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Analysis of Citizen Satisfaction in Municipal Services

José Fernando Romero-Subia [1], Juan Antonio Jimber-del Rio [1,*], María Salomé Ochoa-Rico [2,3] and Arnaldo Vergara-Romero [4]

[1] Department Agricultural Economics, Sociology, and Policy, Faculty of Economics and Business Sciences, Universidad de Córdoba, Plaza de Puerta Nueva s/n, 14002 Cordoba, Spain

[2] Faculty of Economics and Business Sciences, Universidad de Córdoba, Plaza de Puerta Nueva s/n, 14002 Cordoba, Spain

[3] Faculty of Economic, Universidad Ecotec, Samborondón 092301, Ecuador

[4] Department of Research, Universidad Ecotec, Samborondón 092301, Ecuador

* Correspondence: jjimber@uco.es

Abstract: Citizen demand for quality public services is increasing, and improvements in the provision of public services affect citizen satisfaction and loyalty. This research is to evaluate citizens' loyalty to municipal officials on the quality of public services provided by the municipality. The measurement is made through a household-level survey, with a sample of 428 valid questionnaires, in a rural parish of Tengel in Guayaquil, following the American Customer Satisfaction Index (ACSI). This study used the Warp-PLS 7.0 software with a structural equation model to evaluate the seven hypotheses raised. A new component is included in this research: the effect of perceived quality in the provision of municipal services in rural areas on the value ratio perceived by the citizen and overall satisfaction. The results obtained allowed us to observe that the loyalty of the citizen to the elected municipal officials depends on citizen satisfaction with the public services provided by the municipal administration in rural areas. In addition, the quality perceived by the citizen modulates at different levels the relationships between the perceived value and the citizen satisfaction. Areas of improvement in the provision of public services such as municipal police, firefighters, veterinary services, parking services and address information were identified. The findings would allow local public administrators to take action to improve the services provided in rural areas in order to maintain the loyalty of citizens.

Keywords: citizen satisfaction; municipal services; rurality; SEM; ACSI

1. Introduction

Rural territories are seen as good places to live. These assumptions are based on aspects such as community integration, low crime rate and beautiful natural landscapes, which shape the so-called "romantic rural life"(Lee and Lassey 1980; Hubatková 2019)

On the contrary, other authors indicate that cities can offer a better quality of life in terms of access to services (Bouckaert et al. 2005). The low availability of services is seen as a major setback in rural life (Scharf and Bartlam 2006; Giarchi 2006; Milbourne 2012). In other words, cities can be better places and have greater well-being (Morrison and Weckroth 2018; Okulicz-Kozaryn and Valente 2019).

Lack of appropriate data and partial understanding of the term "rural" make it difficult to study (Hubatková 2019), Rural areas are not homogeneous in their character but differ, maintaining particularities such as wealth, size, age structure, services, or proximity to urban center (Champion and Hugo 2004; Ballas et al. 2003; Manthorpe et al. 2008).

Citizen contributions to democratic governance make governments pay attention to voters' opinions (Song et al. 2020; Biswas and Roy 2020), while citizens expect politicians to guarantee their demands (Rönnerstrand and Oskarson 2020). Satisfaction plays a fundamental role in re-elections (Martin and Raffler 2020; Esaiasson et al. 2020).

In recent decades, governance reforms have sought to improve the quality of public services. (Zarychta 2020). Quality of service is considered a fundamental aspect of the measurement of performance in the public sector (Biswas and Roy 2020), resulting in national or local governments maintaining approaches based on the quality of the public services they provide (Filippetti 2020).

For the measurement of service quality, citizen satisfaction is considered a main indicator (Kelly and Swindell 2002; Osborne 2010). Satisfaction is the pleasurable sensation you get when you receive something you want (Remoaldo et al. 2020). From the point of view of consumption, Oliver (1981) mentions that satisfaction is the collection of psychological states, the result of emotions comprising expectations combined with previous consumer feelings about the experience.

Quality of service can be defined as a difference between expected (expectations) and perceived service (perceptions) (Parasuraman et al. 1985; Ni et al. 2020). The expectation is influenced by variables such as education level, income level, or social level (Bostancı and Erdem 2020). Consequently, satisfaction is attributed to different expectations between urban and rural populations (Scharf and Bartlam 2006; Sørensen 2014).

Studies on expectations, perceived quality and satisfaction in rural areas are scarce, which justifies the analysis of the quality of public services in the Rural Canton of Tenguel (Scharf and Bartlam 2008).

The study was conducted in Tenguel, a rural coastal parish in the province of Guayas, Guayaquil canton, Ecuador (Polo Almeida 2020).

Tenguel has a population of 13.800 inhabitants, with an average age of 37 years; the male population corresponds to 53.12%, while the female population to 46.88% (Instituto Nacional de Estadísticas y Censos (INEC) 2021). Tenguel has been linked to agriculture, livestock, forestry and fishing, mining, and quarrying (Álvarez 2015).

The method used in this research to evaluate the satisfaction of the citizens of Tenguel with municipal services was the Structural Equations Model (SEM), the study is based on the American Customer Satisfaction Index (ACSI) (Fornell et al. 1996) which allows us to carry out evaluations about customer satisfaction in the private and public sector (Ogikubo et al. 2009).

ACSI is a proven model for use in research on the satisfaction of services such as transportation (Shen et al. 2016), customer service (Hult et al. 2019), economic conditions (Ogikubo et al. 2009), provision of services Ali and Kaur 2018), public trust (Li and Wang 2021), health (Yuliansari et al. 2017), or municipal services (Yuan-yuan et al. 2007).

The model is based on the expectations that are created before using the public services provided by the municipality (expected quality). Citizens use public services and perceive the quality of service of the different causes that form the perceived quality, both constructs (expected quality and perceived quality) are related to the perceived value.

Citizens compare the balances or imbalances between the perceived cost of local taxes and the value received from municipal public services. When the citizen has internalized the perceived value, he can evaluate satisfaction with the public services provided by the municipality, and the levels of satisfaction will motivate him to recommend or re-elect the municipal authorities (loyalty).

The objective of this research is to assess the loyalty of citizens to municipal officials on the quality of public services provided by the municipality in a rural parish in the city of Guayaquil. The study expands the existing literature on citizen satisfaction and loyalty in rural territories. Although it is true that the ACSI method is a traditional and contrasted method, it has been little used in rural areas of Latin America. This research provides new results to the scarce literature on citizen satisfaction with municipal services in rural areas.

The ACSI model is made up of indices that estimate causal models. This model is divided into three parts: on the left side are customer expectations, perceived quality and perceived value; in the center is satisfaction and on the right side as a consequence of satisfaction is customer loyalty.

The American Customer Satisfaction Index is a tried and tested model that has been used in various studies in the literature (Ogikubo et al. 2009; Shen et al. 2016). The model has a solid foundation that can be successfully adapted to different areas in order to analyze the satisfaction and loyalty of users of a product or service. Customer satisfaction is measured on a scale of 1 to 10, with 1 meaning the customer is very dissatisfied and 10 very satisfied. Customer expectations are also measured on a scale of 1 to 10, with 1 meaning low expectations of the product or service and 10 meaning high expectations.

