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IT Service Quality Perspectives in Greek SMEs

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ABSTRACT

IT services quality is an important topic due to the digital transformation of contemporary organizations, especially for SMEs that lack dedicated resources to quality. In an attempt to investigate the level of adoption of IT service quality theory and practice by SMEs in Greece, it was revealed that not all stakeholders share the same understanding due to the various perspectives they have about IT service quality. In an initial research round, stakeholders were asked to identify situations that indicate, to their view, a quality problem and possible remedies. Based on the answers, twelve IT service quality perspectives were identified, which were then ranked by another set of respondents to reveal very low levels of congruence among their perspectives. Implications for this variety of IT services quality perspectives are discussed as concluding remarks.

Keywords: Information technology quality, IT service quality, IT SME quality, quality perceptions.

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I. Introduction

As organizations are becoming more digital, dependency on IT is increasing and, thus, quality of IT services is of paramount importance for all types of organizations. IT quality is either initiated as part of a total quality management / business excellent program, or, quite frequently, by the need of the IT unit to deliver more value to internal and external clients. More and more, IT quality is also a by-product of an IT governance programme that organizations are obliged to run. Especially so, if the organizations belong to a highly regulated sector with strict compliance requirements, or quality comes as a CIO's decision to ensure more satisfied clients of the IT services offered. One way or another, internal and external stakeholders of contemporary organizations are asking for higher levels of IT quality, since consumption of IT services lies at the core of almost every business activity nowadays.

In a recent research, the relationship between information systems' (IS) quality and organizational impact is modeled, "highlighting the importance of IS service quality for organizational performance."[1] Therefore IS service quality in not only a topic for the IT staff but also affects the perceptions and the performance of the rest of the business people. Given the importance of IT services quality for the organizational performance, this research aimed initially at investigating the level of assimilation of quality management methods and tools in the IT unit of SMEs in Greece and the satisfaction of their customers, using models such as SERVQUAL, ITIL/ISO 20000 etc. "The SERVQUAL questionnaire [2] is one of the preeminent instruments for measuring the quality of services as perceived by the customer." [3] However, during the preliminary stages of discussing with various stakeholders, it was revealed that there is no common understanding of what IT services quality constitutes. Therefore, the research shifted focus towards finding out the various perspectives of IT service quality and their relative importance as perceived by IT and non-IT stakeholders in various Greek SMEs.

Adoption of total quality management by SMEs has been slow [4]. "It is believed that the adoption of TQM in SMEs must not be a fully blown approach but a gradual progression and selection of appropriate quality tools and initiatives as and when necessary, with the ultimate aim of continuous improvement in the organisation." [5]. Moreover, IT quality management assimilation is not an easy task for SMEs. An empirical study of Indian SMEs in the IT Sector in software quality initiatives concluded that "the respondents involved all three managerial levels and statistical results reflect the non-realization of quality management practices in software development. The SMEs under study were aware of the importance of quality management practices but had not implemented the same in the organization which is one of the basic requirements for the success of any software." [6] A prerequisite for successful implementation is obviously the common understanding of what IT service quality constitutes, which cannot be taken for granted, as it was found in our research. "The search for a universal definition of quality has yielded inconsistent results" [7] and the proliferation of quality management principles especially in the area of SMEs is still problematic.

To examine thoroughly the IT service quality perspectives in Greek SMEs, a first set of twenty stakeholders, both IT and non-IT, representing mainly IT intensive SMEs from various industry sectors were

interviewed with two main questions: (a) please identify the three most common situations that indicate a quality problem in IT services quality, (b) please provide the three most important ways to address IT services quality problems that would alleviate the problems indicated by the previously mentioned situations. After having collected answers to these questions, we have arrived at the most common IS service quality perceptions, which another set of twenty SME stakeholders, IT and non-IT executives, were asked to rank. Outcomes of this survey are presented and analyzed.

II. Design of the Survey

To test common understanding among stakeholders about quality, interviewees were asked to name the most common situations, according to their view, that indicate a quality problem in IT services. The outcome is this list.

1. Production incidents / unexpected errors
2. Difficulty in changing production functionality
3. Lack of or retrospective documentation of functionality
4. Inability to modify initial functional and/or technical design
5. Customer complaints
6. Low acceptance / adoption rate by customers
7. Lack of consistency in managing problematic situations
8. Variety of response times in production incidents
9. Inadequate transparency of communication from IT to business when problems occur
10. Inadequate transparency of time and effort necessary to develop and support IT services.

In earlier times of the IT services, when IT quality was still in its infancy, quality was only determined in terms of the most significant demonstrable features. This is best exemplified, by the work of [8], who had identified the following as the most important quality factors for software-based products:

- Correctness
- Modifiability for corrective, adaptive and perfective changes
- Portability over different hardware and operating systems
- Testability
- Usability
- Reliability
- Efficiency
- Integrity
- Reusability
- Interoperability.

