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Measuring IT Service Quality: Evaluation of IT Service Quality Measurement Framework in Industry

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ABSTRACT

IT service quality is determined by the value that the IT service brings to both the IT service provider and its customers, but service value is not measured in most IT service organizations today. We describe the fourth iteration of our IT service quality measurement framework and report on the evaluation of the framework in the Australian IT service industry. The data was gathered from 63 IT service providers through an online survey. The paper focuses on the application of the proposed IT service quality measurement framework in industry as well as the importance and feasibility of measuring and interlinking various IT service quality aspects. An important finding is that although the majority of respondents recognize the importance of IT service value, very few providers actually measure the value of their IT services. The findings also support the importance of taking a systemic approach to IT service measurement. It is clear that various service areas are inter-linked: IT service stability impacts on customer satisfaction, and process performance affects IT service stability. With the exception of three indicators, all the proposed indicators and measures were applied in the surveyed IT service organizations. Further efforts to confirm these findings will be under-taken within the global IT service industry.

KEYWORDS

IT Service, IT Service Quality, IT Service Quality Measurement, Evaluation, Online Survey.

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1. INTRODUCTION

In order for the IT service providers to sustain and improve their business, they have to guarantee the stable quality of their IT services. IT services are complex because they are delivered via a combination of many components e.g. hardware, operating system software, application software, telecommunication network devices. Continual updating is required to exploit the facilities of new technologies (den Hertog 2000). Changes to any of these components can affect the viability and quality of the IT service provided. Several service quality models have been proposed and tested in applied research in the last three decades but there is still a lack of consensus about service quality concepts and service quality measurement (Martinez & Martinez 2010).

Most service quality measurement efforts have been limited to the implementation of SERVQUAL (Parasuraman 1985) and ask customers simple questions when service interactions are completed. IT service quality is a complex multi-faceted construct that depends on the value that the IT service brings to the business of both the IT service provider and its customers, yet rigorous measurement of IT service value is still not conducted in most service organizations (Lepmets et al. 2014; Spohrer et al. 2007). IT service quality could adopt more rigorous approaches that interlink with software engineering practice. Martinez & Martinez (2010) also suggested that more creative service quality models could be developed on the basis of qualitative research.

This study builds on the previous works describing the development of the IT service quality measurement framework in 2011 (Lepmets 2011), which was extended in 2012 (Lepmets et al. 2012) and evaluated in 2014 (Lepmets et al. 2014). This paper describes the fourth iteration in building and evaluating the IT service quality measurement framework. The aim of the study is to understand the benefits and feasibility of using the IT service quality measurement framework for IT service quality improvement. While the preceding evaluation was carried out through in-depth case studies with six IT service providers in Australia, Luxembourg and Spain (Lepmets et al. 2014), the paper at hand broadens the evaluation as the data was now gathered through an online survey from 63 Australian IT service providers.

As a result of this study, we can confirm that all the proposed measurement indicators of

the IT service quality measurement framework were applied in the studied IT service industry with the exception of three. The study also proposes an additional indicator that should be added to the framework to measure customer satisfaction.

The paper is structured as follows. The research method and approach are described in the next section, followed by the description of the IT service quality measurement framework. The data collection and data analyses are provided in Sections 4 and 5, respectively. The paper ends with a short summary and sets an agenda for future research to evaluate and finalize the framework.

2. RESEARCH METHOD AND APPROACH

This study follows the design science research paradigm that is based on constructive research. The design science paradigm is fundamentally about problem-solving and it seeks to create artefacts to solve identified organizational problems (Hevner et al. 2004). Rather than posing theories as in natural science, design science strives to create models, methods, and implementations that are innovative and valuable (March & Smith 1995).

As shown in Figure 1, in design science a method or model is first *built* for specific purposes, and then *evaluated* to determine how well it works (March & Smith 1995). In *building* an artefact we first have to demonstrate that it is needed, i.e. we have to illustrate the problem relevance as described by Hevner et al. (2004), and that the artefact can be constructed to address an important organizational problem (March & Smith 1995). Once the artefact has been built, we need to know if it performs the specific task it was built for, i.e. we have to answer the question "does it work?." In order to know how well the artefact works, the artefact must be *evaluated* scientifically to see if any progress has been made compared to existing solutions. Design science research efforts may begin with simplified conceptualization and representation of problems but with the changes in organizational environments, assumptions made in prior research may become invalid and need to be revisited and the artefact refined. Evaluation is therefore an iterative cycle where rigorous scientific evaluation methods are used (Hevner et al. 2004) to review and refine the artefact.