Quality control associations, research groups and universities in countries such as India, Saudi Arabia, Singapore, Dubai, Kuwait, South Africa, Honduras, Puerto Rico and Colombia implement quality and satisfaction control systems. The literature includes similar user satisfaction measurement systems such as "Swedish Customer Satisfaction Barometer" (SCSB) (Hult et al. 2019), "Norwegian Customer Satisfaction Barometer" (NCSB) (Ali and Kaur 2018), "European Customer Satisfaction Index" (ECSI) (Li and Wang 2021), "Hong Kong Customer Satisfaction Index" (HKCSI) (Yuliansari et al. 2017). The model has been used to measure customer loyalty in different fields, such as psychology (Yuanyuan et al. 2007), satisfaction with university studies (Demirović Bajrami et al. 2020) or rural development (Lenzi and Perucca 2020). It has also been widely used to study the tourism sector (Hoogerbrugge et al. 2021; Bouckaert et al. 2005).

After the introduction, the research contains five sections: The second consists of a theoretical framework that includes a description of the results obtained by several authors with their applied methodologies and the constructs of the theoretical model. The third is the presentation of the methodology used. The fourth summarizes the presentation and analysis of results. Finally, we present the discussion and conclusions, followed by the bibliographic references.

The improvement of the living conditions of rural areas can be expressed through economic, environmental, social, and cultural benefits (Demirović Bajrami et al. 2020). Elements that are attributed to possible effects of dissatisfaction in rural areas are financial difficulty, poor public transport and few amenities (Scharf and Bartlam 2006). It is common for many of the basic public services such as medical services, communication routes, firefighting services and the police to be less promoted by the authorities in rural areas since the cost-benefit ratio (understood as voters) is not very beneficial.

The rural development of a territory is a set of economic, social, technological, institutional, infrastructural, environmental and cultural resources that constitute its development potential (Hidalgo-Fernández et al. 2019) and that can be translated into socioeconomic well-being if it is managed from a territorial perspective, collaborative and respectful of local knowledge and values (Furmankiewicz et al. 2021). Therefore, knowing the quality that a rural citizen expects from municipal services based on their environment, the quality they perceive, the value perceived globally, satisfaction and loyalty are decisive for improving the well-being of citizens, promoting local entrepreneurship of the intrinsic values of the area.

Rural development can be understood as the improvement of the economic, social and cultural conditions of a rural territory, with respect for the physical environment and in such a way that it has a positive impact on the quality of life of the resident population and integrates the territory into the whole of society (Boletín de La Asociación de Geógrafos Españoles 2016).

The expectations of citizens when it comes to access to quality public services in rural areas differ according to how they tend to see their municipalities: they will have higher accessibility expectations if they see their territory as an urban center; on the contrary, if they see their settlement as eminently rural, they will have expectations of access to worse services, as they see this as a normal particularity of rural life (Hubatková 2019).

Studies such as that of Lenzi and Perucca (2020) examined the proximity to large cities, with the advantages of access to services that this implies associated with the satisfaction of citizens of smaller places. In their findings, Hoogerbrugge et al. (2021) mention

that rural residents living in polycentric regions have greater satisfaction than urban residents.

Governments from all over the world have paid attention to public opinion on the performance of their management (Bouckaert et al. 2005; Van Ryzin 2015). An assumption in citizen satisfaction is that the quality of public service is important (Van Ryzin 2015; Ryzin et al. 2008), so there is a relationship between citizen satisfaction and government performance.

The growing intensity and complexity of public service has spurred policy reform efforts across the globe, many featuring attempts to promote more collaborative government. Collaboration in Public Service Delivery sheds light on these efforts, analyzing and reconceptualizing the major types of collaboration in public service delivery through a governance lens(Forrer et al. 2010).

In accordance with Bovaird and Loeffler (2007) the quality of local governance in a town in the UK, demonstrating how the concept of local governance can be operationalized, presenting key findings on the quality of local governance in the case study and suggesting that more limited, service-oriented, performance assessment systems may be misleading.

Citizen assessments and government performance are reflected in studies conducted in democratic and decentralized contexts, where citizens can reveal their satisfaction or loyalty to the government of their choice through the exercise of election (Brinkerhoff et al. 2018; Choi et al. 2004).

Citizen opinion about their satisfaction with public services could provide government officials with feedback on their management and alert them of priorities, the clientele they serve, or how to reallocate resources (Song and Meier 2018). Consequently, citizen perception assessments are used to measure governments at the local or national level (Bouckaert et al. 2005).

Perceived quality is considered one of the most studied topics in service marketing (Choi et al. 2004). It is a measured result of the recent consumer experience that has a direct or positive impact on the satisfactory overall customer quotient (Fornell 1992; Cronin et al. 2000).

Studies have shown that perceived quality has an impact on customer satisfaction and that satisfaction is primarily determined by perceived quality (Fornell 1992; Martensen et al. 2000; Caruana 2002). Therefore, if perceived quality increases, satisfaction should increase (Johnson et al. 2001).

For example, Wangpipatwong et al. (2009) using multiple regression analysis, found a correlation between the quality of service of e-government websites and citizen satisfaction in Thailand. Kelly and Swindell (2002) investigated the relationship between citizen satisfaction with municipal services and the measurement of administrative quality, demonstrating a correlation with citizen satisfaction.

Rodrigues and Tavares (2020) investigated the impact of citizen satisfaction on the quality of a public policy of territorial reform implemented in Portugal. This territorial reform had prior economic motivations and its consequences were financial difficulties to citizens. Their findings demonstrated negative democratic effects on electoral participation, such as political protest to the reform.

Expected quality is a measure of customer anticipation of the quality of a product or service, it is represented as a pre-purchase experience (Fornell et al. 1996). Oliver (1980) mentioned that a consumer's satisfaction with a product or service is based on perceived quality and expected quality.

Yilmaz et al. (2021) evaluate citizen satisfaction in light rail transit services, through the American Customer Satisfaction Index (ACSI). One of their findings was that the expected quality variable acts as a mediating variable between image and loyalty.

It had previously been indicated that variables such as level of education, income level, or social level influence the expected quality (Bostancı and Erdem 2020). Therefore,

satisfaction differs from the expected quality of urban and rural populations (Scharf and Bartlam 2006; Sørensen 2014).

Bostancı and Erdem (2020) investigated citizens' satisfaction with local services in Osmaniye, Turkey, using fuzzy FDEMATEL and FTOPSIS models. The study revealed that citizens' satisfaction with the quality of local services ranged from low to high levels depending on location.

Perceived value is considered a compromise between what they receive and what the customer sacrifices in exchange for quality (Johnson et al. 2001; Flint et al. 2002); or the relationship between quality and price paid (Parasuraman et al. 1985; Wangpipatwong et al. 2009). For Zeithaml (1988), it is the evaluation of the value before or after the use or consumption of goods or services. So, if perceived value increases, so will satisfaction (Fornell et al. 1996; Fornell 1992).

Ali and Kaur (2018) conducted a detailed review of factors related to expected user quality to assess the perceived value in calculating satisfaction to customers who used the 3PL service using ACSI.

Shen et al. (2016) evaluated rail passenger satisfaction using a model of structural equations that determined the influence of expected quality and perceived quality on perceived value and satisfaction.

Customer satisfaction is the ability of a product to match its expected quality Yilmaz et al. 2021; Flint et al. 2002), a post-consumer assessment of the quality of the product or its coincidence between the perceived quality and the perceived value.

Consumer satisfaction is fundamental to the practice of consumer sovereignty (Choi et al. 2004), Therefore, customer satisfaction is recognized as influencing the formation of consumers' future purchasing intentions (loyalty) (Taylor and Baker 1994).

Through a trend analysis using structured interviews in South Africa O'Leary (2007) identified variables that have the greatest impact on the provision of municipal services. Among the variables mentioned were public services with a positive impact on the quality of life, spatial location of housing and citizen participation.

