

Original Article

# A New Approach to Measure the Quality of University Services Using the ServPerf Model and Statistical Techniques Implemented in a Business Intelligence Solution

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**Abstract** - In order to carry out continuous improvement in universities, it is necessary to investigate what interests the student regarding the quality of the services that affect student satisfaction, for which a study of the literature on the attributes that emanate from the quality of services to develop later the research instrument making use of the Servperf model in its various dimensions which are: Tangibility, Security, Empathy, Reliability, and Sensitivity. To observe the level of quality based on the data obtained, hypotheses were raised, which were validated with statistical tests using the IBM SPSS software. Likewise, with the dataset of the perception survey, a Business Intelligence solution was implemented using Power BI Desktop, used for the development of the agile scrum methodology, so that it can be visualized in a dashboard for decision making, the latter being important since no studies of perceptions of business management have been found in the reviewed literature. The quality of university services implemented in a business intelligence solution, likewise, as a consequence of applying the exploratory and confirmatory factor analysis using Amos Software, latent variables are generated, which are also implemented in the business intelligence platform, which constitutes the novelty of the research work and additionally to partly explain the nonconformities, the sentiment analysis is done in Python so that the university educational management can observe and correct and therefore improve the quality of University Services.

**Keywords** - Quality of services, Business Intelligence, Sentiment analysis, Exploratory and confirmatory factor analysis, Decision making.

## 1. Introduction

One way to ensure the continuous improvement of management in everything related to university education is by perceiving students' feelings about the impact produced by the quality of services their faculty provides. That is why this research developed a business intelligence solution based on the SERVPERF model, thus relating the quality of services with the satisfaction of the students of a Public University.

The total study population was 1,584 students from the Faculty of Systems Engineering and Informatics, from which a sample of 314 participants was obtained prorated according to the academic schools that the faculty has. Statistical tests were used to test the hypotheses, which were developed later.

The practical contribution whose artifact shows the perceptions in its various dimensions is developed, for which the influence and importance of the proposed solution are demonstrated. Therefore, it can be portable for any Faculty of the Orb. Universities today adopt International Quality standards; firstly, we must come to contextualize what it really means for a higher education institution to become categorized as "international." For this purpose, the 7 characteristics adopted by the "American Council on Education" (1997) can be considered within the positioning lists of the main universities. However, before carrying out the study, a review of the literature was carried out in order to carry out the survey, which is developed below. The demonstrations conclude that there is no satisfaction if there is no quality of services.



**2. Literature Review**

The research is developed as follows:

**2.1. Planning**

This stage involved developing research questions, search keywords, and creating to include or not select paper.

**2.2. Realization**

Primary items are selected based on the planning phase.

**2.3. Results**

Statistical analysis is conducted based on the research questions. The information is then analyzed and discussed [1]. A research question was raised; it was interesting to know the student's profile in terms of what he would like regarding the factors of the quality of the services that affect the satisfaction of the university student.

Scopus, Emerald, Springer, and Google Scholar articles were chosen based on the following string. String : ("quality service" OR servperf ) AND "student satisfaction" AND ("platform" OR ("business intelligence" OR "business analytics")) AND ("higher education" OR college OR university), said chain was executed in the various Scopus, Springer, Emerald, Web of Science repositories, finding various articles on quality models and what is the focus of the investigation question, ¿what interests the university student?. Worth noting that do not found articles referring to the implementation of perceptions based on models such as Servperf, Servqual, or another implemented in a business intelligence solution were found using statistical methods to validate the investigation.

As part of the planning, this research includes articles from the last 5 years, articles oriented to the quality of services based on keywords; the main objective of the literature review was to know what satisfies the student in relation to the quality of university services, as well as what to compare regarding the quality of services?, to take it into account in the

preparation of the survey, which will serve to apply the exploratory and confirmatory factor analysis to detect the variables with the greatest preponderance as well as to develop the satisfaction platform in Power BI. The following Table 1 shows what the student thinks about the quality of university services, according to researchers. In this research, other questions could have been raised, but the study mainly focuses on what interests the university student.

**3. Materials and Methods**

Figure 1 shows the workflow, which begins with filling out the survey based on the Servperf dimensions. Cronin and Taylor propose a framework for evaluating service quality from the customers' perspective, considering various dimensions. These dimensions include:

**Tangible Aspects:** Refers to the condition of the physical infrastructure and the tangible elements that facilitate the service. Everything that conveys an impression to the client is considered to assess whether the service met their expectations.

**Reliability:** Assesses the proficiency of workers when carrying out an activity, i.e., the ability to provide excellent service from the initial moment.

**Sensitivity:** Values the interest and willingness of workers to assist the customer, as well as the speed with which they perform a service.

**Security:** Evaluate the acknowledgment of the service provided and the courtesy of employees. This dimension primarily focuses on the knowledge and attitude projected by the staff.

**Empathy:** Assesses the employee's desire to help customers, i.e., the ability to provide personalized attention and demonstrate an understanding of the customer's needs.