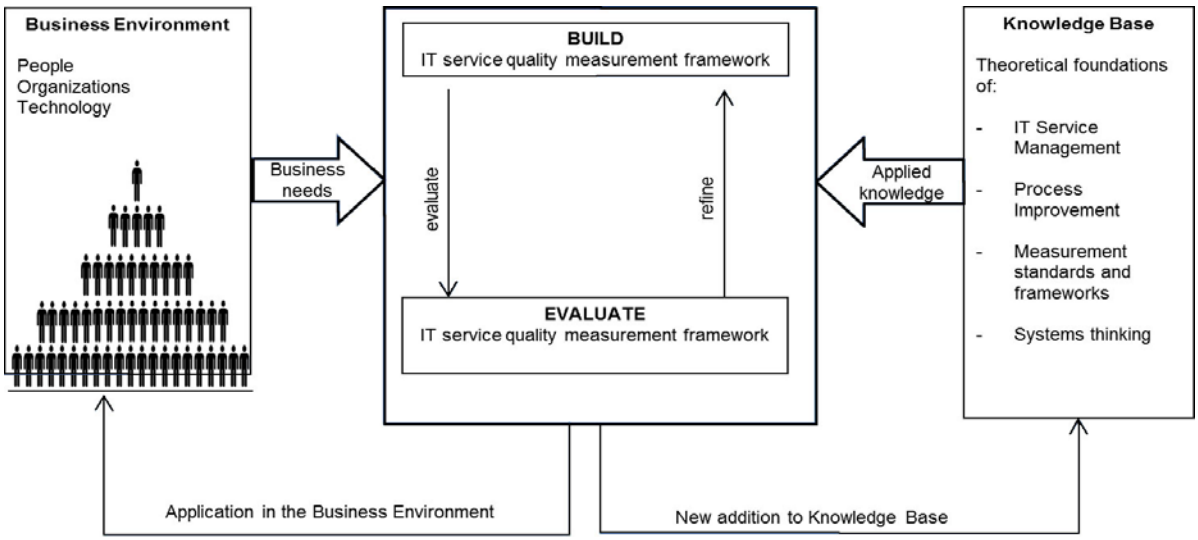

Figure 1. Design Science Research Paradigm (adapted from Hevner et al. 2004)

Following the principles of constructive research (Järvinen 2001), we first developed an IT service quality measurement framework based on existing knowledge in different domains (Lepmets et al. 2012), and we now evaluate the framework in industry to determine its validity with a sample of its end-users. Validity means that the framework works and does what it is meant to do; that it is dependable in operational terms in achieving its goals (Gregor & Hevner 2013).

The first evaluation of the IT service quality measurement framework in five IT service organizations revealed that the view of IT service quality is fragmented in industry. This fragmentation stems from the fact that despite being regarded as vitally important by the interviewed managers, the interrelationships between the measures of the different common issue areas were in most cases not considered or quantified. For example, the impact of process improvement on IT service quality was detected mainly by the improvement in customer satisfaction but was not related to other common issue areas. The managers suggest that for clear interrelationships between these common issue areas, the IT service quality requirements should be reflected in the goals of the IT service management processes. In other words, goal alignment would allow building these missing links between the different IT service quality dimensions moving closer to a more holistic view of the IT service quality (Lepmets et al. 2014).

To perform a more detailed evaluation, we extended the sample population by conducting an online survey with members of the IT service industry in Australia. The survey was online from December 2013 until March 2014 and was distributed by the Australian chapter of IT service management forum. This paper reposts on the results of the online survey.

3. DESCRIPTION OF THE FRAMEWORK

Although different aspects of IT service quality are often measured in industry, they tend not to be systemically analyzed to support *provider-driven* IT service quality improvement. We intend to fill that gap. The aim of building the IT service quality measurement framework (ITSQM framework from hereon) was to propose a set of measurable elements that make up a service offering that the service providers can improve. The elements of the framework were drawn from widely used standards and frameworks from software engineering and IT service domains: Practical Software and Systems Measurement (PSM 2000), Software product Quality Requirement and Evaluation (ISO/IEC JTC1 SC7 2009), IT Infrastructure Library (ITIL) (Lloyd & Rudd 2007), SERVQUAL and ISO/IEC 20000 (ISO/IEC 20000-4 2010). The categorization of the measures followed the SQuaRE standard and the measurement process elements were derived from the PSM approach, which provides generic elements for quality measurement. Many of the basic concepts of PSM have been formalized in the Software Measurement Process standard (ISO/IEC 15939) and are closely related to other measurement approaches. We extended the use of the PSM measurement elements by applying them to the IT service quality domain. The measures of the framework were based on ITIL and ISO/IEC 20000. In the process performance dimension of our framework, the process compliance measurement category addresses the compliance with various standards such as the ITSM process assessment model (ISO/IEC 15504-8).

