- .003	1		
	Sig. (2-tailed)	.832	.161	.443	.646	.959			
Age	Pearson Correlation	.108	.094	.036	.094	.076	- .031	1	
	Sig. (2-tailed)	.081	.128	.565	.128	.222	.619		
Study level	Pearson Correlation	.045	.007	.000	.051	- .048	- .057	.173**	1
	Sig. (2-tailed)	.463	.911	.995	.407	.435	.359	.005	

** Correlation is significant at the .01 level (2-tailed).

The fact that the 5 factors are correlated with each other indicates the model's reliability. However, in relation to the independent variables of gender, age, and class of study, there appears to be a correlation across all factors, which is very weak and not statistically significant. For instance, it was found a low negative correlation appears to be present between age and study level. Therefore, demographic characteristics do not affect the quality of education in secondary schools in our country (and specifically in the area where the data were collected). Appendix C presents a scatter diagram that displays the slope of the relationship between gender variables and the five dimensions of SERVQUAL model. As with any correlation analysis, the Point-Biserial Correlation assesses the strength of association or co-occurrence between two variables. The correlation coefficient is the single value used in correlation analyses to express the strength of the association.

Discussion

The present survey aimed to investigate the satisfaction of students of a school unit with the SERVQUAL method through the use of a questionnaire on a Likert scale 1-5) in a sample of 263 students attending secondary schools in the prefecture of Thessaloniki. The purpose of the survey is to evaluate the services provided by public secondary education schools to determine any discrepancies between students' expectations and their perceptions of the final services offered. The gaps discovered indicate that the school's educational services are not meeting student expectations in the five quality dimensions of the SERVQUAL model. To be specific, the average expectations are 4.44, perceptions are 3.11, and gaps are -1.33. The schools examined had a more significant discrepancy in the dimensions measuring safety and emotional understanding, which was observed. The model's utility for assessing or improving safety may be limited because students, parents, and teachers have different levels of awareness about actual safety hazards. This, according to the researcher, is due to the fairly large age gap between teachers and students, the high expectations of students, and the lack of rigour that exists on issues related to the safety of school units in our country. What is more, SERVQUAL does not take into account compliance with national or regional regulations for safety in school units. Hence, to address these gaps, schools would need a framework that is complementary or alternative, like risk management standards or safety audits.

To enhance the performance of service quality **i**n school units effectively based on the findings of existing theories, school stakeholders should integrate academic and non-academic dimensions, such as safety with inclusivity, and psychological support, alongside traditional academic measures. Collecting insights from students, parents, teachers, and administrative staff is necessary to capture diverse perspectives on service quality.

In recent studies (Athanasiadis & Papadopoulou, 2024; Gupta & Kaushik, 2018; Karatas et al., 2016), it is often highlighted that physical infrastructure, technological facilities, and learning resources are important. In order to improve perceived service quality, it is becoming more important to have up-to-date teaching tools and well-maintained school premises. In the past, research focused on the availability of basic infrastructure, such as classrooms, libraries, and laboratories, with less attention to technological advancements (Bouranta et al., 2021). Hence, recent findings have emphasized digital resources due to technology's pivotal role. The evaluation of basic amenities has shifted to more sophisticated and tech-oriented tangibles, which indicates changing educational priorities.

The measure of reliability is often determined by how consistently institutions meet their promises, such as providing quality education, meeting academic schedules, and maintaining teacher punctuality. In previous research, the focus was on whether schools met academic targets and fulfilled commitments to parents and students, with a lot of attention given to gaps in rural or under-resourced environments (Adams, 1994; Bouranta et al., 2021). Both findings emphasize the importance of reliability, but recent studies may indicate higher expectations among stakeholders due to increased competition and transparency in education.