Samkar and Alpu (2013) studied citizen satisfaction with the services provided by the Municipality of Eskisehir in Turkey. Through factor analysis, their findings allowed them to observe general satisfaction with the services provided by the Municipality, such as transport, transit, cultural and artistic activities, environmental cleaning, urbanism, organization of parks, sports areas and agricultural activities.

Customer loyalty is seen as an ingrained commitment to buy back or re-favor a product or service, consistently in the future (Oliver 1999). Disgruntled customers are unwilling to show loyalty to services or products they do not like (Olever 1997; Amin et al. 2013).

The relationship between satisfaction and loyalty has gained attention in the literature, there is the certainty that high levels of satisfaction lead to greater purchase intention (Verhoef et al. 2001; J. Y. Kim and Im 2017). In addition, satisfied customers are likely to tell others about their favorable experience and engage in positive advertising of the product or service(Varma and Srikrishna 2016).

In an empirical analysis of more than 400 data from Saudi citizens using transactional e-government services, Chatfield and AlAnazi (2013) found that quality of service and citizen satisfaction describe citizens' loyalty to e-government facilities.

A study by Vetrivel Sezhian et al. (2014) showed that the indirect effect of service quality on loyalty through satisfaction is greater than the proportion of satisfaction that directly affects loyalty, in a study of bus transport service users in India.

The provision of municipal public services can cover areas such as road maintenance, waste management, security, parking, and traffic control (Ghodousi et al. 2016). However, they differ in each country. For example: In Turkey, a municipality provided cheaper bread with additional vitamins due to the high cost of living (Samkar and Alpu 2013). Likewise, a municipality in Portugal offers a physical activity program to older people (e Sá and Fernandes (2020).

This study evaluates the public services provided by the Municipality of Guayaquil to the Rural Parish of Tenguel, in services where Ecuadorian municipal governments have competencies according to the Constitution of the Republic of Ecuador (Asamblea Nacional Constituyente 2008) and the functions established by the Decentralized Autonomous Governments of Ecuador according to the Organic Code of Territorial Organization, Autonomy and Decentralization (COOTAD) (Asamblea Nacional del Ecuador 2010).

The variables used to assess the loyalty of citizens to municipal officials on the quality of public services provided by the municipality in the rural parish of Guayaquil were (1) Quality of public services expected in Tenguel parish; (2) perceived quality of public services provided in Tenguel parish; (3) by comparing the expected quality and the perceived quality we can estimate the perceived value; (4) satisfaction, as an emotional or cognitive response of the citizen who uses public services and; (5) loyalty that the citizen has as a result of the experience with municipal public services.

The hypotheses used in this study were formulated according to the theoretical framework and previous research in this area (Figure 1).
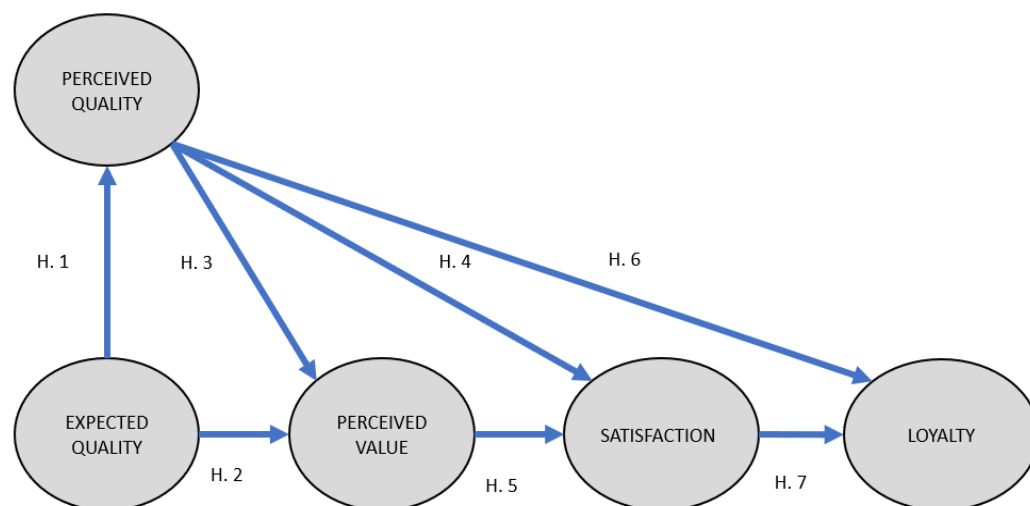

Figure 1. Theoretical research model.

Hypothesis 1 (H1). *The quality of public services expected by the citizen has a positive and significant influence on the perceived quality of public services* (Shabbir et al. 2017; Atombo and Wemegah 2021).

Hypothesis 2 (H2). *The quality of public services that the citizen expects has a positive and significant influence on the perceived value of public services* (Amin et al. 2013; Sun 2018).

Hypothesis 3 (H3). *The quality of public services perceived by citizens has a positive and significant influence on the perceived value of these public services* (Ercsey and Józsa 2016; Peña et al. 2012).

Hypothesis 4 (H4). *The quality of public services perceived by the citizen has a positive and significant influence on citizen satisfaction with the public service* (Nuviala et al. 2012; Dettori et al. 2020).

Hypothesis 5 (H5). *The value of public services perceived by the citizen has a positive and significant influence on citizen satisfaction* (Havas et al. 2016; K. H. Kim and Park 2017).

Hypothesis 6 (H6). *The quality of public services that a citizen perceives positively and significantly influences his loyalty* (Chi et al. 2020; Goyal and Chanda 2017).

Hypothesis 7 (H7). *A citizen's satisfaction with public services has a positive and significant influence on citizen loyalty* (Castillo Canalejo and Río 2018; Xue and Chen 2019).

2. Materials and Methods

The study was conducted in the rural parish of Tenguel (Figure 2), located in the province of Guayas canton Guayaquil, Ecuador (Polo Almeida 2020). Most of Tenguel's population has little assembly power when it comes to making public demands to Municipal authorities, except when it comes to social programs and other aspects related to them (Álvarez 2015). The government is a Decentralized Autonomous Municipality, with a mayor and 15 council members who are elected by popular vote for a 4-year term (Muy Ilustre Municipalidad de Guayaquil 2021).

Figure 2. Location of Tenguel in Guayaquil. Source: (Sageo 2021).

The data were collected with a questionnaire, which was given to citizens of Tenguel. In order to guarantee the validity of the questionnaire, the questions were based on previous studies (Álvarez 2015; Vetrivel Sezhian et al. 2014; Ghodousi et al. 2016). Several items were based on studies with similar measurement objectives and needs (Samkar and Alpu 2013; Yazdanpanah et al. 2013; Bostancı and Erdem 2020).

The information was collected through a questionnaire. The survey was carried out to households located in Tenguel parish, which consists of 67 items grouped into three sections: (1) Questions about expected quality, perceived quality, and perceived value of public services provided in Tenguel, in security, transport, and provision of public services in general. (2) Questions related to satisfaction and loyalty with the public municipal administration based on citizens' experience with the services provided by the municipality and (3) Questions about the citizen's sociodemographic profile.

Citizens were informed of the academic purposes and anonymity of the study before completing the questionnaire and the verbal consent of the citizen was requested before completing the questionnaire; anonymity was guaranteed at each stage of the data collection process. In the first two sections, a seven-point Likert scale was used, in which 1 was the lowest rating and 7 was the highest.

Participation in the study was voluntary and individual, sample data was collected through a questionnaire at different times of the day during March 2021. The survey could only be completed with citizens residing in the rural parish of Tenguel; the study area consisted of 2458 households.

