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Management of perceptions of information technology service quality

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ABSTRACT

The present study evaluates the perception gaps of service quality between information technology (IT) service providers and their clients. IT services require high investments, which make analyzing its effectiveness increasingly important. To do this analysis, this study uses the instrument SERVPERF of the SERVQUAL model. The research took place in a large Brazilian retail bank, which identified gaps in perceptions between IT service providers and its clients. The findings suggest opportunities for improvement in the quality of IT services from a strategic alignment perspective, particularly in the following dimensions: tangibles, reliability, responsiveness, assurance, and empathy. The study also indicates some enhancements for the SERVQUAL model.

1. Introduction

Analyzing the effectiveness of IT service components is becoming increasingly important (Jiang et al., 2000). To meet growing user demands organizations allocate high investments toward IT. However, the measures generally analyze IT effectiveness based on products rather than on services. Thus, they provide inconsistent information for decision-making (Pitt et al., 1995; DeLone and McLean, 2003).

IT products like hardware, software, and information system (IS) applications are part of a process of services (development and maintenance of IS applications, management of operational systems, and maintenance of hardware and software), which determine client perceptions about quality (Gronroos, 2000). Quality may result in a competitive advantage for organizations (Porter, 1980), due to differentiation characteristics. Nevertheless, the competitive advantage of an organization starts in its internal processes, which are also the management of intraorganizational demands (Greenhalgh, 2001; Bhatt and Grover, 2005), such as those of IT services.

Therefore, an effective service analysis of the services produced by IT division for other organizational divisions, or IT client divisions, should take into consideration how these clients perceive IT services. According to Gronroos (1988, p. 10), "when the service provider understands how the clients evaluate its services, it can identify how to manage these evaluations and how to influence them in a desired direction." This situation requires "a model of how the customers perceive the service quality" (p. 10).

SERVQUAL is a model that serves this purpose in that SERVQUAL evaluates service quality using a questionnaire containing 22 items divided into five dimensions, namely tangibles, reliability, responsiveness, assurance, and empathy. These elements evaluate both the expectations for agreed services and the perceptions of services previously provided. Both clients and suppliers respond this questionnaire (Parasuraman et al., 1991).

The applicability of the SERVQUAL model to the Brazilian banking sector as an instrument for IT service quality improvement is especially interesting, considering the intensive use of IT and the large amounts invested in technology. In 2004, Brazilian banks invested approximately $1.44 billion in IT, or in other words, 30% of their total investments (FEBRABAN, 2006). In 2006, the number of accounts in Brazilian banks totaled 102.6 million, with clients independently operating over 12 billion electronic transactions using devices like Internet Banking and Automated Teller Machines (FEBRABAN, 2008). The site of this research is one of the top five Brazilian banks that invest in IT. This investment is partly responsible for the bank achieving one of the largest net profits of the sector in 2004, besides being one of the 10 largest American banks in terms of assets. Consequently, its IT Division (ITD) receives, on average, over 250 IT service requests per month from its client divisions, which requires a complex infrastructure of physical and human assets. Based on this situation, managing the relationship between ITD and its clients raises the following question: How is the alignment of IT service quality perceptions between the ITD and its client divisions?

To answer this question, the main objective of this study is to evaluate the different perceptions of IT service quality by questioning

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ITD employees, here also identified as suppliers, and the employees of its client divisions, here also identified as clients, using the SERVQUAL model during a specific period of time. As secondary objectives, this research aims to analyze the perception gaps in the five dimensions of the SERVQUAL model and identify opportunities for the management improvement of the client supplier relationship in IT services. Because the model is not a common sense, the findings add new ways to continue the validity discussion of SERVQUAL, this time based on a sample characterized by intense and strategic IT development, and exploring conceptual elements unpredicted in the original instrument.

Four main sections develop the objectives of this study. The first section briefly reviews previous research about service quality emphasizing IT context, followed by the presentation of the SERVQUAL model, including gap analysis and considerations about factor stability for IT services. The second section presents the method of the research. The third section develops the empirical results, through quantitative and qualitative data analysis. The last section highlights managerial implications and suggestions for future research.