The ability of institutions to instill confidence in students' futures is linked to teacher qualifications, trustworthiness, and assurance. The focus is on programs that train teachers and develop their skills (Rozak et al., 2022). The importance of experienced teachers and discipline has been highlighted in previous findings as a key factor in ensuring safety. New studies have expanded assurance to include professional development and adaptability to new teaching methods. The concept of emotional understanding now encompasses the school's ability to address the specific needs of individual students, foster inclusivity, and cultivate a supportive environment. Previous research has frequently established a link between emotional understanding and teacher-student rapport and personalized attention in smaller schools or classrooms. Aligning with global trends in equity and diversity in education, the concept of empathy has expanded in scope.

Conclusion

It appears that students place more emphasis on safety related to staff (fourth pillar) based on the aggregate allocation of points for the five axes of the SERVQUAL model. It is important for the school to have staff who possess knowledge, good manners, and inspire confidence. The second pillar, reliability, is less important than the ability to perform the promised services provided by the school with reliability. According to these findings, students prioritize knowledge, good manners, and the ability of teachers to inspire confidence, with a percentage of 24.87%. While the ability to provide promised services (reliability and accuracy) is seen as the least important, it still has a 17.29% percentage.

The correlations between demographic variables (gender, age, study level) and SERVQUAL dimensions have been found to be stronger in recent findings than in earlier studies due to an increased emphasis on personalized education and the diverse needs of stakeholders (Rasli et al., 2012; Vuković et al., 2022; Wider et al., 2024). Unlike this, our study revealed that the measurement of quality in secondary schools examined is not significantly influenced by gender and study-level demographic factors. Only the age factor was found to have a significant positive connection. However, in different countries, such as India, Malaysia, China, and Turkey, researchers have found that male and female students have different perceptions of service quality across different grades.

The development of societies is being impeded by the quality of secondary education systems today. The data analysis reveals intriguing findings about how students perceive service quality. Continuous measurement of school services will help improve quality and provide a solid foundation for achieving high goals. While the ability to provide promised services (reliability and accuracy) is considered the least important, it still has a 17.29% percentage. The development of societies is being impeded by the quality of secondary education systems today. The data analysis reveals intriguing findings about how students perceive service quality. Continuous measurement of school services will help improve quality and provide a solid foundation for achieving high goals.

Recommendations

The study results could be enhanced with other sub-criteria related to the conditions prevailing in societies, such as economic and social crises, new developments in technology, and the use of the digital world (emotional intelligence and robotics methods). Future studies should try to examine the influences of other demographic variables (personality and physiographic traits) of students on the measurement of quality in schools. Future research could examine how cultural differences influence perceptions of service quality, particularly in international education, as education becomes more global and students from diverse cultural backgrounds.

The foundation of understanding service quality in secondary education was laid by earlier studies, but modern findings reflect the evolving stakeholder expectations, technological advancements, and increased emphasis on holistic and inclusive education. The SERVQUAL model remains valid, but its dimensions have been modified to accommodate these changes, demonstrating the dynamic nature of educational service quality.

Limitations

The survey's limitation lies in the number of students who participated. Also, the data were collected from three secondary schools in the Prefecture of Central Macedonia, i.e. schools operating in Thessaloniki and Halkidiki. Furthermore, the findings of the survey are restricted to the evaluation of quality by high school students. An additional limitation is the duration and timing of the survey.

Ethics Statements

Ethical approval for this study was obtained from the three secondary schools in the Prefecture of Central Macedonia. All the participants were informed of the objectives of the study ahead of obtaining their consent. They were confirmed that their responses would remain completely confidential and their identity would remain anonymous.

Conflict of Interest

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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Authorship Contribution Statement

T. Tarnanidis: Conceptualization, design, analysis, writing, data acquisition, data analysis/interpretation, drafting manuscript, statistical analysis, editing/reviewing, critical revision of manuscript, supervision, final approval. J. Tarnanidis.: Conceptualization, design, analysis, writing, data acquisition, data analysis/interpretation, drafting manuscript, statistical analysis, editing/reviewing, critical revision of manuscript, supervision, final approval.