The ITSQM framework is illustrated in Figure 2. The six common issue areas are shown in the inner circle of the framework: IT service quality, information system quality, process performance, customer satisfaction, service behavior, and IT service value. Each common issue area is divided into measurement categories (25 in total). Each measurement category in turn has from one to three unique measures. Each measure has one or more measurable indicators that are not illustrated in Figure 2. These indicators, 74 in total, are the low-level

measures that are collected by organizations to provide insight into the common issue areas.

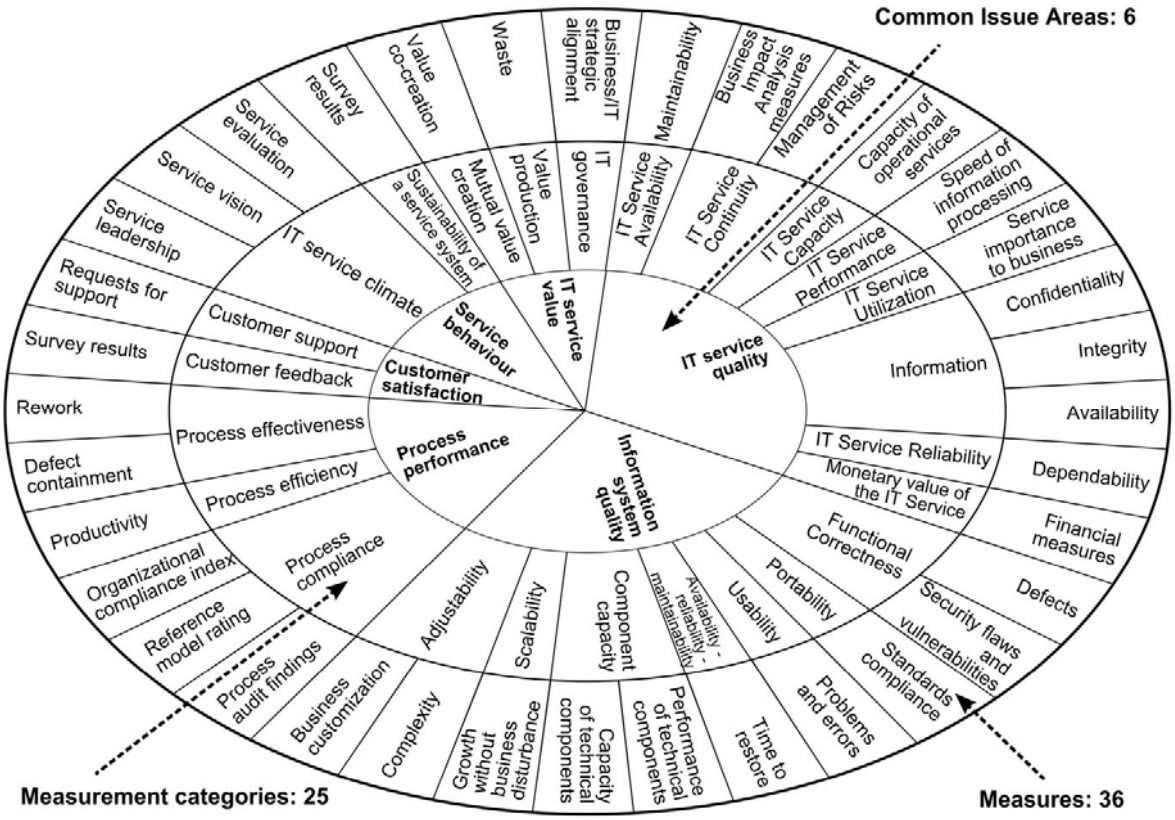

Figure 2. IT service quality measurement framework (Lepmets et al. 2014)

The ITSQM framework provides detailed and comprehensive guidance for IT service providers suggesting measurable indicators to collect and analyze for IT service quality improvement. Of the six common issue areas, only customer satisfaction is the extrinsic one whereas the other five common issue areas are intrinsic, i.e. areas which the service providers can improve by analyzing the data they already have, in the majority of cases.