1.1. IT service quality

The definition of service quality is controversial, yet indubitably important to enterprises (Parasuraman et al., 1985). High quality services generate more customer satisfaction, customer retention, profit, cost reduction, and a good image of the enterprise (Buttle, 1996; Jiang et al., 2003). Bloom et al. (2002) define quality services as being those that exceed customer expectations.

1.2. Expectations and perceptions

The definition of expectations is elusive (Oliver, 1986). Parasuraman et al. (1988) state that the expectations of service quality provided to clients are client wishes or needs, or what the service supplier should provide. On the other hand, the perception of service quality performance, contrary to expectations, refers to services executed (Berry et al., 1990) at the very moment the consumer interacts directly with them (Bitner et al., 2000). Therefore, the perception of service quality is a consequence of an evaluative perception of the customer, when interacting with the service at a specific moment in time (Cronin and Taylor, 1994).

1.3. Characteristics of the IT service

Three aspects justify the elusive and abstract nature of the service quality construct (Parasuraman et al., 1985; Cronin and Taylor, 1992): a) service quality is more difficult to evaluate than product quality; b) perceptions on service quality result from the comparison of client expectations and current service performance; and c) quality assessment is not only about the results of the service provided, but also about the process of providing the service. Gronroos (1988, 2000) considers that service quality must take into account both a technical dimension (what) related to results, and a functional dimension (how) related to processes. The former demands a more objective perception from the consumer, whereas the latter demands a more subjective one, considering the relational perspective of service providing.

In the IT context, the results are IT products provided by suppliers according to specifications given by the client. When the supplier does not meet this technical dimension, the client develops an objective perception based on tangible characteristics. However, the functional dimension concerns the process of client–supplier relationships related to the product, which involves intangible variables such as trust, commitment, cooperation, responsiveness, and empathy, among others. These characteristics provide a challenge to establishing quality assessment models for IT services that provide subsidies to IT governance (Pitt et al., 1995). SERVQUAL is a model that serves this purpose and is of interest to this study.

1.4. SERVQUAL model

SERVQUAL is a model of service quality measurement and management (Buttle, 1996). SERVQUAL explores the intangible aspects of providing services, although the model also assesses tangible aspects, albeit in a more superficial manner. The model evaluates service quality using two instruments. Each contains 22 items, distributed into five dimensions (constructs), according to the definitions in Table 1.

The first instrument, SERVEXP, assesses client and supplier expectations related to the service, whereas the second instrument, SERVPERF, assesses client and supplier perception of performance regarding the service provided. Van Dyke et al. (1997) report that the performance perception assessment instrument is more adequate than the expectation assessment instrument, since the latter does not have better psychometric properties than the former.

1.5. Gap analysis

The SERVQUAL model uses both client and supplier perspectives to find the expectation and perception gaps between respondents. A gap represents the mathematical difference between the assessment of performance perception and of expectations for the service required by each respondent, in each item of the five dimensions. The respondent might indicate a perceived service quality below or above expectations, which characterizes the paradigm of disconfirmation (Oliver, 1993).

1.6. Criticisms

Although widely accepted, the SERVQUAL instrument is object of some criticism, mainly: a) the operationalization of perceived service quality as a gap score (Cronin and Taylor, 1992); b) the ambiguity of the expectation instrument (Teas, 1993); and c) the use of a single generic measurement to measure service quality in different types of industry (Babakus and Boller, 1992).

Although criticized, SERVQUAL is still a marketing breakthrough for service quality measurement (Kettinger and Lee, 1999). Fisk et al. (1993) investigated seven marketing studies that use SERVQUAL and conclude that the instrument provides good predictability regarding general service quality. Parasuraman et al. (1988), the developers of the SERVQUAL, defend the model, stating that this model provides the basic structure to support service quality. They also suggest the modification of this structure in terms of item writing and adaptation to specific contexts.

1.7. SERVQUAL and IT

Studies of IT service quality measurement are in their initial stages, and some of them have used the SERVQUAL research instrument and marketing conceptual models (Carr, 2002). SERVQUAL may help IT managers identify the areas that need improvement in service quality,

Table 1
The five dimensions of service quality.