References

Acquila-Natale, E., & Iglesias-Pradas, S. (2020). How to measure quality in multi-channel retailing and not die trying. *Journal of Business Research*, *109*, 38-48. https://doi.org/10.1016/j.jbusres.2019.10.041

Adams, J. C. (1994). Appraising classroom teaching in higher education. *Quality Assurance in Education*, *2*(2), 15-17. https://doi.org/10.1108/09684889410061114

Akhlaghi, E., Amini, S., & Akhlaghi, H. (2012). Evaluating educational service quality in technical and vocational colleges using SERVQUAL model. *Procedia - Social and Behavioral Sciences*, *46*, 5285-5289. https://doi.org/10.1016/j.sbspro.2012.06.424

Al-Adwan, A. S., & Al-Debei, M. M. (2024). The determinants of Gen Z's metaverse adoption decisions in higher education: Integrating UTAUT2 with personal innovativeness in it. *Education and Information Technologies*, *29*, 7413-7445. https://doi.org/10.1007/s10639-023-12080-1

Alemu, A. (2023). Assessing service quality in tertiary education using adapted SERVQUAL scale. *Cogent Education*, *10*(2), 2259733. https://doi.org/10.1080/2331186X.2023.2259733

Ali, J., Jusoh, A., Idris, N., & Nor, K. M. (2024). Healthcare service quality and patient satisfaction: A conceptual framework. *International Journal of Quality & Reliability Management*, *41*(2), 608-627. https://doi.org/10.1108/IJQRM-04-2022-0136

Al-Refaei, A. A.-A. H., Ali, H. M., Aldaba, A. M., & Zumrah, A. R. (2024). Determinants of customer-perceived service quality in higher education: The roles of job satisfaction and organizational commitment. *International Journal of Quality and Service Sciences*, *16*(1), 1-18. https://doi.org/10.1108/IJQSS-08-2022-0089

Alsheyadi, A. K., & Albalushi, J. (2020). Service quality of student services and student satisfaction: The mediating effect of cross-functional collaboration. *The TQM Journal*, *32*(6), 1197-1215. https://doi.org/10.1108/TQM-10-2019-0234

Amin, R., & Khuwaja, A. (2020). Impact of service quality on students satisfaction in higher education institutions. *Journal of Business & Tourism*, *6*(1), 1-18. https://doi.org/10.34260/jbt.v6i1.176

Arli, D., van Esch, P., & Weaven, S. (2024). The impact of servqual on consumers' satisfaction, loyalty, and intention to use online food delivery services. *Journal of Promotion Management*, *30*(7) 1159-1188. https://doi.org/10.1080/10496491.2024.2372858

Athanasiadis, A., & Papadopoulou, V. (2024). Service quality metrics in a teacher training program. *International Journal of Services, Economics and Management*, *15*(2), 120-135. https://doi.org/10.1504/IJSEM.2024.137209

Beerkens, M., & Udam, M. (2017). Stakeholders in higher education quality assurance: Richness in diversity? *Higher Education Policy*, *30*, 341-359. https://doi.org/10.1057/s41307-016-0032-6

Bouranta, N., Psomas, E., & Antony, J. (2021). Findings of quality management studies in primary and secondary education: A systematic literature review. *The TQM Journal*, *33*(3), 729-769. https://doi.org/10.1108/TQM-02-2020-0020

Butt, B. Z., & Rehman, K. u. (2010). A study examining the students satisfaction in higher education. *Procedia - Social and Behavioral Sciences*, *2*(2), 5446-5450. https://doi.org/10.1016/j.sbspro.2010.03.888

Chen, Q., Gong, Y., Lu, Y., & Tang, J. (2022). Classifying and measuring the service quality of AI chatbot in frontline service. *Journal of Business Research*, *145*, 552-568. https://doi.org/10.1016/j.jbusres.2022.02.088