**Table 1. Student concerns**

<b>Contribution</b>	<b>References</b>
Useful Platform	[2],[10]
Information quality, learning enjoyment, support service quality, and Instructor performance.	[3],[5],[7],[8],[16],[17],[20]
Library services	[4]
e-service quality, e-information quality.	[6]
The acceptance or rejection of learning technology is essential.	[9]
Teachers should upgrade. Technological-pedagogical, online teaching effectiveness, and personal well-being, Online feedback.	[12],[18]
Good service Personalized.	[13]
Learning portfolios, teacher/student feedback, e-books, learning materials.	[14]
Offer better services and products to its users.	[15]
Relationships between service quality, perceived value, and student satisfaction and student loyalty	[19],[20],[21]

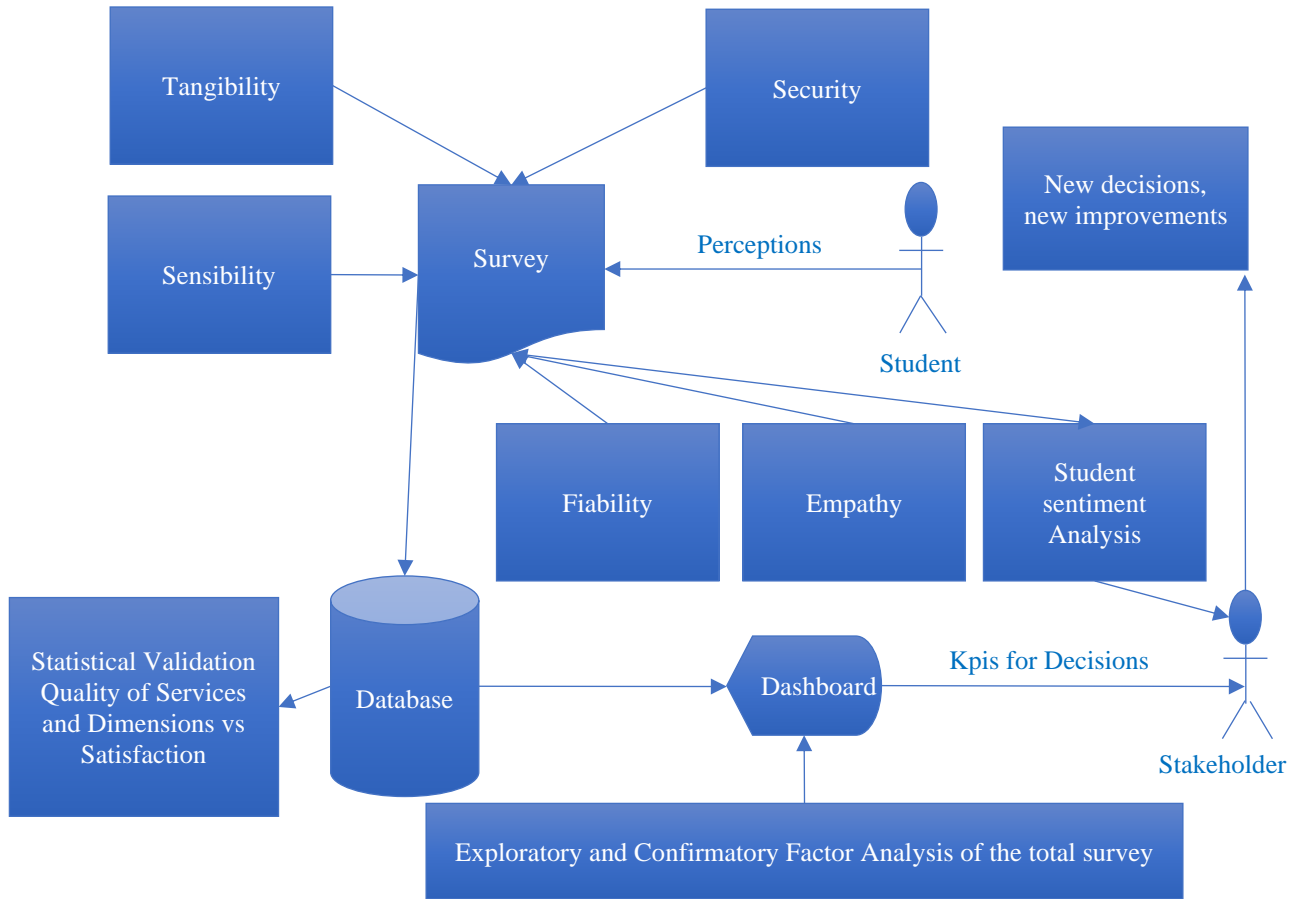


Fig. 1 Roadmap of the investigation

This multidimensional approach provides a comprehensive framework for evaluating and improving service quality from the customers' perspective, encompassing tangibles, staff skills, responsiveness, assurance, and empathy.

Based on the literature review, the survey was prepared, which can be seen in Table 2, but it was before first validated by expert judgment (statisticians):

Table 2. Survey

Items	Judge1	Judge2	Judge3	Sum	v-aiken
Item1	1	1	1	3	1.00
Item2	1	1	0	2	0.67
Item3	1	1	1	3	1.00
Item4	1	1	0	2	0.67
Item5	1	0	1	2	0.67
Item6	1	1	1	3	1.00
Item7	1	1	0	2	0.67
Item8	1	0	1	2	0.67
Item9	1	1	0	2	0.67
Item10	1	1	1	3	1.00
Item11	1	1	0	2	0.67
Item12	1	0	1	2	0.67
.....	1	1	1	3	1.00
Item31	1	1	0	2	0.67
Average					0,86