Newer research on the technical perspective of the quality of an information system suggests that the quality lies in the relationship among quality, architecture, and process. Thus, Russo et. al. introduced "a novel meta-model, named SQuAP (Software Quality, Architecture, Process), which is intended to give a comprehensive picture of ISQ by abstracting and connecting detailed individual ISO models." [9].

Those 10 aforementioned situations that indicate a quality problem can be categorized into four main types of viewpoints of IT quality issues: IT internal and IT external view, internal and external customer's view. All of these views are taken into account when an IT balanced scorecard is shaped by an organization to measure business alignment between business and IT objectives as well as govern the IT management decisions. A generic IT balanced scorecard has been described by [10]; their ideas have fertilized the production of IT quality metrics which are meaningful and actionable from an organizational viewpoint.

Given the aforementioned situations that indicate poor quality, interviewees were asked to propose methods to approach quality for IT services. The main 24 keywords / key themes of the answers given are listed as follows in alphabetical order:

- "After-sales" support
- Agile IT services design.
- Best business value
- Better communication between supply and demand around IT services
- Consistency
- Customer-oriented procedures
- Document templates
- Easy to use
- Effective procedures for developing new IT services
- Faster time-to-market for new IT services
- Frequent quality audits
- Get what you pay for
- High product quality
- High quality business requirements and functional specifications
- Integrated quality system
- ISO standards
- Key performance indicators in quality & metrics
- Quality assurance
- Quality excellence , e.g. EFQM
- Quality standards
- Reliability
- Satisfied customers
- Software Tools for quality control
- Use Acceptance Testing
- Value for money
- Zero-based design, listen to the customer

Grouping these 26 keywords as per their conceptual affinity, we have arrived at 12 statements that reflect the perspectives of IT services' quality as emerged from the answers of the interviewees. Some of these perspectives lean themselves to definitions of quality given by the gurus of the quality management literature over the years.

i. Quality control – elimination of functional problems & fit to purpose. The fitness to use is the definition of quality given by [11]. In the IT function world, it mainly corresponds to the testing phases of information systems development methodologies.
ii. Value for money. This is the implicit definition of quality for whatever can be purchased. It means that the cost of not investing in an IT service is higher in the long run than the cost of acquisition of alternative solutions.
iii. Quality assurance (i.e. compliance to standards, conformance internal and external requirements and specifications). Conformance to specifications is the Crosby's definition of quality [12] and relies on the

concept of cross-checking the outcome of each step of the production process to the original customer or legal or regulatory requirement.

iv. End-Customer satisfaction (no complaints, voice of the customer, customer appraisals etc.). "IS researchers have normally assumed that satisfaction is the key factor influencing IS customers' reuse of services; however, a focus on customer satisfaction does not always guarantee customer retention." [13] However, customer satisfaction metrics are becoming popular among IT service providers. The widespread use of the 'rate this application' widgets in web and mobile applications has helped a lot the proliferation of such a mentality for IS services. The perception of quality from the customer perspective is grounded on Deming's thinking [14].

v. Standardization (from simple templates to ISO or other international standards). Early attempts to introduce quality standards in IT services were based on standardization of document templates, of project tasks, of development methodologies. ISO standards are getting more popular in the IS function with a view to apply globally accepted best practices in IS management. A recent study "revealed that Greek ISO certified SMEs, emphasize performance appraisal, invest in quality elements that require minimum usage of their resources and prioritize their ISO certification." [15].

vi. Business objectives met. Since technology is expensive and IT budgets more and more represent larger portions of the entire organization's budget, the need to demonstrate contribution to the achievement of business objectives is getting pushier.

vii. IT quality is one part of the overall organizational quality. In organizations focused on total quality management, IT services is not an exception. Therefore, IT quality is integrated in the organizational effort for quality improvement.

viii. Well-defined procedures with metrics. This represents the next step after standardization, for organization where the level of adoption of quality is not mature enough.

ix. Information systems alignment with business strategy, goals and objectives. In a research "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." [16].

x. Information systems features such are no down time, high responsiveness, high aesthetics etc. This perspective represents in essence the IT interpretation of the eight dimensions of quality for products, namely performance, features, reliability, conformance, durability, serviceability, aesthetics, and perceived quality [17].

xi. Good results from internal – external audits. In an attempt to measure objectively the level of quality, success in process audits from internal and external IT auditors is a means for understanding and communicating sustainably the quality level of IT services.

xii. Quality is mainly a communications problem among all the stakeholders. Communication issues in requirements elicitation is often the root cause for offering IT services very low adoption [18].