The three previous iterations of the model have been reported (Lepmets et al. 2011, 2012, 2014). In this paper we describe the fourth iteration of the framework development in which we further evaluate the IT service quality measurement framework. This time the evaluation is carried out by gathering data through an online survey to reach a wider audience and therefore be able to confirm that the proposed measures and indicators are in fact used by IT

service providers, and fit with the measurement categories and common issue areas as proposed in the framework. The findings of the survey are also compared to the results of the preceding evaluation phase.

4. DESIGN OF SURVEY

The questionnaire comprised three main sections: details of organization and frameworks (8 questions), measurement of IT service quality and improvement (12 questions), measurement priority and impact (3 questions). The questionnaire items are provided in the Appendix-Table 1. The unit of analysis is organizations offering IT services to internal and/or external clients. The Australian Chapter of itSMF hosted the online survey and invited its 2,500 members (IT service managers and practitioners) to participate. The questionnaire was pilot tested by three ITSM practitioners and three researchers. The wording and structure of the questionnaire was revised based on the feedback provided.

The questionnaire was built using branching techniques to enable only the relevant questions to be asked of respondents. For example, when respondents do not measure a particular aspect of IT service quality they would not be offered low level questions about the indicators of that quality area. Instead, they would be able to skip these detailed questions. In the data analysis section of the paper, therefore, the summaries of the gathered data are based on the population of responses given to each specific question.

5. ANALYSIS OF SURVEY DATA

After the survey was open online for three months, 63 individual responses had been received. A summary of the responses is included with the questions in Appendix A Table 1.

Most of the organizations that responded to the survey are large (1,000-4,999 employees) or very large (with excess of 5,000 employees). These two groups account for more than half the responses.

More than half the respondents (52%) were internal service providers, primarily providing services within their organization. The largest ‘main industry’ serviced by the respondents was the financial and insurance sector (16%), closely followed by information and communication (14%), and transportation and storage (11%).

The spread of responses regarding the geographic operational reach was quite evenly distributed across national (29%), regional (27%), multi-national (23%) and global (21%) locations with only one response from an organization restricted to a single location.

The top two roles of respondents reported were project or service manager (31%) and process manager (29%). In this question, 11 percent of respondents identified as consultants and were requested to respond to the survey questions based on their current or one previous assignment.

The vast majority of respondents reported use of the ITIL® framework (86%). Although many organizations relied on their own experience and knowledge (43%), almost one third also used COBIT (30%), closely followed by the international standard for ITSM (ISO/IEC 20000) (29%).

To understand the relevance of the ITSQM framework, we asked about the measures the organizations collect and use to improve their IT service quality. The results are shown in Figure 3. The vast majority of respondents use customer satisfaction (87%) to know and/or improve the quality of IT services. Strong support was also recorded for measuring IT service quality and stability (64%) and the performance of ITSM processes (62%). Only 18 percent of respondents collect IT service value related measures while 7 percent do not measure any of the above-mentioned IT service quality areas.

When asked how customer satisfaction is measured, the top responses were customer feedback and customer satisfaction surveys (both 82% of responses). More than half the responses measure the number of incidents handled daily by the service desk, while half also measure total calls per day answered vs abandoned, and average call response time. Three respondents reported a measure not listed as an option: net promoter score (NPS). NPS can be used to measure the loyalty that exists between an IT service provides and customer. This measure is based on a direct question: How likely are you to recommend our company/ product/service to your friends and colleagues? When the respondents were asked which low-level indicators for customer satisfaction measures were gathered, only 14 responses were provided: dependability of the provided IT services (79% of responses), perceptions of the stability of the provided IT service (57% of responses), the accuracy of the provided IT service (50% of responses) and perceptions of the quality of the information systems

underlying the provided IT service (50% of responses).