**Table 3. Questions of the survey**

No.	Questions
P1	Administrative and managerial personnel offer swift and punctual assistance.
P2	You can be confident that there are no errors in your transactions.
P3	When you encounter issues, there is a readiness to assist you.
P4.	The faculty is attentive to the student's interests and requirements.
P5	Administrative and executive personnel have the capacity to resolve their issues.
P6	The ways to communicate with the faculty are adequate
P7	The administrative and managerial personnel are approachable when it comes to inquiries.
P8	The administrative and managerial staff have a high level of proficiency in their skills.
P9	The administrative and managerial staff inspire trust.
P10	The communication systems and methods meet your expectations.
P11	They fulfill the development of the syllabus.
P12	Appropriate attention hours.
P13	When you request a procedure, they execute it promptly.
P14	The faculty keeps its students informed.
P15	The faculty provides personalized attention to students.
P16	Appropriate teaching methodology.
P17	The faculty is concerned about students who failed in previous cycles.
P18	Consider learning according to the market.
P19	Do you think that quality classes?
P20	The manner in which the classes are conducted is at the appropriate level.
P21	The way the assessments are being conducted is the correct approach.
P22	Professors resolve their doubts after class.
P23	Professors are up to date on their careers.
P24	The laboratories have an adequate amount of equipment for the classes.
P25	The faculty has modern computers.
P26	We have the necessary software for the optimal development of classes.
P27	The scheduling of courses in laboratories is appropriate for machine usage.
P28	The internet connection in the laboratory is good.
P29	Is the infrastructure adequate and friendly?
P30	The programming of courses for the use of machines in laboratories is appropriate.
P31	How satisfied are you with the services provided by the faculty?
P32	What should be improved regarding academics (Open question)
P33	What should be improved regarding the administration (Open question)

**3.1. The Survey Questions were validated based on Expert Judgment using the Aiken Formula**

This coefficient can take values between 0 and 1. When the computed value is high, it indicates that the item has a higher degree of content validity [22]. Being the formula:

$$V = (S)/(N * (C - 1))$$

S= Sum of the expert's ratings for each of the survey items.

N= Number of experts.

C= Valuation possibilities; in this case, it's dichotomous (1,0).

The closer the value is to 1 means that this question is in this way the entire instrument is validated.

The survey was evaluated by experts, as seen in Table 2, giving a good value per item and at the level of the entire research instrument. This average of 0.86 indicates that it is a good average; therefore, the questions on the instrument are appropriate. Table 3 shows survey questions; below are the survey items or questions related to each dimension:

Questions: P1, P4, P5, P6, P7, P8, P21, P22 related to the Security dimension.

Questions: P2, P9, P18, P19, y P22 related to the Fiability dimension.

Questions: P3, P13, and P14 are related to the Sensibility Dimension.

Questions: P10, P24, P25, P26, P27, P28 P29,P30 related to the Tangibility dimension.

Questions: P12, P15, and P17 related to the Emphaty Dimension.

There are other questions to correlate satisfaction with the quality of services, such as P31 and Questions P32 and P33, to explain non-conformities through sentiment analysis. Later, in item 3.6, it will be seen that through exploratory and confirmatory factor analysis, the number of variables in the survey is reduced to the strongest ones.

That is, to those most correlated, which indicates that they are the most important to consider.

Likewise, the sentiment analysis based on questions P32 and P33 will be seen later in item 4.2. Sentiment analysis partially explains the errors and benefits of the educational services provided by the faculty.

**3.2. Survey Reliability**

It deployed the questionnaire in Google Forms and obtained that there is internal consistency of the questionnaire with the answers of the students, which is also important to use the dataset to use the tests, whether parametric or non-parametric and to be able to implement it in the business intelligence solution. Cronbach’s Alpha is 0,960 for 31 elements, which means it is highly reliable. Open questions and questions concerning the user are not considered (P32, P33) To explain disagreements through sentiment analysis, The answer was responded by 314 students.

**3.3. Validity of the General Hypothesis**

**3.3.1. General Hypothesis**

The service quality assessed with the SERVPERF model is related to the satisfaction of the Undergraduate student. To work with this assumption, the questions were then separated according to the Servperf dimensions (Security, Empathy, Tangibility, Reliability, and Sensitivity), adding each of the items resulting from the survey and then recalculating these values to them to a Liker scale to contrast it with the satisfaction of student (P31) in its various dimensions and see if there is a relationship.

For example, if we add the questions from P24 to P29 of Table 3 that correspond to the Tangibility dimension, then the result is recalculated to a Likert scale. It is ready to be compared with the students' satisfaction on the Likert scale. Table 4 shows the relationship of Normality between Satisfaction and Services Quality.

**Table 4. Normality of satisfaction vs quality of services**

	Kolmogorov-Smirnov		
	Statistical	gl	sig
Satisfaction	,285	314	,000
Quality of Services	,087	314	,000

It should be noted that Kolmogorov Smirnov is used when the sample exceeds 50 elements.

*Chi-Square Test*

Being a non-normal distribution, a non-parametric chi-square test will be applied when having polytomous responses; that is, with 3 or more option values, then the dilemma can be launched:

H0: Undergraduate student satisfaction is not linked to the quality of service.

H1: Undergraduate student satisfaction is linked to quality service.

**Table 5. Satisfaction vs quality of services**

	Valor	sig
Chi_Square Pearson	210,447 <sup>a</sup>	,000
Likelihood Ratio	192,515	,000

Table 5 Displays the chi-square measurement. In this case, the significance for the dataset of the related samples is 0.000 <0.05; therefore, the null hypothesis H0 is rejected.