Cuthbert, P. F. (1996). Managing service quality in he: Is servqual the answer? Part 1. *Managing Service Quality: An International Journal*, *6*(2), 11-16. https://doi.org/10.1108/09604529610109701

Demis Alamirew, G. (2024). Investigating quality service and student satisfaction: Evidence from college of business & economics, university of gondar, ethiopia. *Journal of Innovation and Entrepreneurship*, *13*(1), Article 76. https://doi.org/10.1186/s13731-024-00422-3

Diamantopoulos, A., Sarstedt, M., Fuchs, C., Wilczynski, P., & Kaiser, S. (2012). Guidelines for choosing between multi-item and single-item scales for construct measurement: A predictive validity perspective. *Journal of the Academy of Marketing Science*, *40*, 434-449. https://doi.org/10.1007/s11747-011-0300-3

Đonlagić, S., & Fazlić, S. (2015). Quality assessment in higher education using the servqualq model. *Management: journal of contemporary management issues*, *20*(1), 39-57.

Espinosa, M. P., Reomero, J. I., Deguito, P., Lugatiman, R., & Bantilan, J. (2023). Performance appraisal of teachers in public secondary schools: A systematic review. *International Journal of Research and Scientific Innovation*, *10*(11), 356-367. https://doi.org/10.51244/IJRSI.2023.1011030

Galeeva, R. B. (2016). Servqual application and adaptation for educational service quality assessments in Russian higher education. *Quality Assurance in Education*, *24*(3), 329-348. https://doi.org/10.1108/QAE-06-2015-0024

Gheyssens, E., Coubergs, C., Griful-Freixenet, J., Engels, N., & Struyven, K. (2022). Differentiated instruction: The diversity of teachers' philosophy and praxis to adapt teaching to students' interests, readiness and learning profiles. *International Journal of Inclusive Education*, *26*(14), 1383-1400. https://doi.org/10.1080/13603116.2020.1812739

Goumairi, O., Aoula, E.-S., & Ben Souda, S. (2020). Application of the SERVQUAL model for the evaluation of the service quality in Moroccan higher education: Public engineering school as a case study. *International Journal of Higher Education*, *9*(5), 223-229. https://doi.org/10.5430/ijhe.v9n5p223

Gupta, P., & Kaushik, N. (2018). Dimensions of service quality in higher education – critical review (students' perspective). *International Journal of Educational Management*, *32*(4), 580-605. https://doi.org/10.1108/IJEM-03-2017-0056

Hair, J. F., Black, B., Babin, B., & Anderson, R. (2010). *Multivariate data analysis: Global edition* (7th ed.). Pearson Education.

Hazilah Abd Manaf, N., Ahmad, K., & Ahmed, S. (2013). Critical factors of service quality in a graduate school of A point-biserial correlation was run to determine the relationship between income and gender. There was a negative correlation between the variables, which was statistically significant Malaysia. *International Journal of Quality and Service Sciences*, *5*(4), 415-431. https://doi.org/10.1108/IJQSS-07-2012-0006

Karatas, H., Alci, B., Balyer, A., & Bademcioglu, M. (2016). An examination of students' perceptions of service quality dimensions in higher education. *The Anthropologist*, *24*(1), 389-398. https://doi.org/10.1080/09720073.2016.11892030

Latif, K. F., Bunce, L., & Ahmad, M. S. (2021). How can universities improve student loyalty? The roles of university social responsibility, service quality, and "customer" satisfaction and trust. *International Journal of Educational Management*, *35*(4), 815-829. https://doi.org/10.1108/IJEM-11-2020-0524

Malhotra, N. K., Nunan, D., & Birks, D. F. (2020). *Marketing research*. Pearson.

McDaniel , C., Jr., & Gates, R. (2018). *Marketing research*. John Wiley & Sons.