Dimensions	Definition	Number of items
Tangibles (TANG)	The appearance of physical facilities, equipment, personnel and communication materials.	4
Reliability (REL)	Ability to perform the promised service dependably and accurately.	5
Responsiveness (RESP)	Willingness to help customers and provide prompt service.	4
Assurance (ASR)	Knowledge and courtesy of employees and their ability to convey trust and confidence.	4
Empathy (EMP)	The firm provides care and individualized attention to its customers.	5
Total		22

Source: Adapted from Berry et al. (1990).

as well as help researchers searching for successful IT service measurements (Jiang et al., 2000).

Some IT studies do not confirm the model factors, or confirm only part of them (Kettinger and Lee, 1997), and other studies that identify a different amount of factors (Pitt et al., 1995). Thus, the nonconformity of the SERVQUAL factor structure in IT studies suggests its continual evaluation in different IT contexts (Chin and Todd, 1995).

2. Method

This survey is descriptive exploratory of a large Brazilian retail bank and investigates a contemporary organizational phenomenon that is complex and closely related to real life contexts. ITD employees and the employees of its client divisions from business and administrative areas are the respondents. The ITD is responsible for the bank automation, has more than 1500 employees, and develops activities regarding the definition of infrastructure architecture (equipment, telecommunications, basic and support software) and IS (internal management and business; IS processing; and data administration). The ITD provides services to other business and support divisions, which directly affects the experience of its clients. The analysis unit of this research focuses on the quality perception of IT services, both from ITD and its client division standpoint, as well as the alignment between them.

This research applies a survey using the SERVPERF instrument, via an agreement/disagreement Likert scale, with an answer range from 1 (strongly disagree) to 7 (strongly agree). This instrument has greater psychometric properties than the SERVEXP instrument (Parasuraman et al., 1993; Van Dyke et al., 1999) and is more appropriate for transversal studies (Cronin and Taylor, 1992, 1994), which is the present case.

2.1. Selection of the organization and the respondents

Four aspects guided the decision to choose a large retail bank which boasts total assets of over $44.2 billion: a) the intensive use of IT in the products and services offered to its clients; b) the large number of projects of internal automation processes; c) the ITD services provided to other divisions for extended periods of time; and d) the easy research accessibility to the organization and its respondents.

The study selected 708 ITD employees from the bank database with potential relationships with employees of other divisions, the clients. These 708 employees perform mid-management and technical duties, such as those of system analysts or programmers. In regards to clients, the study selected 2409 employees from divisions requiring IT services who work in mid-management or technical areas such as that of the business analyst. These profiles allow a higher level of IT service interaction in that they lead the everyday tactical activities of the enterprise, besides being the main users of such services. Thirty-five ITD employees and 105 employees from other divisions from the selected group of respondents participated in a training program and were the first to answer this survey.

2.2. Survey instrument

The study adapted the survey instrument to the bank context, based on the SERVPERF instrument version applied to IT services (Pitt et al., 1995). Two new items in the *tangibles* dimension explore physical facilities (Pitt et al., 1998), as reception area and meeting rooms, and the availability of IS applications to users, bringing this construct to a total of six items. One of the researchers established a first face validity, based on his long professional experience in IT services.

The new instrument encompasses 24 items, an open item for respondent opinions, two demographic items regarding the total time working in the division and job profile, and a question about the type of interaction with the ITD in the instrument for clients. This last question aims to filter employees with little or no interaction and to identify the type of interaction.

Next, three ITD experts and four clients participated in a pilot test of the new instrument to verify the face validity of the 24 items and the guidelines on how to complete the instrument. Based on the information gained from the pilot test, the revision of the instrument improved the guidelines for respondents and made some items more understandable, as well as excluded the item "desire of ITD employees to always help", considered redundant with the item "ITD employees resolve all questions and doubts even when they are busy." The final version of the instrument for data collection had 23 items.

The Likert scale used seven points, contrary to the original version of five points. According to Hair et al. (1998, p. 186, 187), "the more points you use, the higher the precision you will obtain with regard to the intensity with which the person agrees or disagrees with the statement." Moreover, the authors of SERVQUAL themselves Parasuraman, Berry, and Zeithaml (1991) affirm that this model provides the basic structure to support service quality and that this structure may receive some adjustments to fit specific needs.