**3.3.2. Satisfaction vs. Reliability Dimension**

H0 Fiability is not significantly related to undergraduate student satisfaction.

H1: Fiability is significantly related to undergraduate student satisfaction.

**Table 6. Normality-Satisfaction vs Fiability**

	Kolmogorov-Smirnov		
	Statistical	gl	sig
Satisfaction	,276	314	,000
Fiability	,080	314	,000

First of all, Normality is measured. Table 6 shows the result of Normality using IBM-SPSS. Since it is not Normal since the significance is less than 0.05, we perform the chi-square test.

**Table 7. Test Chi-Squared Satisfaction vs Fiability**

Test Chi Squared			
	Valor	df	sig
Chi_Square Pearson	351,508	48	,000
Likelihood Ratio	354,223	48	,000

Table 7 shows the results of the Test Chi-squared. The significance is less than 0, which means that the dimension of Fiability is related to satisfaction.

In the same way, hypotheses were made regarding satisfaction versus the dimensions Tangibility, Sensibility, Security, and Empathy, first taking their partial reliability regarding satisfaction, which gave Cronbach's Alpha values greater than 0.8, which is a strong value; likewise, normality tests gave values less than 0.05. Therefore, non-parametric tests were applied. In this case, the chi-square test was applied, giving values less than 0.05, which indicates that the dimensions mentioned have a significant relationship with student satisfaction.

**3.4. Exploratory Factor Analysis of the Survey**

The goal of exploratory factor analysis is to identify and summarize information into a smaller set of variables (factors) while preserving as much information as possible. [23]. In this investigation, the KMO and Bartlett factor is 0.939, and the significance is 0,000 less than 0,05, which indicates that the number of items of the survey can be reduced, using exploratory factor analysis in order to stay with the items most prevalent or important, which is seen in Table 8.

**Table 8. KMO and Bartlett factor**

Kaiser-Meyer-Olkin Measure of Sampling Adequacy	,939
Sig.	,000

The KMO is acceptable to readjust, and the significance indicates good to reduce the survey variables. Table 9 shows the reduced variables after execution in IBMS-SPPS. It should be noted that not only exploratory factor analysis is applied in this case, but also qualitative analysis of the variables was done before.

**3.5. Confirmatory Factor Analysis**

The aim is to confirm the number of factors obtained in the exploratory factor analysis solution and, after discovering different results from those reported by the authors of the questionnaire, to compare which model has the best-fit indices [24].

The items in Table 9 are going to be validated with Amos Software:

**Table 9. Results of the exploratory factor analysis applied to the survey**

Questions	Factor1	Factor2	Factor3
P2. You can be confident that there are no errors in your transactions.	,793		
P3. When you encounter issues, there is a readiness to assist you.	,758		
P4. The faculty is attentive to the student's interests and requirements.	,758		
P5. Administrative and executive personnel have the capacity to resolve their issues.	,741		
P6. The means to communicate with the faculty are adequate.	,712		
P7. The administrative and managerial personnel are approachable when it comes to inquiries.	,698		
P10. The communication systems and methods meet your expectations.	,645		
P12. Appropriate attention hours.	,613		
P14. The faculty keeps its students informed.	,578		
P16. Appropriate teaching methodology.		,827	
P17. The faculty is concerned about students who failed in previous cycles		,813	
P18. Consider learning according to the market.		,754	
P22. Professors resolve their doubts after class.		,584	
P23. Professors are up to date on their careers.		,582	
P24. The laboratories have an adequate amount of equipment for the classes.			,825
P25. The faculty has state-of-the-art computers (Modern computers).			,798
P30. The programming of courses for the use of machines in laboratories is appropriate.			,636
P28. The internet connection in the laboratory is good.			,616
P29. The infrastructure is adequate and friendly.			,556

**Table 10. Result of the iterations**

MODELS	Rmse	Cfi	Tli	Nfi	Pratio	Pcfi	Pnfi	Aic
M1	0.0619	0.941	0.932	0.892	0.921	0.863	0.831	997.802
M2	0.057	0.944	0.939	0.896	0.917	0.863	0.832	968.227
M3	0.058	0.948	0.943	0.902	0.913	0.866	0.824	940.78
M4	0.053	0.952	0.951	0.908	0.912	0.871	0.828	895.109