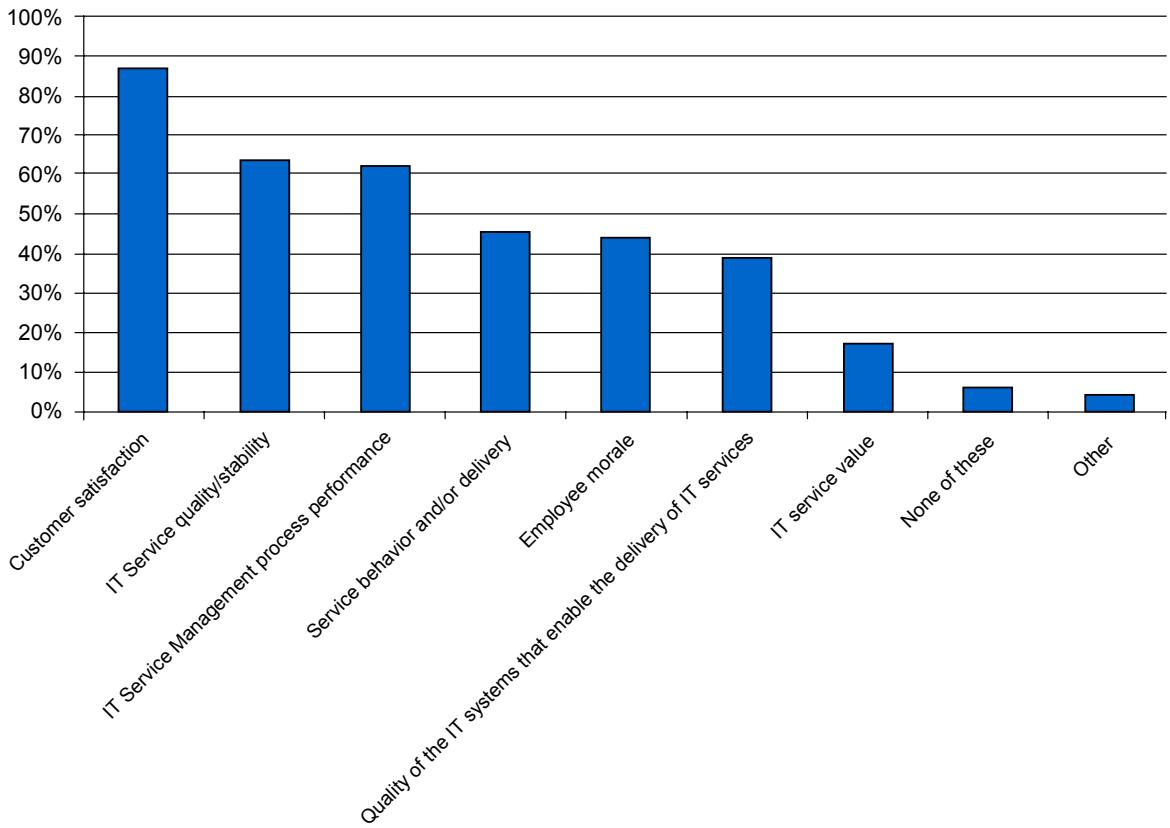

Figure 3. Measures Collected to Know/Improve IT Service Quality (by Common Issue Areas)

There was strong support for the use of IT service availability metrics (88% of responses) to understand the stability of IT services. Also the IT service performance metrics were widely used (72% of responses), while about half used IT service continuity (55% of responses), reliability (49% of responses) and risks (47% of responses). Only 10% of responses reported gathering measures about the monetary value of the IT service. When asked specifically how IT service stability is measured, a wide variety of metrics was reported. Half the responses measure the business impact on service unavailability (50%), and MTRS-mean time to restore IT service after failure (48%), closely followed by incidents related to IT service continuity (44%), and incidents, RFCs and problems handled daily (44%). The only indicator provided in the framework that was not measured by any respondents was about the compe-

titiveness of the IT service.

To understand the performance of IT service management processes, two thirds of the responses given report measuring process capability and/or maturity (68%). Almost half check process compliance with standards or models (45% of responses). 17 percent of responses report on not measuring processes to understand their performance. Most of those who measure process performance do so using process assessments (88% of responses). Process audits (55% of responses) and analysis of historical vs proposed and actual data (50% of responses) are also used in practice. When asked how IT service organizations measure the improvement in IT service management processes, the majority do so by evaluating customer satisfaction (71% of responses) or stakeholder satisfaction (60% of responses). Achievement of project or service performance objectives was also evaluated to understand process improvements (48% of responses). Only 7 percent of responses reported that they do not measure process improvements.

In terms of IT system quality, system availability was the most frequent aspect measured (67% of responses), followed by system reliability (41% of responses) and system problems and errors (39% of responses). In terms of specific metrics for IT system quality, the number of incidents resolved out of all incidents daily was the most frequently used (83% of responses) followed by MTRS (mean time to restore system) (44%).