The survey was applied to a total of 576 households selected with simple random sampling, obtaining 428 valid questionnaires; therefore, the participation rate of the universe is 17.41% and the sample had a confidence level of 96% and a margin of error of 4.52%. The questions in the third section related to the socio-demographic profile were completed with closed questions.

Data from this research were tabulated and analyzed using structural equation modeling (PLS-SEM), using Warp-PLS 7.0 software (ScriptWarp Systems, PO Box 452428, Laredo, TX, USA). The method is recognized as an appropriate analytical technique for testing as well as for the theoretical model (Hair et al. 2011).

The model was designed (see Figure 1 above) using the American Customer Satisfaction Index (ACSI). Table 1 shows the constructs of the model and the latent and observed variables.

Table 1. Scales used.

Authors	Variable	Indicators
(Bostancı and Erdem 2020; Ogikubo et al. 2009; Shen et al. 2016; Hidalgo-Fernández et al. 2019; Yilmaz et al. 2021)	Expected Quality (EXPEQUAL)	Expected Quality: (EQ1) Town planning and zoning, (EQ2) Roads and pavements, (EQ3) Organization of traffic and crossing, (EC4) Public Transport System, (EQ5) Car parking service, (EQ6) Address information, (EQ7) Transport Services, (EQ8) Drinking water quality, (EQ9) Wastewater and drains, (EQ10) Garbage collection and town cleaning, (EQ11) Parks and gardens, (EQ12) Public road and street lighting, (EQ13) Preservation of historical and cultural heritage, (EQ14) Cultural activities, (EQ15) Social and cultural facilities, (EQ16) Funeral services, (EQ17) Social activities, (EQ18) Firefighting service, (EQ19) Local police service, (EQ18_2) Sports services, (EQ19_2) Veterinary services, (EQ20) Noise reduction, (EQ21) Air pollution, (EQ22) Green areas, (EQ23) Social services.
(Wangpipatwong et al. 2009; O'Leary 2007; e Sá and Fernandes 2020; Rico et al. 2022)	Satisfaction (SATISFAC)	Satisfaction: (S1) Satisfaction with the town and road planning, (S2) Satisfaction with the provision of municipal services, (S3) Global satisfaction with the user experience.

(Ni et al. 2020; Rodrigues and Tavares 2020; Yilmaz et al. 2021; Chatfield and AlAnazi 2013; Vetrivel Sezhian et al. 2014)	Loyalty (LOYALTY)	Loyalty: (L1) I would recommend my friends or family to vote for the mayor of Guayaquil, (L2) I would vote for the mayor of Guayaquil again, (L3) I would recommend the services provided by the Municipality of Guayaquil, (L4) I would recommend family or friends living out of town to live in Guayaquil, (L5) I would recommend family or friends living out of town to visit Guayaquil.
(Kelly and Swindell 2002; Wangpipatwong et al. 2009; Rodrigues and Tavares 2020)	Perceived Quality (PERQUAL)	Perceived Quality: (PQ1) Urban planning and zoning, (PQ2) Roads and pavements, (PQ3) Organization of traffic and crossing, (PC4) Public Transport System, (PQ5) Car parking service, (PQ6) Address Information, (PQ7) Transport services, (PQ8) Drinking water quality, (PQ9) Wastewater and drains, (PQ10) Garbage collection and town cleaning, (PQ11) Parks and gardens, (PQ12) Public road and street lighting, (PQ13) Preservation of historical and cultural heritage, (PQ14) Cultural activities, (PQ15) Social and cultural facilities, (PQ16) Funeral services, (PQ17) Social activities, (PQ18) Firefighting services, (PQ19) Local police service, (PQ18_2) Sports service, (PQ19_2) Veterinary services, (PQ20) Noise reduction, (PQ21) Air pollution, (PQ22) Green areas, (PQ23) Social services.
(Shen et al. 2016; Ali and Kaur 2018; Hidalgo-Fernández et al. 2019)	Perceived Value (PERVALU)	Perceived Value: (PV4) Public Transport System, (PV5) Car parking service, (PV7) Transport services, (PV8) Drinking water quality, (PV9) Wastewater and drains, (PV10) Garbage

	collection and town cleaning, (PV11) Parks and gardens, (PV12) Public road and street lighting, (PV13) Preservation of historical and cultural heritage, (PV14) Cultural activities, (PV15) Social and cultural facilities, (PV16) Funeral services, (PV17) Social activities, (PV18) Firefighting services, (PV19) Local police service, (PV18_2) Sports service, (PV19_2) Veterinary services

Source: Author.

3. Results

This section provides the results obtained after applying the structural equation models. First, an extract of the sociodemographic profile is presented and later the reliability and validity of the proposed model, culminating with the contrast of the seven hypotheses raised in the theoretical framework.

The sociodemographic profile of citizens of the rural parish Tenguel (Table 2) who use public Municipal services shows that 53.50% were male and 46%.26% were women. A total of 41.82% of respondents were between 18 and 30 years and 24.3% had a primary education level, while 99.53% were Ecuadorian nationals. A total of 77.57% had an income of less than $400, i.e., income below the unified basic salary in Ecuador (Ministerio Del Trabajo 2021), and 86% confirmed that Tenguel has been their only place of residence.

Table 2. Citizens' sociodemographic profile.

Variable/Categories	Absolute Frequency	Percentage
Sex (n = 428)		
Men	229	53.50
Women	198	46.26
No comment	1	0.23
Age (n = 428)		
[Under 30]	179	41.82
[30–39]	71	16.59
[40–49]	82	19.16
[50–59]	50	11.68
60 or more	46	10.75
Level of Studies (n = 428)		
No studies	16	3.74
Primary	88	20.56
Secondary	228	53.27
University	95	22.19
Postgraduate	1	0.23
Country of origin (n = 428)		
National	426	99.53
Abroad	2	0.47
Income (n = 428)		

	Less than $400	332	77.57
	Between $400 and $2000	94	21.96
	Between $2001 and $5000	2	0.47
	Between $5001 and $10,000	0	0.0
	More than $10,001	0	0.0
Tenguel is their only place of residence (n = 428)			
	YES	405	94.63
	NO	23	5.37

Source: Author.

Table 3 shows the relationship of the latent and observed variables with the values of the structural coefficients and the limit probability of each variable, between constructs of the proposed model.

Table 3. Standardized structural coefficients of the variables observed and the latent variables.