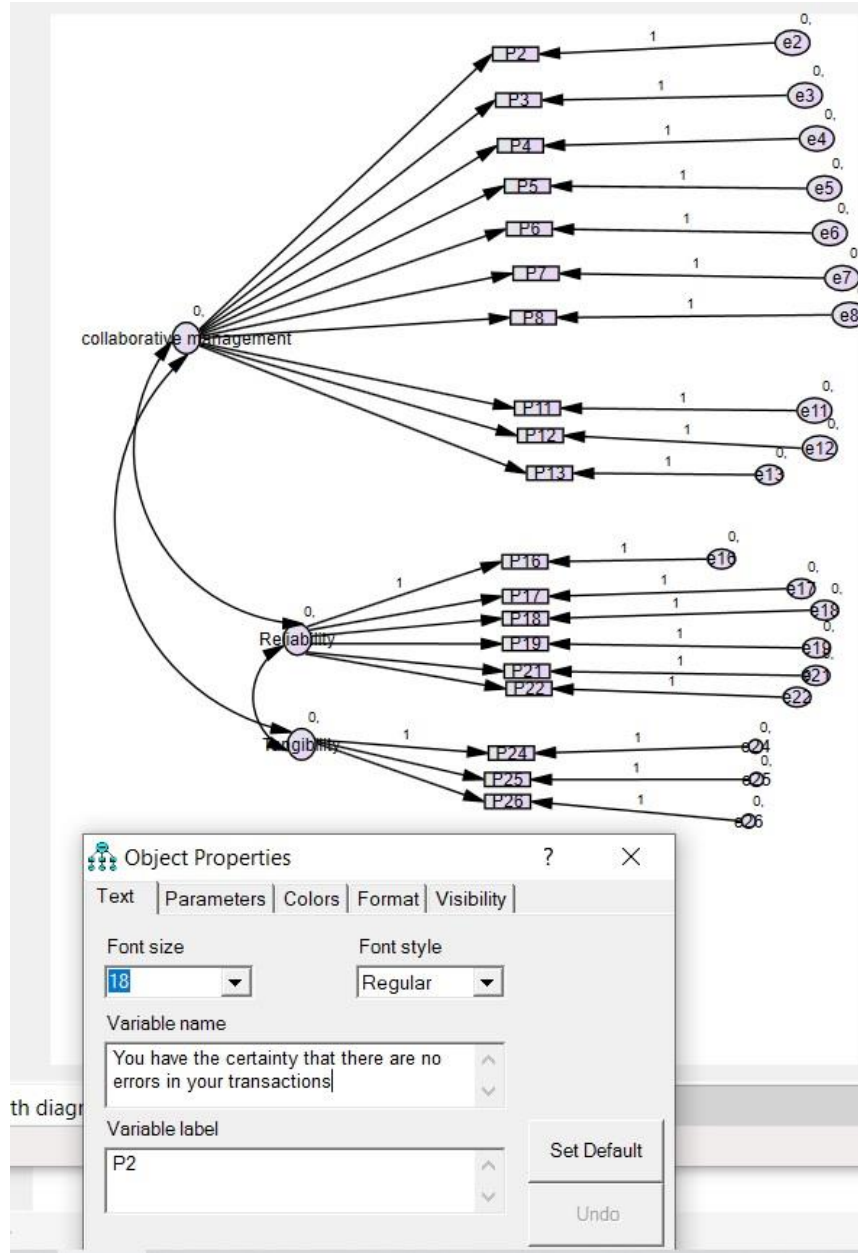


Fig. 2 Applying confirmatory factor analysis

Figure 2 shows the survey model resulting from the confirmatory factor model, and Table 10 shows the models after running recursively with AMOS Software. 3 dimensions are generated that have been assigned: collaborative management, reliability, and tangibility with their respective questions. After performing several 4 iterations in model 4 (M4), it has the following indicators which satisfy and confirm the exploratory factor analysis, the metrics being  $Cfi \geq 0.952$ ,  $Tli \geq 0.951$ ,  $Nfi \geq 0.908$ ,  $Pratio \geq 0.912$ , which are greater than 0.9. These indicators are necessary to confirm the model; therefore, it is reduced from 31 to 19 items. Based on the models of Table 9 and confirmed in Table 10 of the exploratory, confirmatory model,

these 19 items are added separately to the business intelligence solution, which will be seen in Figure 7.

### 3.6. Reliability Analysis De McDonald

Now, it is validated that the variables that remain after the confirmatory factor analysis meet the internal consistency; for this, it is used the  $\phi$  of McDonald. Figure 3 shows the results when you run them in the Jamovil software.

The reliability of the survey with the reduced items after the exploratory factor analysis is 0.923; it means that the 19 items are representative of the survey because the value is strong.

## 4. Results

### 4.1. Analysis of Results about the Dimensions

After applying Exploratory and confirmatory factor analysis with respect to Figure 2, we can analyze the following:

#### 4.1.1. Tangibility

The most important variables to take into account are: P24, P25, P26.

#### 4.1.2. Collaborative Management. -is a Combination of Security and Sensibility Dimension

They make up this generated dimension P2, P3, P4, P5, P6, P7, P8, P11, P12, P13.

#### 4.1.3. Reliability

Composed of questions P16, P17, P18, P21, P22

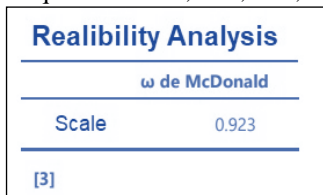


Fig. 3 Reliability of the 19 items after applying Confirmatory Analysis

### 4.2. Development of the Business Intelligence Solution

The Business Intelligence solution is developed in Power BI, for which the appropriate Performance indicators were previously analyzed to place them on the dashboard. Developing the artifact based on the Servperf Model and the statistical model of the exploratory and confirmatory Factorial analysis. For which a series of tasks (Backlog product) is developed, being segmented into activities (sprint), using Scrum as a methodology to speed up development.

### 4.3. Scrum

It is a framework for creating complex software and delivering it on time in a much easier way [25].

The development of the application is developed taking as a model:

- Product stack: (product backlog) list of user requirements that grows and evolves during development from the initial vision of the product.
- Sprint backlog: (sprint backlog) list of work the team must do during the sprint to generate the planned increment.
- Increase: Result of each sprint [26].

Table 11 shows the Backlog product to develop the platform.