More than half of the responses indicate that IT service value is not measured (56%). A minority measure business/IT alignment (17% of responses), value creation and value delivery (13% of responses), and revenue growth (11% of responses).

The majority of responses indicate that work performance goals with employees are regularly discussed (67% of responses) and about half recognize that customer service is an important criterion of formal performance evaluation (48% of responses) and ensure frequent communication with clients (46% of responses). On the other hand, many organizations do not measure service behavior (20% of responses) or employee morale (7% of responses) at all.

Although a minority of respondents measured the impact of IT service stability on customer satisfaction (28% of responses) and the impact of process performance on IT service stability (24% of responses), only two respondents believe impact measuring is not beneficial whereas

a large number of respondents believe that there is no feasible way to do it (41% of responses).

When the respondents were asked a hypothetical question about which of the six common areas are most important to measure for improving the IT service quality, the customer satisfaction common issue area was closely followed by IT service value, which 56 percent of responses report not currently being measured. The least important measure for IT service quality improvement was considered to be IT service process performance, which curiously was reported to be measured by 62 percent of responses.

6. INTERPRETATION OF THE SURVEY DATA

In the previous evaluation iteration of the framework (Lepmets et al. 2014), we described the possible benefits of a holistic approach to IT service quality where different measures are linked to each other for efficient IT service quality improvement. The survey results of Australian IT service providers, reported in the paper at hand, supports the findings of the previous evaluation. In both cases the industry finds it important to have a systemic IT service measurement approach where various service areas are linked to each other. The systemic view is vital for industry in providing insight into the impact that IT service stability has on customer satisfaction, and the impact that process performance has on IT service stability. Unfortunately, there is currently no method or approach that would allow a feasible way of measuring impact of one quality area on another for systemic IT service quality improvement planning.

This study has evaluated the IT service quality measurement framework in 63 Australian IT service organizations. Results indicate that with the exception of three indicators, all 36 measures and their corresponding 74 indicators in the framework are applied in industry. The three indicators that were not measured were the *competitiveness of the IT service*; the *appearance of service provider's physical facilities*, *and the appearance of the equipment*. Competitiveness of an IT service is a financial indicator providing the service provider with information about the economy and value of the service management functions (Donko & Traljic 2009). This indicator might not be applicable as over half of the organizations responding to the survey did not measure IT service value at all, and only a small number of

the respondents who measured value used financial indicators to do so (7%). With only 29 percent of survey respondents providing services to external clients, perhaps the rest of the respondents, i.e. the internal service providers might not be as driven or do not need to compete.

Analysing the measures of the IT service value helps the provider determine whether gearing its activities and processes towards supporting customers' practices will generate productivity gains that can be shared as value to the customer and value to the provider. There is a vast difference between the importance of value that the IT service providers report, with 54 percent of respondents ranking it more important than other quality attributes, and the actual measurement of value in their provided IT services (17%). It indicates the difficulties in adopting service logic that would allow for mutual value creation between the provider and the customer (Grönroos & Helle 2010) where the service provider could improve as a result of understanding the environment in which its customers operate.

Contradictory to the numerous reported efforts of implementing SERVQUAL to measure customer satisfaction with IT services (Kang & Bradley 2002; Ladhari 2009; Parasuraman et al. 1991; Zhu et al. 2011), two SERVQUAL measures from our framework were not applied at all in the surveyed Australian IT service industry. These measures relate to the appearance of service provider's physical facilities and to the appearance of service provider's equipment. With IT services being predominantly provided virtually, these two measures might no longer be appropriate.

This finding calls into question the applicability of the four 'IHIP' core characteristics of services proposed by Zeithaml et al. (1985): intangibility, heterogeneity, inseparability and perishability. Considering that IT services are in most cases not provided by people the way other services are, perhaps the IHIP service characteristics do not apply to IT services?

Customer satisfaction also determines the level of customer loyalty (Al-Hawari et al. 2009). An additional way to measure loyalty is by using *net promoter score*, which three IT service providers added to the list of measurable indicators for customer satisfaction. Net promoter score (NPS) is based on the following question: how likely are you to recommend our company/product/service to your friends and colleagues? In order to improve the cus-

tomer satisfaction common issue area in our framework, NPS should be added to the framework as it was specifically mentioned and applied by three respondents.

Similarly to the findings of previous evaluation iteration, process improvement efforts were mostly measured by customer and stakeholder satisfaction. This finding supports the earlier conclusion about a lack of alignment between quality goals and IT service management process goals, as systemic process improvement should impact all of the other common issue areas.