McElwee, G., & Redman, T. (1993). Upward appraisal in practice: An illustrative example using the qualed model. *Education + Training*, *35*(2), 27-31. https://doi.org/10.1108/EUM0000000000298

Minh, T. H. (2020). The relationship between service expectations and service quality in university education. *International Journal of Research in Engineering, Science and Management*, *3*(12), 68-70. https://doi.org/10.47607/ijresm.2020.409

Murali, S., Pugazhendhi, S., & Muralidharan, C. (2016). Modelling and investigating the relationship of after sales service quality with customer satisfaction, retention and loyalty – a case study of home appliances business. *Journal of Retailing and Consumer Services*, *30*, 67-83. https://doi.org/10.1016/j.jretconser.2016.01.001

Osman, A. R., & Saputra, R. S. (2019). A pragmatic model of student satisfaction: A viewpoint of private higher education. *Quality Assurance in Education*, *27*(2), 142-165. https://doi.org/10.1108/QAE-05-2017-0019

Owusu-Frimpong, N., Nwankwo, S., Blankson, C., & Tarnanidis, T. (2013). The effect of service quality and satisfaction on destination attractiveness of sub-saharan African countries: The case of Ghana. *Current Issues in Tourism*, *16*(7-8), 627-646. https://doi.org/10.1080/13683500.2013.785479

Parasuraman, A., Berry, L. L., & Zeithaml, V. A. (1991). Refinement and reassessment of the servqual scale. *Journal of Retailing*, *67*(4), 420-450.

Parasuraman, A., Zeithaml, V. A., & Berry, L. L. (1988). Servqual: A multiple-item scale for measuring consumer perc. *Journal of Retailing*, *64*(1), 12-40.

Rahman, M. M., & Nasrin, S. (2024). Perceived service quality at higher education institutions: A study on the success factors of total quality management practices in Bangladesh. *Social Sciences & Humanities Open*, *10*, Article 100997. https://doi.org/10.1016/j.ssaho.2024.100997

Rasheed, R., & Rashid, A. (2024). Role of service quality factors in word of mouth through student satisfaction. *Kybernetes*, *53*(9), 2854-2870. https://doi.org/10.1108/K-01-2023-0119

Rasli, A., Shekarchizadeh, A., & Iqbal, M. J. (2012). Perception of service quality in higher education: Perspective of Iranian students in Malaysian universities. *International Journal of Economics and Management*, *6*(2), 201-220. http://www.ijem.upm.edu.my/vol6no2/bab01.pdf

Redman, T., & McElwee, G. (1993). Upward appraisal of lecturers: Lessons from industry? *Education + Training*, *35*(2), 20-26. https://doi.org/10.1108/EUM0000000000297

Rozak, L. A., Bahri Arifin, M., Rykova, I. N., Grishina, O. A., Komariah, A., Nurdin, D., Ponkratov, V., Malashenko, G., Kosov, M., & Dudnik, O. V. (2022). Empirical evaluation of educational service quality in the current higher education system. *Emerging Science Journal*, *6*(Special Issue), 55-77. https://doi.org/10.28991/ESJ-2022-SIED-05

Sahney, S., Banwet, D. K., & Karunes, S. (2004). Conceptualizing total quality management in higher education. *The TQM Magazine*, *16*(2), 145-159. https://doi.org/10.1108/09544780410523044

Sann, R., Lai, P.-C., Liaw, S.-Y., & Chen, C.-T. (2023). Multidimensional scale development and validation: University service quality (uniqual). *Journal of Hospitality and Tourism Insights*, *6*(5), 2565-2594. https://doi.org/10.1108/JHTI-08-2022-0343

Saravanan, L. (2018). A study of students' satisfaction level towards service quality of teacher education colleges with special reference erode district. *Shanlax Int J Comm*, *6*, 52-58.