The data must always be transformed in some fields because certain survey fields are free to comment on or do not have answers to choose from. Once the csv file survey has been downloaded, we proceed to build the xls files, according to the structure and modeling as shown in Figure 4, and then develop the software solution of business intelligence about this model. In the model, you can see the transformed table containing the most important variables after applying the exploratory and confirmatory factor analysis. These variables are separated in the Factored table. The following Figure 5 shows the Front Page of the Perceptions Dashboard, which has been built based on the dataset downloaded from the perceptions survey based on the Servperf dimensions (Tangibility, Sensitivity, Security, Empathy, Reliability) by clicking on each of the dimensions, the business intelligence solution shows the items or questions of each of the dimensions on the button.

When you click it, the main variables button shows the variables from the Factored table. These variables are the most important in the entire survey. The solution is based on the Servperf Model. The Model ServPerf places exclusive emphasis on performance evaluation as the gauge of service quality [27].

The button is the main variable to consider for decision-making from the previous figure. It shows us the main variables that are a priority to consider in decision-making; it is the product of exploratory and confirmatory factor analysis.

Figure 6 shows the quality of services vs the satisfaction in its various dimensions By Sex, with their subjective averages.

In Figure 6, when clicking on the Women O Man button, differences in perception are also shown; on the other hand, the average of the perceptions regarding the 5 dimensions is shown.

In Figure 7, with respect to the tangibility dimension, when clicked, the questions will appear with their respective kp is and the average regarding tangibility. In the same way, the other dimensions are presented in a dashboard with their respective questions with the respective average.

Table 11. Backlog product

1. Data Transformation
2. Import csv files to Power BI desktop software
3. Modeling
4. Development of the platform according to user requirements
5. Tests (Contrasting the results vs dataset with IBM SPSS)
6. Deployment



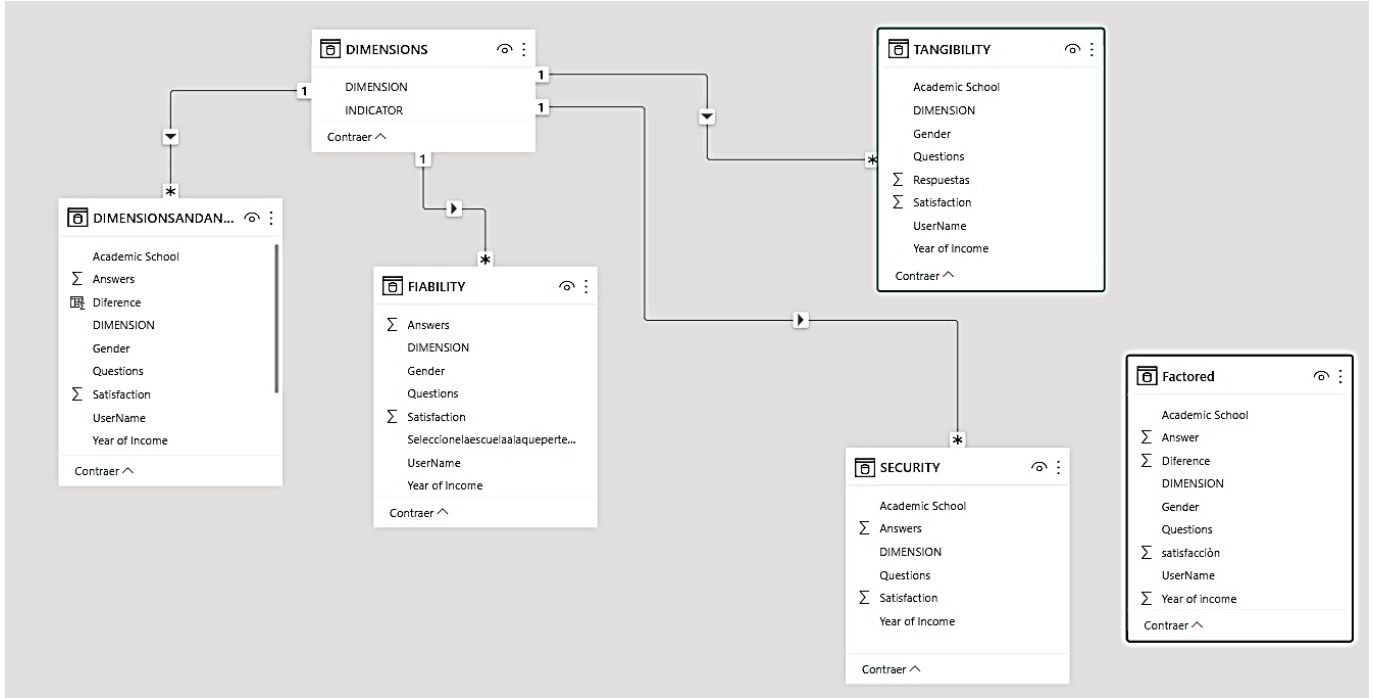


Fig. 4 Data modeling



Fig. 5 Platform Business Intelligence, options menu

In addition, it was observed that there are 19 important items for decision-making seen in the exploratory and confirmatory factor analysis, which will be reflected in Figure 8. Of all the variables in the survey, this is the most representative remaining.

To understand the causes of disagreement, open questions were asked in the survey to be able to correlate questions and do the sentiment analysis P32 and P33 (Table 03) and give an explanation of the disagreements.