2.3. Procedures of data collection and analysis

The standard procedures for this type of survey (Hair et al., 1998) guided the data collection. The data collected are valid for the analysis of the results. In April 2005, 20 ITD employees and 32 client employees participating in internal bank training answered a printed version of the instrument. From April to May 2005, 78 ITD employees and 100 client employees answered the instrument via e-mail. A pre-analysis eliminated unanswered instruments. The return rate was 14.0% of a total of 708 service providers and 5.5% of a total of 2,409 clients. Part of the ITD employees does not interact with the clients, and vice versa. Consequently, these rates are slightly higher.

To assess the differences in perceptions of IT service quality and to test the construct validity of the model, this research analyzed the data factor structure using multivariate analysis techniques such as the exploratory and confirmatory factor analysis. Although different researchers tested the SERVQUAL model in several situations, its factor structure is not uniform for IT services, thus justifying new tests. Before the multivariate analysis, this study explored the data dimensionality

Table 2
Exploratory factor analysis.

Item	Factor				Cronbach's alpha
	1	2	3	4	
TANG1				0.88	0.72
TANG2			0.51		
TANG4			0.81		
TANG5			0.86		
TANG6				0.54	
REL1		0.63			0.89
REL2		0.65			
REL3		0.67			
REL4		0.85			
REL5		0.61			
RESP1		0.75			0.87
RESP2	0.64				
RESP3	0.71				
ASR1	0.76				0.92
ASR2	0.70				
ASR3	0.79				
ASR4	0.80				
EMP1	0.65				0.91
EMP2	0.67				
EMP3	0.60				
EMP4	0.70				
EMP5	0.74				

Table 3
Indices of the measurement model adjustment.

Model	Chi-square	*P*	gl	Chi-square/gl	GFI	NFI	TLI	CFI	RMSEA
Measurement	447.47	0.000	196	2.28	0.85	0.89	0.92	0.93	0.08

using graphical examination, missing data (omitted values) and outliers, and tests for statistical assumptions of multivariate analysis. The necessary modifications ensure dimensionality adequacy.

In the qualitative data analysis of the open question answers, the technique of content analysis helped to identify new categories that symbolize aspects of the quality of the services provided.

3. Findings

This section validates the survey instrument, the analysis of perceived quality levels, and observed gaps. The SPSS® and Amos® 4.0 statistical software packages support the analysis of the quantitative data.

3.1. Respondents

ITD employees (44%) and clients (66%) composed the sample of 228 valid respondents. Twenty nine percent of the ITD employees have worked in the area for 1 to 4 years, 29% for 5 to 10 years, and 42% for more than 11 years. In the category of job position, 32% have management level positions (sector manager or core manager) and 68% have technical level positions (consulting analyst, system analyst, assistant analyst, associate analyst or senior analyst).

In client groups, 40% have interacted with the ITD for 1 to 4 years, 35% for 5 to 10 years, and 25% for more than 11 years. In job positions, 2% of the clients have directorial positions (director, general manager or executive manager), 13% have management level positions, and 86% have technical level positions.

3.2. Construct validation

The exploratory factor analysis examined the underlying standards of the variables observed without the influence of the researcher (Hair et al., 1998). Therefore, analysis verified how the scale items grouped themselves, providing a preview for confirmatory factor analysis. Bartlett's sphericity test (3893.5; $p<0.000$) and the measurement of sampling adequacy (MSA = 0.938) represented the statistical probability that the correlation matrix has significant correlations, as well as the adequacy for using the factor analysis (see Table 2). The results confirm the data adequacy.

The analysis of the results took in consideration the factors with self-value equal to or higher than 1 and used the technique of factor analysis through the extraction of the principal components with VARIMAX rotation. According to the data in Table 2, two factors encompass the variables of the tangibles construct (TANG). Furthermore, the reliability construct (REL) encompasses the first item of the responsiveness construct (RESP). Finally, one single factor combines the factor loads of the other items of responsiveness and the items of the assurance (ASR) and empathy (EMP) constructs. Since the objective is to assess the underlying structure, this stage of analysis considers all the items. Cronbach's alpha indicates good scale reliability of values above 0.7 (Hair et al., 1998) for the groups of variables in the constructs.

Considering the fact that multiple indicators measured a construct, the analysis demonstrates that such indicators justify the construct. The confirmatory factor analysis through structural equation modeling measures the degree in which the survey data responds to the expected model.