Latent Variables	Observed Variables	Standardized Coefficient	*p*-Value	Latent Variables	Observed Variables	Standardized Coefficient	*p*-Value
	EXP1	0.696	<0.001		PQ2	0.352	<0.001
	EXP2	0.698	<0.001		PQ3	0.538	<0.001
	EXP3	0.644	<0.001		PQ4	0.391	<0.001
	EXP4	0.691	<0.001		PQ5	0.616	<0.001
	EXP5	0.823	<0.001		PQ6	0.661	<0.001
	EXP6	0.635	<0.001		PQ7	0.659	<0.001
	EXP7	0.798	<0.001		PQ8	0.292	<0.001
	EXP7_2	0.626	<0.001		PQ9	0.309	<0.001
	EXP9	0.670	<0.001	Perceived	PQ11	0.371	<0.001
	EXP10	0.740	<0.001	Quality	PQ13	0.677	<0.001
	EXP11	0.755	<0.001	(PERQUAL)	PQ14	0.668	<0.001
Expected	EXP12	0.628	<0.001		PQ15	0.656	<0.001
Quality	EXP13	0.697	<0.001		PQ16	0.166	<0.001
(EXPQUAL)	EXP14	0.672	<0.001		PQ18	0.317	<0.001
	EXP15	0.669	<0.001		PQ19	0.439	<0.001
	EXP16	0.673	<0.001		PQ20	0.358	<0.001
	EXP17	0.772	<0.001		PQ21	0.498	<0.001
	EXP18	0.601	<0.001		PQ24	0.466	<0.001
	EXP19	0.613	<0.001		PQ25	0.483	<0.001
	EXP20	0.676	<0.001		PV1	0.410	<0.001
	EXP21	0.573	<0.001		PV2	0.642	<0.001
	EXP22	0.750	<0.001		PV3	0.622	<0.001
	EXP23	0.742	<0.001		PV4	0.271	<0.001
	EXP24	0.644	<0.001		PV7	0.377	<0.001
	EXP25	0.699	<0.001		PV8	0.293	<0.001
Satisfaction	S1	0.696	<0.001	Perceived	PV9	0.720	<0.001
(SATISFAC)	S2	0.776	<0.001	Value	PV10	0.648	<0.001
	S3	0.781	<0.001	(PERVALU)	PV11	0.725	<0.001
	L1	0.859	<0.001		PV12	0.246	<0.001
	L2	0.851	<0.001		PV13	0.698	<0.001
Loyalty	L3	0.666	<0.001		PV14	0.195	<0.001
(LOYALTY)	L4	0.493	<0.001		PV15	0.448	<0.001
	L5	0.438	<0.001		PV16	0.268	<0.001

| | PV17 | 0.397 | <0.001 |

Note: The values of *p* < 0,05 are necessary for reflective indicators. Source: Author

3.1. Individual Reliability of the Items

To verify the individual reliability of the observed variables, the criterion suggested by Sarstedt et al. (2019), regarding the convergent validity of the constructs, was followed. All the sections proposed in (Table 4) have a value > 0.707 (Henseler and Chin 2010), which indicates good reliability for all the items of the constructs.

Table 4. Indicator loading of observed variables.

Latent Variables	Observed Variables	Value
Expected Quality (EXPQUAL)	(EXP1) Zoning and urban planning expectations	0.991
	(EXP2) Roads and pavements expectations	0.990
	(EXP3) Organization of traffic and crossings expectations	0.985
	(EXP4) Public Transport Service expectations	0.993
	(EXP5) Parking services expectations	0.996
	(EXP6) Address information expectations	0.990
	(EXP7) Transport services expectations	0.995
	(EXP7_2) Drinking water quality expectations	0.995
	(EXP9) Wastewater and sewerage expectations	0.991
	(EXP10) Garbage collection and town cleaning service expectations	0.995
	(EXP11) Parks and gardens expectations	0.992
	(EXP12) Public Road and street lighting expectations	0.992
	(EXP13) Preservation of historical and cultural heritage expectations	0.994
	(EXP14) Cultural activities expectations	0.963
	(EXP15) Social and cultural facilities expectations	0.953
	(EXP16) Funerary services expectations	0.988
	(EXP17) Social activities expectations	0.983
	(EXP18) Firefighting Services expectations	0.995
	(EXP19) Local police services Expectations	0.993
	(EXP20) Sports Services expectations	0.994
	(EXP21) Veterinary services expectations	0.995
	(EXP22) Noise reduction expectations	0.988
	(EXP23) Air pollution expectations	0.996
	(EXP24) Green areas expectations	0.988
	(EXP25) Social services expectations	0.983
Perceived Quality (PERQUAL)	(PQ2) Perceived Quality of roads and pavements	0.679
	(PQ3) Perceived Quality of the organization of traffic and crossings	0.735
	(PQ4) Perceived Quality of Public Transport Service	0.682
	(PQ5) Perceived Quality of Parking services	0.686
	(PQ6) Perceived Quality of Address Information	0.772
	(PQ7) Perceived Quality of Transport Services	0.749
	(PQ8) Perceived Quality of Drinking water quality	0.686
	(PQ9) Perceived Quality of Wastewater and Sewerage Services	0.890
	(PQ11) Perceived Quality of Parks and gardens	0.735

	(PQ13) Perceived Quality of the Preservation of historical and cultural heritage	0.716
	(PQ14) Perceived Quality of Cultural activities	0.745
	(PQ15) Perceived Quality Social and cultural facilities	0.724
	(PQ16) Perceived Quality Funerary Services	0.504
	(PQ18) Perceived Quality of FireFighting Services	0.865
	(PQ19) Perceived Quality of Local Police Services	0.756
	(PQ18_2) Perceived Quality of Sports Services	0.769
	(PQ19_2) Perceived Quality of Veterinary Services	0.755
	(PQ22) Perceived Quality of Green areas	0.862
	(PQ23) Perceived Quality of Social Services	0.772
	(PV1) Perceived value Zoning and urban planning	0.710
	(PV2) Perceived value Roads and pavements	0.712
	(PV3) Perceived value Organization of traffic and crossings	0.683
	(PV4) Perceived value of Public Transport Service	0.608
	(PV7) Perceived value of Transport services	0.780
	(PV8) Perceived value of Drinking water quality	0.728
	(PV9) Perceived value of wastewater and sewerage services	0.745
Perceived Value (PERVALU)	(PV10) Perceived value of Garbage collection and town cleaning service	0.773
	(PV11) Perceived value of Parks and gardens	0.783
	(PV12) Perceived value of public road and street lighting	0.761
	(PV13) Perceived value of the preservation of historical and cultural heritage	0.811
	(PV14) Perceived value of Cultural activities	0.626
	(PV15) Perceived value of Social and cultural facilities	0.733
	(PV16) Perceived Value of Funeral Services	0.646
	(PV17) Perceived value of Social activities	0.694
Satisfaction (SATISFAC)	(S1) Satisfaction with the town and road planning	0.883
	(S2) Satisfaction with the provision of municipal services	0.955
	(S3) Global satisfaction of the user experience	0.953
LOYALTY (LOYALTY)	(L1) I would recommend my friends or family to vote for the mayor of Guayaquil	0.953
	(L2) I would vote for the mayor of Guayaquil again	0.983
	(L3) I would recommend the services provided by the Council of Guayaquil	0.927
	(L4) I would recommend family or friends living out of town to move to Guayaquil	0.744
	(L5) I would recommend family or friends living outside the city to visit Guayaquil	0.745

Source: Author.

Once the individual reliability was measured, the validity and reliability of the constructs were analyzed, by measuring the collinearity and verifying that the value of the variance of the inflation factor (VIF) is > 5.0. The results did not show collinearity in the variables used in the loyalty construct. Similarly, Table 5 shows the analysis of the reflective constructs of Expected Quality, Perceived Quality, Perceived Value, and Satisfaction (Hair et al. 2012).

The results found adequate individual reliability with all values higher than the minimum of 0.505 proposed by Fornell and Larcker (1981) (Fornell and Larcker 1981). The

loads were statistically significant (99.99%). As a result, the proposed model is considered reliable and valid, for the analysis of the structural model.

Table 5. Individual VIF of the indicators.