It is good to see that these statements reflect both IT internal – IT external views as well as internal and external customers' views. We have then asked 20 executives to rank those 12 statements according to "how much they fit to your perception of Information Systems' services quality in your (SME) company" from the most significant to the least one. It has been proposed [19] that SMEs can be classified in three groups according to their attitudes against IT: SMEs with low / medium / high use and adoption of IT. Most of the respondents represent SMEs at high end of IT adoption and usage, expecting that they may have a better idea about of concepts of IT services quality. The results are shown in the following section.

III. Analysis of the Survey Results

Results have been analyzed in two dimensions: priorities and congruence of opinions. In terms of priorities, the mean value of all the answers collected has been calculated and then, sorting on the mean value of the significance, the following priorities have been shaped:

TABLE I: IT SERVICE QUALITY PERSPECTIVES IN ORDER OF SIGNIFICANCE

	IT quality perspective	Median Value	Order of significance
I	Quality control – elimination of functional problems & fit to purpose	3	1
VI	Business objectives met	3	1
IV	End- Customer satisfaction (no complaints, customer appraisals etc.)	3	1
X	Information systems features such are no down time, high responsiveness, high aesthetics etc.	4	2
IX	Information systems alignment with business strategy, goals and objectives	5	3
II	Value for money – whatever that means	5	3
III	Quality assurance (i.e. compliance to standards, internal and external requirements and specifications)	7	4
VIII	Well-defined procedures with metrics	8	5
VII	IT quality is one part of the overall organizational quality	8	6
V	Standardization (from simple templates to ISO or other international standards)	9	7
XI	Good results from internal – external audits	11	8
XII	Quality is mainly a communications problem among all the stakeholders	12	9

It is clear that the following have been identified as the most popular IT service quality perspectives:

- Quality control – elimination of functional problems & fit to purpose: all stakeholders expect that IT services function error-free and implement the functions for which they have been developed. Defective IT services in either business or IT terms can be easily recognized by IT and non-IT users making this aspect of quality the most obvious one.

- Business objectives met: it is interesting to see such a quality perspective in the top tier ranking, coming mainly from non-IT people. It denotes the anxiety of business people who are accountable for requesting IT investments to see that IT services meet indeed their business objectives for which they bear responsibility.
- End-Customer satisfaction (no or low number complaints, customer appraisals etc.). This preference on customer centric orientation is quite common as a quality perspective, since it is something measurable, meaningful and actionable.
- Information systems features such are no down time, high responsiveness, high aesthetics etc. This perspective comes mainly from IT people since it is obvious that corresponds to the product viewpoint of IT services.
- Information systems alignment with business strategy, goals and objectives. It is interesting to see that mainly senior IT people have ranked highly this perspective. Meaning that senior IT staff is clearly concerned with business strategy, goals and objectives in an attempt to claim that IT services do provide results at business level.
- Value for money. Again this perspective comes exclusively from business stakeholders who need to justify their cost-benefit requirement for spending expensive IT resources.

To reveal whether there is congruence in the opinions of the respondents in the order of significance of the IT service quality perspectives, the deviation for each perspective (i-xii) has been calculated. Zero deviation means unanimity, low deviation shows congruence, higher deviation shows divergent views over the perspectives.

Table II: DEVIATION OF OPINIONS AS PER THE ORDER OF SIGNIFICANCE OF THE PERSPECTIVES

	IT quality perspectives	Deviation
VI	Business objectives met	1.83
IX	Information systems alignment with business strategy, goals and objectives	1.87
III	Quality assurance (i.e. compliance to standards, internal and external requirements and specifications)	2.13
XII	Quality is mainly a communications problem among all the stakeholders	2.20
VII	IT quality is one part of the overall organizational quality	2.23
XI	Good results from internal – external audits	2.25
I	Quality control – elimination of functional problems & fit to purpose	2.33
V	Standardization (from simple templates to ISO or other international standards)	2.43
VIII	Well-defined procedures with metrics	2.66
X	Information systems features such are no down time, high responsiveness, high aesthetics etc.	2.78
II	Value for money – whatever that means	2.88
IV	End-Customer satisfaction (no complaints, customer appraisals etc.)	3.29

Table II reveals at a first glance that there is no congruence of opinions among the respondents, meaning that the concept of IT services quality has different connotations among the various SME stakeholders, since strong deviations reflect different viewpoints and variation in priorities and perceptions.