Sharif, K., & Sidi Lemine, M. (2024). Customer service quality, emotional brand attachment and customer citizenship behaviors: Findings from an emerging higher education market. *Journal of Marketing for Higher Education*, *34*(1), 18-43. https://doi.org/10.1080/08841241.2021.1949659

Sheng, W., Fan, Z., & Weng, S. (2024). Enhancing student satisfaction in educational management: A Bayesian analysis of influential factors and improvement strategies. *Journal of the Knowledge Economy*. Advance online publication. https://doi.org/10.1007/s13132-023-01672-4

Smith, A. M. (1999). Some problems when adopting Churchill's paradigm for the development of service quality measurement scales. *Journal of Business Research*, *46*(2), 109-120. https://doi.org/10.1016/S0148-2963(98)00015-0

Smith, W. C., & Benavot, A. (2019). Improving accountability in education: The importance of structured democratic voice. *Asia Pacific Education Review*, *20*, 193-205. https://doi.org/10.1007/s12564-019-09599-9

Sweis, R., Diab, H., Mahmoud Saleh, F. I., Suifan, T., & Dahiyat, S. E. (2016). Assessing service quality in secondary schools: The case of Jordan. *Benchmarking: An International Journal*, *23*(5), 1207-1226. https://doi.org/10.1108/BIJ-04-2015-0031

Taraza, E., Anastasiadou, S., Papademetriou, C., & Masouras, A. (2024). Evaluation of quality and equality in education using the European foundation for quality management excellence model—a literature review. *Sustainability*, *16*(3), Article 960. https://doi.org/10.3390/su16030960

Tarnanidis, T., Owusu-Frimpong, N., Nwankwo, S., & Omar, M. (2015). A confirmatory factor analysis of consumer styles inventory: Evidence from Greece. *Journal of Retailing and Consumer Services*, *22*, 164-177. https://doi.org/10.1016/j.jretconser.2014.07.001

Taroum, A. S. A., & Masaud, K. A. R. (2024). The effect of strategic planning on service quality in the higher education sector. *European Journal of Development Studies*, *4*(2), 21-27. https://doi.org/10.24018/ejdevelop.2024.4.2.358

Tomkovick, C., Al-Khatib, J., Baradwaj, B. G., & Jones, S. I. (1996). An assessment of the service quality provided to foreign students at U.S. Business schools. *Journal of Education for Business*, *71*(3), 130-135. https://doi.org/10.1080/08832323.1996.10116772

Uzir, M. U. H., Al Halbusi, H., Thurasamy, R., Thiam Hock, R. L., Aljaberi, M. A., Hasan, N., & Hamid, M. (2021). The effects of service quality, perceived value and trust in home delivery service personnel on customer satisfaction: Evidence from a developing country. *Journal of Retailing and Consumer Services*, *63*, Article 102721. https://doi.org/10.1016/j.jretconser.2021.102721

Varshneya, G., & Das, G. (2017). Experiential value: Multi-item scale development and validation. *Journal of Retailing and Consumer Services*, *34*, 48-57. https://doi.org/10.1016/j.jretconser.2016.09.010

Vuković, A. J., Damnjanović, J., & Papić-Blagojević, N. (2022). Service quality of the higher vocational education. *Management: Journal of Sustainable Business and Management Solutions in Emerging Economies*, *27*(1), 21-30. https://doi.org/10.7595/management.fon.2020.0025

Wider, W., Tan, F. P., Tan, Y. P., Lin, J., Fauzi, M. A., Wong, L. S., Tanucan, J. C., & Hossain, S. F. A. (2024). Service quality (SERVQUAL) model in private higher education institutions: A bibliometric analysis of past, present, and future prospects. *Social Sciences & Humanities Open*, *9*, Article 100805. https://doi.org/10.1016/j.ssaho.2024.100805

Yang, Q., Wang, Z.-S., Feng, K., & Tang, Q.-Y. (2024). Investigating the crucial role of logistics service quality in customer satisfaction for fresh e-commerce: A mutually validating method based on SERVQUAL and service encounter theory. *Journal of Retailing and Consumer Services*, *81*, Article 103940. https://doi.org/10.1016/j.jretconser.2024.103940