Upon verifying the factor loads and the respective statistical tests, the analysis considered three groups of model adjustment measures: a) absolute adjustment measures (RMSEA, GFI), which assess the adjustment of models (structural and measurement); b) incremental adjustment measures (NFI, CFI, TLI), which compare the proposed model with another model specified by the researcher; and c) parsimony adjustment measures (chi-square/gl), which make comparisons between models that present different values in the estimated coefficients to determine the adjustment quantity acquired by the estimation coefficient.

For estimation, this study first built measurement models for each construct that show the relationship between the latent variable (non-observable element) and the scale items (observable elements). When necessary, this study specified the models again after the adjustment evaluation, based on the inclusion of correlations between errors in the same factor. This procedure is possible (Bentler, 2001) since the

Table 4
Perception of users versus perception of ITD and resulting gap.

Const.	Item	Averages		
		ITD	Clients	Gap
Tangibles (TANG)	TANG1. The IT equipment (computer, printer, etc.) that you use for Bank activities is modern, that is, it meets the needs of your activities.	3.9	4.4	0.5
	TANG2. ITD presents visually attractive physical facilities (reception area, meeting rooms, and presentation rooms).	5.5	4.9	−0.6
	TANG3. The Application of Information Technology Service Requirement (application that replaced the executive demand) is easy to use and meets your needs. (ELIMINATED)	3.4	3.9	0.5
	TANG4. The screens of other applications, as well of reports, have a clear language and are easy to understand.	4.4	4.1	−0.3
	TANG5. The operation of the applications is easy and stimulates their use.	4.3	4.2	−0.1
	TANG6. When you try to access the applications required for your job, they are always available (accessible).	5.0	4.3	−0.7
Reliability (REL)	REL1. When the ITD promises to do something for a period of time (consultancy, participation in group work, lend equipment, meetings, etc.), it actually does it.	4.6	3.6	−1.0
	REL2. When you have a problem or a necessity, the ITD shows a real interest in solving them.	4.3	3.6	−0.7
	REL3. When the ITD service is concluded there is no need of corrections.	3.6	3.2	−0.4
	REL4. The ITD delivers its services at the due date, that is, with no delays.	3.8	2.8	−1.0
	REL5. The ITD is known for generating information without errors.	4.3	3.5	−0.8
Responsiveness (RESP)	RESP1. The ITD employees tell you exactly when the services will be performed, that is, the deadline/finish date.	4.1	3.2	−0.9
	RESP2. If you have an urgent need, ITD employees immediately address it.	4.4	3.1	−1.3
	RESP3. The ITD employees resolve your questions and doubts at the appropriate time, even if they are busy.	4.6	3.6	−1.0
Assurance (ASR)	ASR1. The behavior of ITD employees inspires you with trust.	5.0	4.2	−0.8
	ASR2. You feel safe when relating to the ITD.	4.9	3.9	−1.0
	ASR3. The ITD employees are always assured when responding to your questions.	4.9	4.3	−0.6
	ASR4. The ITD employees have the required knowledge to resolve your questions and doubts.	5.3	4.6	−0.7
Empathy (EMP)	EMP1. The ITD gives you individualized attention.	4.1	3.4	−0.7
	EMP2. The ITD provides services at a convenient schedule for you.	5.1	4.3	−0.8
	EMP3. The ITD has employees who give proper attention to your needs.	4.9	3.7	−1.2
	EMP4. The ITD shows real importance to essential needs you presented.	4.6	3.4	−1.2
	EMP5. The ITD employees understand the specific needs presented by you.	4.7	3.9	−0.8

Table 5
Emergent categories of IT service quality.

Emergent categories	Elements	Relations with the SERVQUAL dimensions
Service	Supplier's service to clients, including telephony, schedules and access to qualified people to solve the problem.	Responsiveness, empathy
Competence	Set of knowledge and abilities needed to perform well in the ITD division.	Assurance
Demand	Attributes clients expect from the supplier to fulfill the request for projects or services: (ability of) definition; understanding; flexibility; commitment; fulfillment of deadlines.	Responsiveness, empathy
Solutions	Results of meeting the clients' demand: delivery of products and/or services; credibility of the solutions offered.	Reliability, assurance, tangibles
Communication	Information channels available, including internal communication for ITD employees and external communication for clients of other divisions.	Responsiveness

theory will always be unable to predict exactly all the sources of correlation among the data. This study implemented adjustments by correlating errors of the same factor to improve the model concerning the TANG and ASR constructs. In this stage, the findings confirm the convergent validity of all constructs.