TABLE III: COMBINED RESULTS: ORDER OF SIGNIFICANCE AND DEVIATION

	IT quality perspective	Order of significance	Deviation
I	Quality control – elimination of functional problems & fit to purpose	1	2.33
VI	Business objectives met	2	1.83
IV	End-Customer satisfaction (number of complaints, customer appraisals etc.)	3	3.29
IX	Information systems alignment with business strategy, goals and objectives	4	1.87
X	Information systems features such are no down time, high responsiveness, high aesthetics etc.	5	2.78
III	Quality assurance (i.e. compliance to standards, internal and external requirements and specifications)	6	2.13
II	Value for money – whatever that means	7	2.88
VIII	Well-defined procedures with metrics	8	2.66
VII	IT quality is one part of the overall organizational quality	9	2.23
V	Standardization (from simple templates to ISO or other international standards)	10	2.43
XI	Good results from internal – external audits	11	2.25
XII	Quality is mainly a communications problem among all the stakeholders	12	2.20

Normally, IT service quality perspectives with higher order of significance had been expected to be combined with lower levels of deviation, i.e. higher levels of congruence, if there were dominant views among respondents regarding the priorities. This is not obviously the case.

If SME stakeholders were agreeing upon the perceptions, then deviation would only increase as the order of significance gets lower. This is a strong indication for non-aligned views among the respondents of the survey. The finding of this survey verifies how much dispersed are the views of the stakeholders, evidence that quality perspectives vary across organizations, due to the multi-dimensional concept of quality and the different experiences carried by the respondents.

Probably these deviations may also be influenced by the diversity of IT services, whose perceived quality depend on a different number of factors for each one of them. For example:

- an empirical study of on SMEs employees perceptions about cloud computing identified the following factors: the perceived benefits, disadvantages and risks, communication process, overall experience of using cloud computing services, perceived image, and empathy regarding the cloud computing services. [20]
- different determinants of e-service quality are proposed by [21]: "e-service quality has incubative and active dimensions for increasing hit rates, stickiness, and customer retention. The incubative dimension consists of: ease of use, appearance, linkage, structure and layout, and content. The active dimension consists of reliability, efficiency, support, communication, security, and incentives."

- service quality dimensions identified as important in e-commerce SMEs include credibility, expertise, availability and supportiveness. [22]
- a 10-dimension scale for measuring e-service quality proposed by [23]: Website design, reliability, fulfillment, security, responsiveness, personalization, information and empathy from the e-service provider perspective, and trust and experience from the customer perspective.

The differentiation of these factors across IT services and across sectors as well as different levels of adoption of quality management principles and methodologies may well explain the divergent views revealed by the survey. After all, SERVQUAL model is only a set of principles that need to be adapted to the particular object of study because different dimensions are appropriate for different services settings. The dimensions of the generic SERVQUAL model are reliability, responsiveness, assurance, empathy, tangibles [24]. It would be interesting for another research to investigate who these different factors/ dimensions of IT services quality affect the perception and priorities of SMEs about IT service quality.

IV. Concluding Remarks

The phrase "Quality is everybody's job, but because it is everybody's job, it can become nobody's job without the proper leadership and organization" has been attributed to Feigenbaum, one of the quality management gurus [25]. A prerequisite for becoming everybody's job is a common communication language among all stakeholders, which can be easier in larger organizations, despite their mass, but more difficult for SMEs where people play various roles and few of them have the luxury of employing experts in quality.

This lack of common communication language regarding the various quality perspectives in the sensitive area of IT services has been researched by this study. Business people require high quality IT services and IT people strive to achieve quality targets, but the opinions and views about the relevant expectations are not aligned due to the different perspectives of the stakeholders. Given that quality is multi-dimensional [26] and that IT service quality aims at increasing the level of IS success which has an impact on the overall organizational performance [27], strong leadership and organization is needed indeed to reconcile the perspectives and build an appropriate quality culture where all stakeholders may expect the same outcomes when referring to quality management concepts.

This study, aimed at revealing the level of common understanding of the IT service quality in a sample of Greek SMEs, has shown that the views of the stakeholders in this area are still quite dispersed. Such a lack of congruence in quality perceptions is creating frustration and divergent expectations among stakeholders and becomes an obstacle for agreed key performance indicators. Therefore, to alleviate the problem, SMEs are recommended to:

- Execute formal training of their staff in total quality management,
- Set the same level of quality expectations both from IT and business staff,
- Establish agreed metrics, based on the results from a study that suggests: "system quality, information quality, user IS characteristics, through their effects on employee IS performance, influence service quality, while technical support influences service quality directly." [28].

Setting up a common language for quality is also inextricably interwoven with defining a model or scale for measuring IT service quality, such as the 8-dimensions one proposed for e-service quality [29] or the software as a service (SaaS) quality model [30].

As further research on this research, it is interesting to investigate the impact of the various dimensions of IT services quality on the relevant perceptions and priorities of SMEs stakeholders.

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