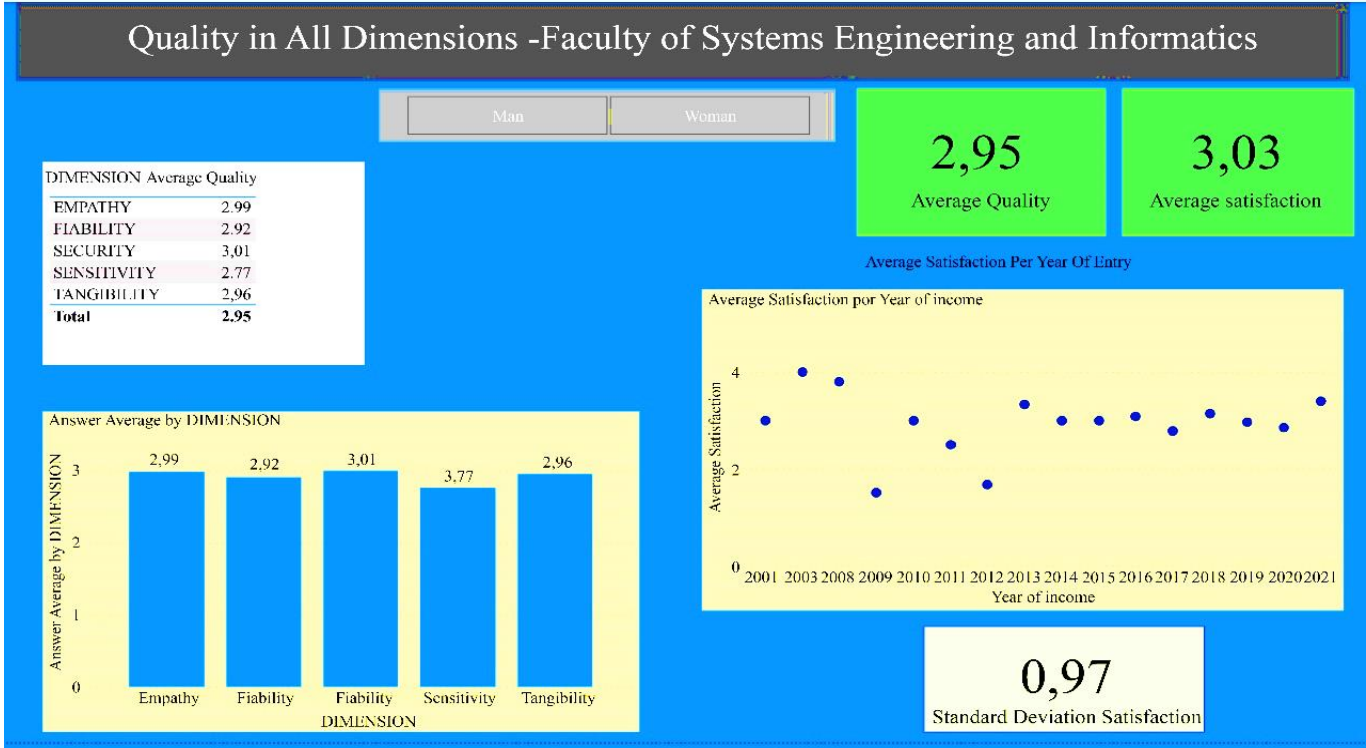


Fig. 6 Dimension of quality service



Fig. 7 Score tangibility dimension

**4.4. Sentiment Analysis**

Sentiment Analysis is also known as opinion analysis [28]. In this investigation to correlate the quality of Administrative academic services, open questions were asked in order to have some thoughts about the positive strengths

regarding the services that the faculty provides, such as seen in Table 12 (dataset) and Figure 8, which shows the python program that polarizes the opinions of the dataset showing the polarity in table 13.



Fig. 8 The most important variables when applying exploratory and confirmatory factor analysis

```
# -*- coding: utf-8 -*-
"""
Created on Tue Jun 27 15:54:45 2023

@author: Santiago
"""
from nltk.sentiment.vader import SentimentIntensity Analyzer import pandas as pd
sid=SentimentIntensity Analyzer()
df=pd.read csv("deseos_alumnos.csv")
df["sentimiento"]=df["mensaje"].apply(lambda i:sid.polarity_scores(i)['compound'])
df.to_csv("mensajes_con_sentimientos.csv")
```

Fig. 9 The python program used

The results, which are a summary of what concerns the students, show positive, normal, and negative scores and what needs to be improved regarding the services. Being score values greater than 0.5, those close to zero but less than 0.5