Yildiz, S. M., & Kara, A. (2009). The PESPERF scale: An instrument for measuring service quality in the School of Physical Education and Sports Sciences (PESS). *Quality Assurance in Education*, *17*(4), 393-415. https://doi.org/10.1108/09684880910992359

Appendices

A. SERVQUAL -Expectations scale items

(Adopted from Parasuraman et al. 1988)

Factor 1 –Tangibility

1. The ideal school should have modern equipment (computers, projectors, interactive tables)
2. The school must have appropriate facilities (classrooms, courtyard, toilets, etc.)
3. Access to school should be easy by public transport
4. School employees must have clean and thoughtful appearance
5. The school must be reliable in the correct and timely distribution of books at the start of the school year
6. The content on the e-class website should be complete and regularly improved and updated with new information regarding courses and procedures

Factor 2 -Reliability

1. Teachers must be at school beyond their actual working hours (teaching, students' questions, on-call duty, paperwork, etc.)
2. Teachers must have the ability to transfer the necessary knowledge
3. Teachers need to respond quickly correction of written absences with consistency and in a short period of time
4. Teachers should be understanding when the student has a problem

Factor 3 -Responsiveness

1. Pupils should be informed when It is precisely these actions that will be implemented that interested (conducting written tests, submission of supporting documents, computer)
2. Teachers at school should have time to answer students' questions
3. School teachers must show sincere interest in solving students' problems

Factor 4 -Security

1. There must be security and confidentiality regarding students' personal information
2. The school must have staff who are properly trained with knowledge of the subject
3. Teachers should apply alternative teaching methods
4. Teachers should have an equal and courteous attitude towards students

Factor 5-Emotional understanding

1. Teachers should pay full attention to the questions students have
2. Teachers must understand the particular needs of the student
3. Teachers must be able to handle students' complaints

B. SERVQUAL -Perceptions scale items

(Adopted from Parasuraman et al. 1988)

Factor 1 –Tangibility

1. The school has modern equipment (computers, projectors, interactive whiteboards)
2. The school has the appropriate facilities (classrooms, courtyard, accessible toilets, etc.)
3. Access to the school is easy by public transport
4. School employees have a clean and neat appearance
5. The school is reliable in the correct and timely distribution of books at the beginning of the school year
6. The content on the e-class website is complete and is regularly improved and updated with new information regarding courses and procedures

Factor 2 -Reliability

1. Teachers are at school beyond their actual duty hours (teaching, students' questions, on-call duty, paperwork, etc.)
2. Teachers have the ability to transfer the necessary knowledge
3. Teachers respond quickly to correction in secondary school writings - update absences consistently and in a short period of time
4. Teachers show understanding when the student faces a problem

Factor 3 -Responsiveness

1. Students are informed about exactly when various activities that interest them will be implemented (conducting written tests, submission of supporting documents, computerized ones)
2. Teachers at school have time to answer students' questions
3. School teachers show sincere interest in solving students' potential problems

Factor 4 -Security

1. There is security and confidentiality regarding students' personal information
2. The school has staff who are properly trained with knowledge of the subject
3. Teachers apply alternative teaching methods
4. Teachers have an equal and courteous attitude towards students

Factor 5-Emotional understanding

1. Teachers pay full attention to students
2. Teachers understand student particular needs
3. Teachers are able to handle students' complaints

C. Point-Biserial Correlation of Gender with SERVQUAL

The Point-Biserial Correlation Coefficient measures the strength of association of two variables in a single measure ranging from -1 to +1, where -1 indicates a perfect negative association, +1 indicates a perfect positive association and 0 indicates no association at all. The gender variable and the Five-Factor SERVQUAL model have no correlation as indicated by the diagrams below.