Latent Variables	Observed Variables	VIF	Latent Variables	Observed Variables	VIF
Expected Quality (EXPQUAL)	EXP1	2.699	Perceived Quality (PERQUAL)	PQ2	1.282
	EXP2	4.592		PQ3	1.590
	EXP3	2.585		PQ4	1.238
	EXP4	2.282		PQ5	1.795
	EXP5	4.120		PQ6	1.798
	EXP6	1.903		PQ7	1.756
	EXP7	3.582		PQ8	1.221
	EXP7_2	4.423		PQ9	1.208
	EXP9	6.739		PQ11	1.228
	EXP10	3.232		PQ13	1.994
	EXP11	2.983		PQ14	2.235
	EXP12	2.179		PQ15	1.988
	EXP13	2.864		PQ16	1.178
	EXP14	3.958		PQ18	1.238
	EXP15	3.936		PQ19	1.343
	EXP16	2.617		PQ20	1.159
	EXP17	3.332		PQ21	1.283
	EXP18	1.705		PQ24	1.373
	EXP19	2.299		PQ25	1.383
	EXP20	2.433	Perceived Value (PERVALU)	PV1	1.218
	EXP21	2.041		PV2	1.759
	EXP22	3.058		PV3	1.490
	EXP23	3.004		PV4	1.148
	EXP24	2.228		PV7	1.236
	EXP25	2.385		PV8	1.223
Satisfaction (SATISFAC)	S1	1.158		PV9	1.914
	S2	1.265		PV10	1.782
	S3	1.271		PV11	1.931
Loyalty (LOYALTY)	L1	4.619		PV12	1.249
	L2	4.664		PV13	1.622
	L3	1.299		PV14	1.104
	L4	1.327		PV15	1.263
	L5	1.350		PV16	1.113
				PV17	1.157

Source: Author.

3.2. Construct Reliability Analysis

To confirm whether the observed variables rigorously measure the latent variable they represent, according to Nunnally and Bernstein (1978) Cronbach's Alpha is taken and the latent composite reliability values are considered satisfactory when the values are equal to or greater than 0.70 (Table 6) (Hirmer and Guthrie 2016; Peña et al. 2012). The values maintain and exceed this lower limit; consequently, the reliability of the first-order constructs and their ability to measure Loyalty is confirmed.

The value of Cronbach's Alpha for four of the five constructs (Satisfaction, Expected Quality, Perceived Value, and Perceived Quality) exceeded 0.70 and a construct (Loyalty) had a value equal to 0.70, which means that all five constructs are validated and there can be no doubt about the concept of the structures' ability to measure Loyalty.

Table 6. Composite Reliability and Cronbach Alpha.

Construct		Composite Reliability	Cronbach's Alpha
LOYALTY	Loyalty	0.804	0.700
SATISFAC	Satisfaction	0.796	0.715
EXPQUAL	Expected Quality	0.958	0.954
PERVALU	Perceived Value	0.812	0.759
PERCQUAL	Perceived Quality	0.847	0.811

Source: Author.

3.3. Correlation of Latent Variables and Errors

Convergent validity examines whether a set of variables explains a construct and not a different one; the value for this is obtained from the extracted mean-variance (AVE). It is considered the most commonly used acceptance criterion in research to evaluate this concept. Fornell and Larcker (1981) determined that the minimum value of the AVE should be > 0.5 (Table 7), which means that the construct shares more than half of its variance with its indicators.

The remaining value before the variance is explained by the measurement of the error and the remaining causal relationships. The AVE criterion is applied to latent variables with reflective indicators or for second-order constructs, the Loyalty variables share more than 50% of their variance with the construct when this parameter is met.

Table 7. The average variance extracted (AVE).

The Average Variance Extracted (AVE)	
Expected Quality (EXPQUAL)	0.674
Perceived Quality (PERQUAL)	0.690
Perceived Value (PERVALU)	0.520
Satisfaction (SATISFAC)	0.665
Loyalty (LOYALTY)	0.684

Source: Author.

3.4. Analysis of Hypotheses

To justify the goodness of fit of the proposed model to the assumptions raised, the measures of goodness of fit and the quality indices were calculated, which are shown in Table 8, with all the constructs (reflective and formative) verified and validated, as well as the goodness of the fit of the model. We can say that the results obtained are adequate and justify their validity and applicability.

Table 8. Model fit and quality indices.

Measures of Fit	Value	*p*-Value
Average path coefficient (APC)	0.222	<0.001
Average R-squared (ARS)	0.2000	<0.001
Average adjusted R-squared (AARS)	0.197	<0.001
Index of Quality	**Value**	**Ranges**
Average block VIF (AVIF)	1.308	acceptable if ≤5, ideally ≤ 3.3
Average full collinearity VIF (AFVIF)	1.705	

Tenenhaus GoF (GoF)	0.283	Small ≥ 0.1, medium ≥ 0.25, large ≥ 0.36
Sympson's paradox ratio (SPR)	1.000	acceptable if ≥0.7, ideally = 1
R-squared contribution ratio (RSCR)	1.000	acceptable if ≥0.9, ideally = 1
Statistical suppression ratio (SSR)	1.000	
Nonlinear bivariate causality direction ratio (NLBCDR)	0.786	acceptable if ≥0.7

Source: Author.

Next, we calculated the significance of the Structural coefficient for each of the hypotheses raised, the values of the calculations are shown in (Table 9) and we verified the hypotheses H3, H4, H5, H6, and H7. This means that there is a positive and unifying relationship between perceived quality and perceived value, between perceived quality and satisfaction, perceived value and satisfaction, between perceived quality and loyalty, and there is a positive and meaningful relationship between satisfaction and loyalty of citizens to municipal officials.

Table 9. Hypotheses analysis.

Hypothesis	Effect	Path Coefficient	*p*-Value	Supported?
H1: Expectative Quality—Perceived Quality	+	0.067	0.082	NO
H2: Expectative Quality—Perceived Value	+	−0.057	0.117	NO
H3: Perceived Quality—Perceived Value	+	0.795	<0.001 ***	YES
H4: Perceived Quality—Satisfaction	+	0.173	<0.001 ***	YES
H5: Perceived Values—Satisfaction	+	0.154	<0.001 ***	YES
H6: Perceived Quality—Loyalty	+	0.220	<0.001 ***	YES
H7: Satisfaction—Loyalty	+	0.085	0.037 **	YES

a = 0.001 (***); a = 0.01 (**). Source: Author

Figure 3 shows the hypotheses and the relationships between them. (R) refers to the number of questions that were asked about each of them, and the values of R2 and the p-value for each hypothesis are also shown.
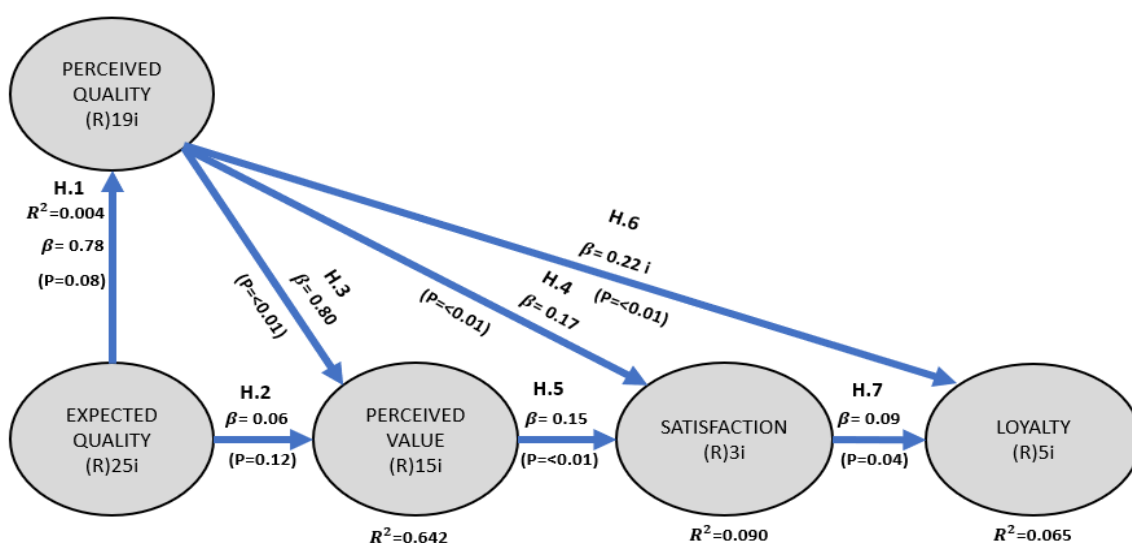
Figure 3. Causal relationships of the model and p-Values.