7. CONCLUSIONS AND FUTURE RESEARCH

This paper evaluates the application of the IT service quality measurement framework by analyzing the 63 responses to an online survey from the Australian IT service industry. The IT service quality measurement framework provides detailed indicators that when systematically collected and analyzed could assist the service providers in improving their IT service quality.

As a result of the survey, we conclude that all the IT service quality measurement framework measures and their associated indicators are applied in industry with the exception of three. The IT service providers stress the importance of mutual value creation in IT services while also indicating serious difficulties in measuring the IT service value in industry. The study also shows that there is no feasible way to understand how different quality attributes relate to one another which could impede the implementation of a holistic approach to the measurement and improvement of IT service quality.

After refining the IT service quality measurement framework based on the findings discussed above, additional studies within the global IT service industry will be conducted to support the development of a holistic approach to IT service quality measurement and improvement.

An additional research topic that needs to be studied in the future is related to linking the measurement framework to business goals and financial indicators of IT service organizations. IT service providers could use these measures to drive organizational change and track how these measurements change over time. It would be possible to set target values and correlate these targets with financial outcomes.

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Appendix

The questionnaire items and proportions of responses for each response option are provided in this table.

Table 1. Questionnaire Items and Response Rates

Part 1 Demographics	**Percent**
1. Country	
2. Choose the profile that best suits the IT service group in your organization	
Primarily provide services within the organization (Internal Service Provider)	52.4%
Primarily provide services to other organizations (External Service Provider)	28.6%
Provide services to both internal and external clients	17.5%
Other: *Vendor*	1.6%
3. What IT services do you provide to your customers?	
4. From this list, please select the industry sector of your main customer (s)	
Financial and insurance activities	15.9%
Information and communication	14.3%
Public administration and defence; social security	14.3%
Transportation and storage	11.1%
Education	9.5%
Various industries	7.9%
Human health and social work activities	7.9%
Manufacturing	4.8%
Agriculture, forestry and fishing	3.2%
Mining and quarrying	3.2%
Water supply; sewerage, waste management and remediation activities	3.2%
Electricity, gas, steam and air conditioning supply	1.6%
Construction	1.6%
Other service activities	1.6%
Wholesale and retail trade; repair of motor vehicles and motorcycles	0.0%
Accommodation and food service activities	0.0%
Real estate	0.0%
Professional, scientific and technical activities	0.0%
Administrative and support service activities	0.0%
Arts, entertainment and recreation	0.0%
5. What is the geographic operational reach of your organisation?	
National	29.0%
Regional	27.4%
Multi-national	22.6%

Global	21.0%
Single location	1.6%
6. Approximately how many staff in total does your organization employ?	
< 10 full time staff or equivalent	6.5%
10-49 full time staff	3.2%
50-249 full time staff	4.8%
250-999 full time staff	12.9%
1,000-4,999 full time staff	30.6%
> 5,000 full time staff	35.5%
Don't know	6.5%
7. What is your role in the organization?	
Project/Service Manager	30.6%
Process Manager	29.0%
Senior/Top Manager	17.7%
Consultant	11.3%
Other, *Semi-technical support, client support and liaison, administration, leadership; Customer Experience Manager; Services Coordinator; System analyst*	6.5%
Quality Manager	3.2%
Technical Lead	1.6%
Developer/Operator	0.0%
8. What models or frameworks do you use to measure/manage IT service quality?	
ITIL	85.7%
Own experience and knowledge	42.9%
CoBIT	30.2%
ISO/IEC 20000	28.6%
CMMI	22.2%
Lean	17.5%
Six Sigma	14.3%
ISO 9000	14.3%
ISO/IEC 15504	7.9%
No models/frameworks are used	7.9%
Vendor-specific frameworks (e.g. HP SMM, MOF)	6.3%
Other: *eTOM; 18001, 14001,4801; ISO27001; TOGAF, BPMN.*	6.3%
ValIT	4.8%
ITIL PMF	3.2%
CMMI SVC	1.6%
Theory of constraints	1.6%
PSP/TSP-Personal/team software process	0.0%
TIPA	0.0%
GAP	0.0%
IT CMF	0.0%
Part 2 Measuring IT Service Quality	