Nonetheless, the findings do not confirm the discriminant validity due to problems identified in the following construct pairs: RESP and REL; RESP and ASR; RESP and EMP; REL and ASR; REL and EMP; and EMP and ASR. The factor loads present quite reasonable magnitudes (above 0.5) for practically all items, except for the variables TANG1 (0.29) and TANG2 (0.42) in the *tangibles* dimension.

The last stage of the confirmatory factor analysis was the evaluation of the model adjustment indices (see Table 3). The chi-square/gl relation of the model is quite satisfactory (2.28), which indicates that the estimated matrix corresponded well to the observed matrix. The other indices are also satisfactory. All have magnitudes close to the values considered good models (above 0.9 for GFI, NFI, TLI and CFI; and below 0.08 for RMSEA). Therefore, the factor structure is valid, although the structure retains reservations concerning the discriminant validity.

3.3. The perceived service quality level and the resulting gap

Based on the quantitative data collected from the survey, this study initially assessed the service quality level perceived by clients and ITD employees (supplier) and the gap between these perceptions in each item of the questionnaire. A positive gap means that the services provided were satisfactory to the clients, whereas a negative gap indicates that the service performance was unsatisfactory (Jiang et al., 2000). If the gap is zero, the perceptions of the clients and supplier are the same.

The findings in Table 4 show that ITD clients are dissatisfied in relation to the services provided (negative gaps), which indicates that client perceptions are lower than those of employees who work in the IT division. Only the item TANG1 has a positive gap, which presents a low factor load in the measurement model and would thus need revision. Moreover, the variable with regard to the operation of applications (TANG5) is the only one with a value close to zero, which indicates that the perceptions between clients and suppliers are similar.

Considering the variables with negative gaps, the largest differences of opinion fall under the category of empathy (EMP3: ITD employees give proper attention to client needs; and EMP4: the ITD gives real importance to essential needs the client presents) and responsiveness (RESP2: ITD employees immediately address urgent needs). The users demonstrate dissatisfaction with the level of importance ITD employees give to their problems, with the amount of attention they give to solving their needs, and with the priority given to their urgent requests.

Content analysis of the answers given to the open question "Make comments you consider pertinent about the quality of services provided by the ITD, covered or not by previous items of the questionnaire" identifies the cause of such dissatisfaction with the services. The content analysis follows recommendations by Silverman (2001) to obtain categories emerging from answer patterns. Five new categories emerged from high frequency answers regarding the potential causes of client dissatisfaction with the quality of IT services provided, all related to the SERVQUAL model dimensions (see Table 5).

Table 6 presents some quotes that represent the quality perception by ITD clients, which justify the five new categories identified through the content analysis.

4. Discussion and conclusion

This research considers that evaluating the alignment of IT service quality perceptions between ITD employees and IT client employees is a factor of strategic importance between IT division and other divisions. This alignment results when values are close to zero. Positive values

Table 6
Quotations by respondents of ITD client divisions.

Categories	Client's quotations
Service	"The telephone service is not good enough... Sometimes we call and the phone rings... rings… rings and you have to give up because nobody answers it…"
	"Regarding the fact of resolving questions and doubts it is still difficult to locate the right person to answer exactly what you need to know…"
Competencies	"I understand that the worst problem at ITD is not personnel quality, in my opinion they have a high standard. The worst problem is the lack of personnel or the way they are organized…"
	"I suggest sharing the knowledge by job turnover and constant training, to manage the ITD knowledge in a way that it is not exclusive of a single employee…"
Demand	"The ITD, through instruments of service requirement, has a bureaucracy that blocks both the requirement and the execution of any alteration requested to a program. Everything is too slow…"
	"It is complicated to send a demand, which is almost never fulfilled…"
	"To make technology demands efficiently met, it is necessary to directly follow the demander, searching for periodic information about the project status and timely execution…"
Solutions	"The applications must guide the user, without the need of looking for help or attending a training program to use them…"
	"The work is always done in a hurry, without assessing the risks…"
Communication	"When there is a problem in the systems, the ideal is to have a messenger informing the manager what is happening, so that the ITD Call Centers may be warned and have conditions to provide information to the Bank's branches. Nowadays this is done by telephone…"
	"The main problems presented by the ITD are related to the deadlines to meet the requests, which almost never correspond to the client's needs, besides the lack of interaction between the parts in the development of the product/service and the lack of a global vision of the environment in which it is being developed…"

Table 7
Service quality: gap of perceptions and emerging elements.