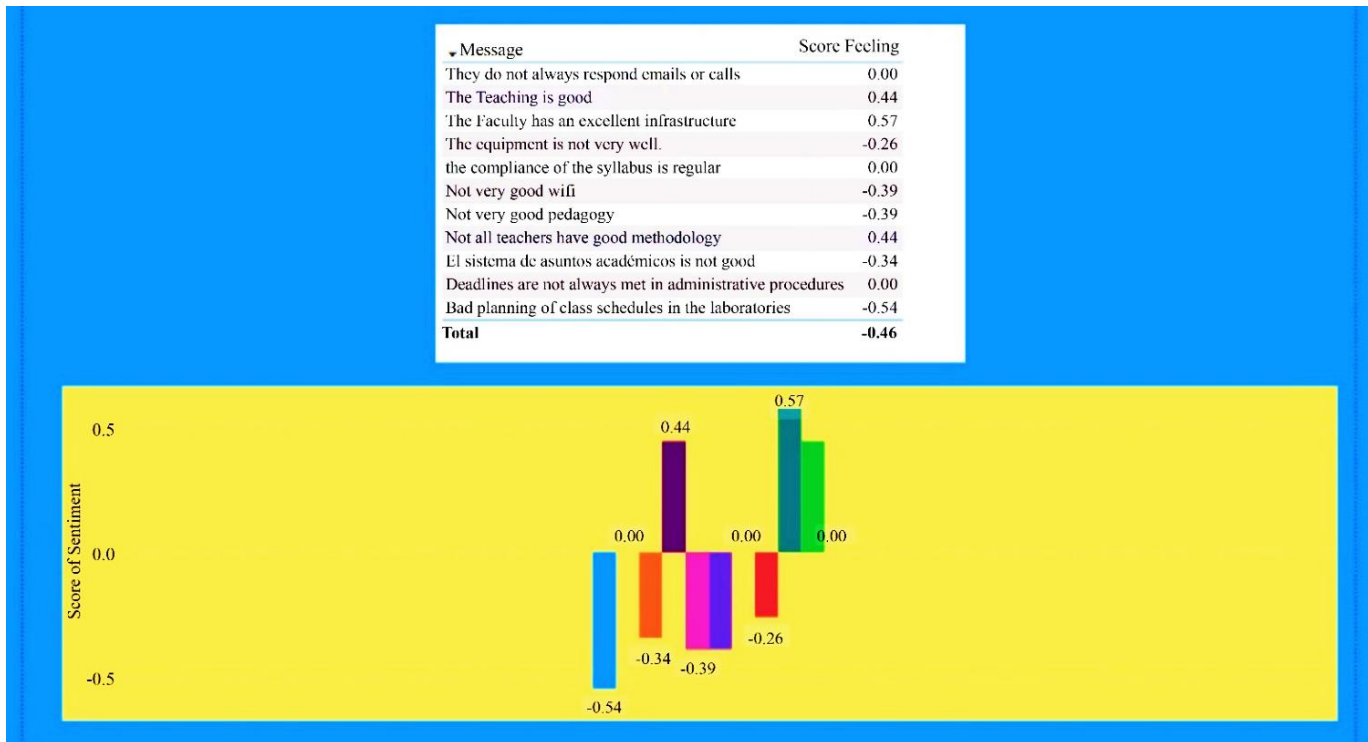
indicate strengths, regular values , and those less than zero details to improve. These values are taken to the dashboard, as seen in Figure 10.

Table 12. Dataset sentiment analysis of student

Resume Dataset "Deseos_alumnos.csv"
"The Teaching is good."
"The equipment is not very well."
"The compliance of the syllabus is regular."
"They do not always respond to emails or calls."
"Not very good pedagogy"
"Bad planning of class schedules in the laboratories"
"Not very good wifi"
"The academic affairs system is not good"
"Not all teachers have good methodology"
"The Faculty has an excellent infrastructure"
"Deadlines are not always met in administrative procedures"

**Table 13. Summary of student interests and scores after running the Python program**

Sentiment	Score
0. The Teaching is good.	0,4404
1. The Computers are not very good.	-0,2572
2. The compliance of the syllabus is regular.	0.0
3. They do not always respond to emails or calls.	0.0
4. Not very good pedagogy.	-0.3865
5. Bad planning of class schedules in the laboratories.	-0.5423
6. Not very good WIFI.	-0.3865
7. The academic affairs system is not good.	-0.3412
8. Not all teachers have good methodology.	0.4404
9. The Faculty has an excellent infrastructure.	0.5719
10. Deadlines are not always met in administrative procedures.	0.0



**Fig. 10 Sentiment analysis brought to the BI platform**

**4.5. Discussions**

Firstly, there has not been found in the literature review a business intelligence solution that considers exploratory and confirmatory factor analysis, not even explaining the causes based on the sentiment analysis and programmed and implemented in the business intelligence solution and validating the research based on statistical hypotheses; this is the hypotheses regarding the quality of services and the Servperf dimensions versus satisfaction. Service quality and satisfaction, being qualitative and subjective, rely on user opinions, especially from university students. These opinions are crucial for decision-making and continuous improvement, a necessity for university accreditation.

This research is based on understanding the interests of university students with respect to the quality of university services, which is observed in state-of-the-art papers, but this research is unique in the way it is carried out because it uses exploratory and confirmatory factor analysis, business intelligence and sentiment analysis, which makes portable for any university.

**5. Conclusion**

Through statistical tests, it was possible to demonstrate that satisfaction depends on the quality of services. It is also shown that there is a significant relationship between the

dimensions of empathy, Security, and Tangibility. Reliability, Sensitivity with user satisfaction.

In conclusion, the paper contributes to creating a business intelligence solution based on the Servperf quality model as a first contribution to show the important KPIs in the dashboard for decision-making; as a second contribution, the exploratory and confirmatory Factor analysis is applied to generate a sub-model of variables (strong questions) for decision making focused on the relevant variables.

As a third contribution, the sentiment analysis is carried out in Python based on the dataset using questions P32 and P34 of the survey to clarify why there are disagreements for continuous improvement.

## Acknowledgments

To the young students of the Faculty of Systems Engineering and Informatic of a Public University for giving us their insights.

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