4. Discussion and Conclusions

Citizens' satisfaction with the public services in a rural territory is the determining factor for loyalty to municipal government officials. Citizens who decided to re-elect municipal officials also recommend and share their experiences with family and friends (Semple 2019).

The local public administration aims to improve and be efficient in the provision of public services and elements where it has competence, in the territory it manages. Economic, social, or environmental improvements should aim to improve living conditions in rural areas (Giarchi 2006).

The study carried out an estimation of direct causal relationships, where latent variables of the main factors that make up the dimensions of the perception of satisfaction, the loyalty of the citizen to the municipal manager on the quality of public services provided by the municipality in rural areas. Most of the hypotheses raised in the theoretical model were confirmed so that local administrations that manage rural areas can use the study to improve the satisfaction of their citizens. It is clear from the results obtained how the perception of the perceived quality of municipal services has a positive and significant influence on the perceived value, the perceived satisfaction and on the loyalty to the managers who apply public policies.

Hypothesis 1: It has not been possible to confirm, that is, the perception of the quality expected by citizens in rural areas of public services does not significantly influence the perceived quality of public services (Figure 4) (Navajas-Romero et al. 2020; Rico et al. 2022; Río et al. 2020; Hidalgo-Fernández et al. 2019). According to Rust et al. (1999) their study, the results suggest that the most important moment for a product or service to establish the perceived quality in the minds of users is at the moment when consumers have little previous experience in the category, that is, if the respondents are younger, their experience in public services is scarce and their expectations have little influence on the perceived quality.
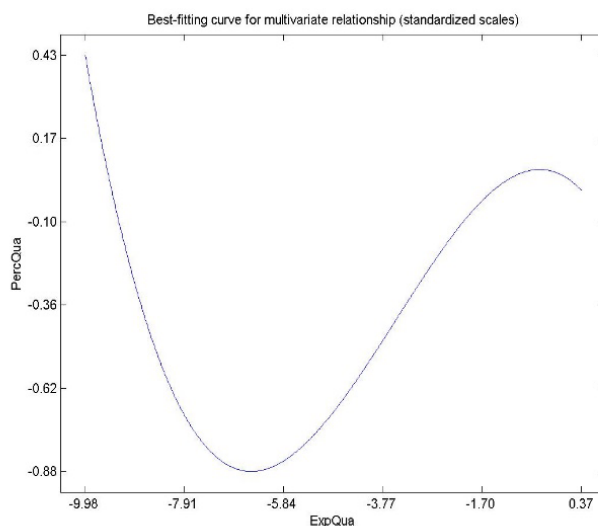

Figure 4. H1, EXPQUAL–PERQUAL.

Hypothesis 2 is not confirmed and is not significant (Figure 5) (Navajas-Romero et al. 2020; Rico et al. 2022; Hidalgo-Fernández et al. 2019), so we cannot say that the quality of public services expected by the citizen significantly influences the perceived value of public services. That the hypothesis has not been confirmed does not mean that it has no influence, only that it is not statistically significant enough.
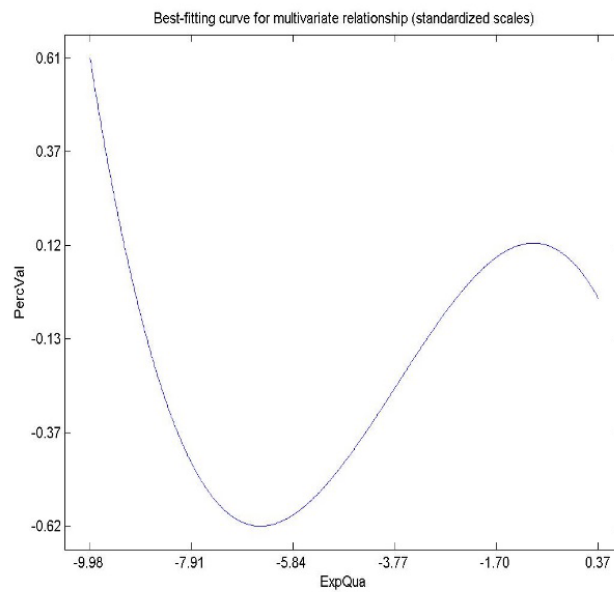
Best-fitting curve for multivariate relationship (standardized scales)

Figure 5. H2, EXPQUAL–PERVALU.

Hypothesis 3: The quality of public services perceived by the citizen significantly influences the perceived value of these public services. Figure 6 shows the sinusoidal behavior of the variable; in addition, we can observe that high values of the perceived quality of public services have no direct influence on the perceived value. These findings coincide with studies such as Ali and Kaur (2018) and Shen et al. (2016).

Best-fitting curve for multivariate relationship (standardized scales)
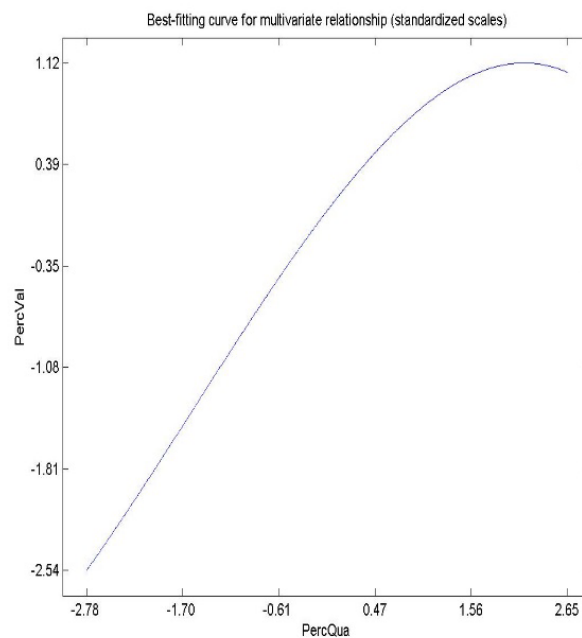
Figure 6. H3, PERQUAL–PERVALU.

Municipal administrators must make improvements in territorial planning, general municipal services and the environment in rural areas. These developments would increase perceived quality and perceived value; citizens indicated that these improvements would increase their perception of satisfaction with public services. Citizens who perceive

quality in municipal services are loyal to their municipality and re-elect the public managers who provide this perception.