Dimension	Gap	Emergent categories
Tangibles (TANG)	−0.1	Solutions (delivery of products and services)
Reliability (CONF)	−0.8	Solutions (which must be properly communicated)
Responsiveness (RESP)	−1.1	Service, demand
Assurance (ASR)	−0.7	Solutions (delivery of products and services), credibility
Empathy (EMP)	−1.0	Demand (definition capacity, understanding/comprehension, commitment and compliance to deadlines)

indicate that user assessments surpass those of suppliers. Thus the organization can reduce or simply maintain efforts related to the elements of alignment. Conversely, negative values indicate needs that ITD must satisfy. This research provides an overview of how an organization as a whole sees IT activities, a view that may diverge from the ITD perception of itself.

From the client relationship perspective, the findings indicate that the SERVPERF instrument is a valid measurement of the perception of IT service performance due to its emphasis on the functional dimension (process), despite the technical dimension limitation of its original version. Nevertheless, the SERVQUAL model can receive some modification to better adapt the model to specific contexts (Parasuraman et al., 1991). Thus, these findings do not confirm the factorial model structure of SERVQUAL, however, they do indicate the need to continue its validation process in IT services. From the client perspective, the complexity of IT services may have some influence on the results obtained. However, the model is helpful in narrowing communication with clients and for the IT area to reflect on its client needs. According to Table 7, quality dissatisfaction occurred in both technical (*tangibles*) and relationship dimensions (*reliability*, *responsiveness*, *safety*, and *empathy*).

Table 7 also contains evaluation categories that emerged from the analysis of the open question, concretely portraying elements that are part of client perceptions. Further studies regarding IT service quality should incorporate them in the measure instrument, testing modifications in order to make them better adapted to the strong relationship-oriented context.

The poor evaluation in the solutions category can result from the high expectations clients ascribe to their projects, or the lack of a clearly defined requirements that lead clients to think that new versions of a product or service will require further versions. Consequently, both service volume, time for service execution, and priority criteria affect credibility. Another observed situation that affects credibility is the outsourcing of certain project phases, judged by some clients as harmful to individual and organizational commitment. Telephone support, perceived as an important client access channel, deserves special attention in the analysis of service quality.

Findings in the demand category indicate a gap between the perceptions of suppliers and clients, predominantly in what refers to the definition of demand, and which leads to an exchange of excuses between them. Lack of clarity on one side and lack of support on the other one harm the subsequent process. Without a clear definition, the meaning of demand remains obscure, incurring complaints from both sides and causing a negative impact on final product delivery. Still another issue highlighted is supplier flexibility with respect to the project execution process. An excessively bureaucratic process in the ITD, along with the necessary corrections and validations during the development process, may harm service delivery.

Commitment is very important to the image that clients create about suppliers and the work they develop. Any weakness in this perception may cause distrust and consequent project abandonment, with clients moving to the market to buy similar products. However, clients recognize the overload of projects in an understaffed IT division to meet demands. This recognition mitigates the negative perception associated to the lack of deadline compliance. Still, the organization must urgently deal with the issue to prevent the start a vicious circle of demand, deadline non-compliance, demand, and so on.

Among the limitations of this research is the reduced possibility of result generalization, since the survey took place in one single organization and the model validation was partial. The complexity inherent to IT services, which involve tangible dimensions of technical nature and intangible dimensions of relational nature, can explain this partial validation.

Considering the importance of perception alignment to improve service quality management, as well as the importance of ready, reliable, simple, and valid measurement instruments, this study suggests further IT studies. These studies should include the emerging categories to evaluate IT service quality, besides using a representative sample of the banking industry in order to incorporate the conceptual elements that stemmed from the SERVQUAL qualitative analysis (see Tables 5 and 7).

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