Hypothesis 4: The quality of public services perceived by the citizen significantly influences the citizen's satisfaction with the public service. Figure 7 shows an exponential form, in which perceived quality has a linear and direct influence on the satisfaction of the citizen residing in rural areas. The results coincide with studies by Wangpipatwong et al. (2009) and Rodrigues and Tavares (2020). The confirmation of this hypothesis means that increasing the quality of experience with public services for citizens living in rural areas influences satisfaction.
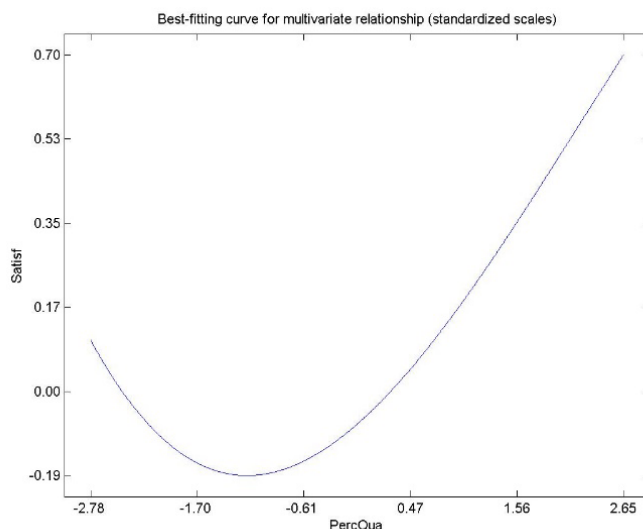
Figure 7. H4, PERQUAL–SATISFAC.

Hypothesis 5: Is confirmed, so that the value of public services perceived by the citizen significantly influences the satisfaction perceived by citizens. Figure 8 shows that low values of the perceived value of public services do not significantly influence citizen satisfaction for high values, it is observed how it influences exponentially. This result has also been observed by other authors such as O'Leary (2007), Samkar and Alpu (2013) and Shen et al. (2016).
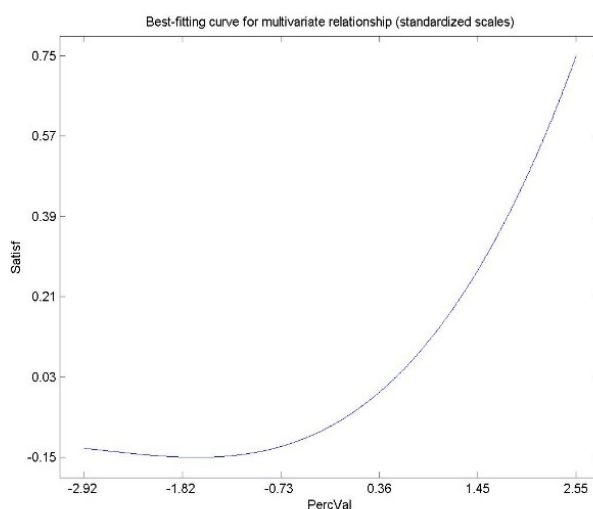
Figure 8. H5, PERVALU–SATISFAC.

Hypothesis 6: It is also confirmed, therefore, the perceived quality of the public services that a citizen receives significantly influences their loyalty. Figure 9 shows the sinusoidal behavior of this relationship, in which increases in perceived quality positively and significantly increase the perceived loyalty of citizens in rural areas. This coincided with the results of other studies by Kelly and Swindell (2002) and Chatfield and AlAnazi (2013).
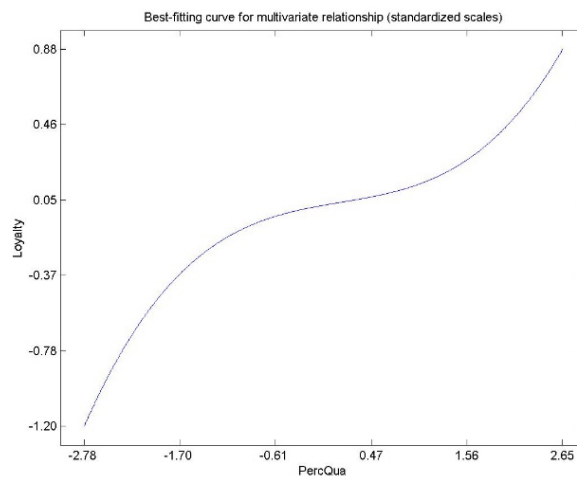

Figure 9. H6, PERQUAL–LOYALTY.

Finally, hypothesis 7 is confirmed, so that the perceived satisfaction of a citizen with public services significantly influences the citizen's loyalty. Figure 10 shows a flattened exponential behavior at the right end of this relationship. Very high satisfaction values do not directly influence loyalty, that is, there comes a time when the perception of quality is sufficient for the citizen and when satisfaction increases, loyalty no longer increases in rural areas.
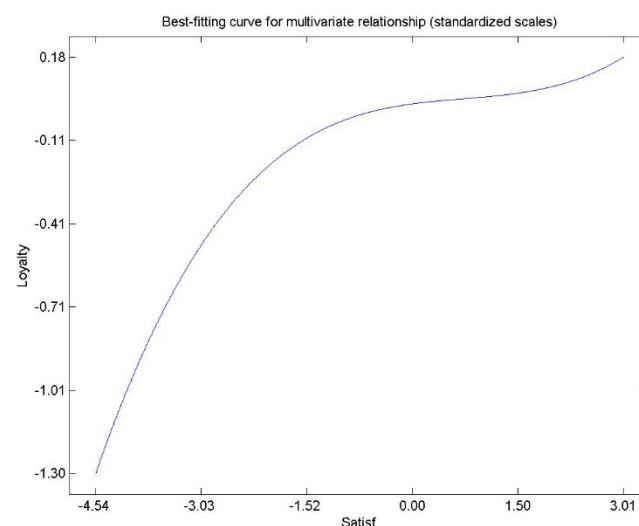

Figure 10. H7, SATISFAC–LOYALTY.

The results showed that satisfaction and quality are positive factors that influence a citizen's decision to choose or suggest a municipal official, as well as to recommend it as a residential or tourist destination. The findings coincide with other studies such as Chatfield and AlAnazi (2013); Samkar and Alpu (2013); Vetrivel Sezhian et al. (2014).

The study confirmed the significance of citizens' satisfaction with the public services provided in Tenguel by their local government and the intention of citizens to vote for civil servants, as well as its recommendation. That is, the loyalty of citizens depends on factors such as roads, water quality, waste management, parks and green areas, public transport, and maintenance of these services.

However, some areas could be improved, such as citizen perception of firefighters, municipal police, veterinary services, parking, and address information, all of which do not meet citizens' expectations.

Public managers in rural areas must pause to evaluate each of the public services they offer their citizens. The study analyzes dimensions such as territorial planning (which includes, among other things, urban planning, state of the roads and pavements, transport service, and urban signage), municipal services (quality of drinking water, sanitation and sewage, public lighting, cemetery, activities and parks and gardens), and finally, the environmental dimension (noise pollution, air pollution, quality of green areas and recycling points). Knowing how the causal relationships of this study influence the final perception of satisfaction and loyalty of citizens in rural areas, they can apply policies that correct poor services in order to improve them and therefore improve the perception of citizens towards municipal services and towards the public managers who apply them.

Therefore, this study has practical results that can be used by the Municipality of Guayaquil, as well as to determine important aspects to improve the loyalty of citizens that can be applied in other towns and cities with similar socioeconomic and cultural characteristics.

Local public services vary according to the diversity and conditions of the country. Research that analyzes the satisfaction of citizens with the services provided in different areas and countries can be useful for municipalities to improve the quality of services provided, and therefore, the satisfaction of citizens.

The limitation of this study lies in the sample since the data were obtained from surveys delivered to households in a rural parish (Tenguel) of the five that exist in Guayaquil, and this means that the data collected is only relevant for this socioeconomic profile. Together with information from other parishes, this study can solve this problem, with a more heterogeneous sample. A second limitation is that this type of study yields results that are expected to be true in all situations. However, more research is needed to see the evolution of citizen perceptions over time.

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