9. In order to know and/or improve the quality of your IT services, what do you measure?	
Customer satisfaction	86.9%
IT Service quality/stability	63.9%
IT Service Management process performance	62.3%
Service behavior and/or delivery	45.9%
Employee morale	44.3%
Quality of the IT systems that enable the delivery of IT services	39.3%
IT service value	18.0%
None of these	6.6%
Other: *Vendor SLAs; Financial return; N/A*	4.9%
Part 3 Measuring Customer Satisfaction	
10. How do you measure customer satisfaction?	
Customer feedback	82.1%
Customer satisfaction survey	82.1%
Number of incidents handled daily by the service desk	57.1%
Total calls per day answered vs abandoned	50.0%
Average call response time	50.0%
Other: *escalations by volume; MTTR, NPS; Net Promoter Score; Net Promoter Score; Evidence of improvements made based on customer feedback*	8.9%
None of the above	5.4%
11. What do you ask your customer to know their level of satisfaction?	
Dependability of the provided IT service	78.6%
Their perception about the stability of the provided IT service	57.1%
Accuracy of the provided IT service	50.0%
Their perception about the quality of the information systems underlying the provided IT service	50.0%
If the IT service provider conveys trust and confidence	35.7%
Their perception about the process performance of IT service management	35.7%
If the IT service provider provides caring, individualized attention to the customer	21.4%
Other: *Customer Complaints; A measure of the value that IT Services provide them as a customer; N/A*	21.4%
Appearance of the IT service provider's personnel	14.3%
Appearance of the IT service provider's communications material	7.1%
Appearance of the IT service provider's physical facilities	0.0%
Appearance of the IT service provider's equipment	0.0%
Part 4 Measuring Process Performance	
12. What do you measure about IT service management processes to understand their performance?	
Process capability/maturity	67.9%
Process compliance with standard (s)/model (s)	45.3%
Process productivity	30.2%

Rework effort	20.8%
We do not measure processes to understand their performance	17.0%
Defect containment	11.3%
Other: *People, Process, Technology Factors, Whether the process provides value; N/A as we help them with this, we do not do it for ourselves; Various measures of efficiency and effectiveness, compliance and completeness, depending on the process. Consistent with ITIL and COBIT KPI frameworks*	5.7%
13. How do you measure process performance?	
Process assessment	88.1%
Process audit	54.8%
Analysis of historical vs proposed and actual data	50.0%
Rework effort in service design	11.9%
Other: *Problem Investigation results; Maturity assessment; CSI plans*	7.1%
Requirements defects discovered after service design	4.8%
14. How do you measure improvements in process performance?	
Evaluating customer satisfaction	71.4%
Evaluating stakeholder satisfaction	59.5%
Evaluating the achievement of project or service performance objectives	47.6%
Evaluating employee satisfaction	38.1%
Evaluating the achievement of product or service quality requirements	33.3%
Conducting model/standard based process assessments	33.3%
Measuring personal performance and/or productivity	28.6%
Evaluating the achievement of organizational goals	28.6%
Measuring organizational productivity	14.3%
Calculating the return on investment to process improvement	11.9%
Measuring project productivity	9.5%
Improvements are not measured	7.1%
Other, please specify	0.0%
Part 5 Measuring IT Service Stability	
15. What do you measure in IT services to understand their stability?	
IT service availability	88.2%
IT service performance	72.5%
IT service continuity	54.9%
IT service reliability	49.0%
IT service risks	47.1%
IT service utilization, i.e. service importance to business	37.3%
IT service maintainability	25.5%
IT service capability	23.5%
Information confidentiality	15.7%
Information availability	13.7%
Information integrity	11.8%
Monetary value of the IT service	9.8%

IT services stability is not measured	3.9%
Other, please describe	0.0%
16. How do you measure IT service stability?	
Business impact on service unavailability	50.0%
MTRS - mean time to restore IT service after failure	47.8%
Incidents related to IT service continuity	43.5%
Incidents, RFCs and problems handled daily	43.5%
Mean time to recovery	41.3%
Changes related to IT service continuity	39.1%
Business impact on the loss of IT service (financial)	37.0%
Incidents related to IT service capability	34.8%
Mean time to achieve incident resolution	32.6%
Business impact on service performance degradation	30.4%
Incidents related to information availability	28.3%
Number of identified risks and threats	23.9%
Changes related to IT service capability	23.9%
Changes related to information availability	23.9%
Incidents related to information integrity	19.6%
Incidents related to information processing speed	17.4%
Incidents related to information confidentiality	15.2%
Changes related to information integrity	13.0%
Actual cost for service provider to provide the service	13.0%
Business impact on service delayed solutions	10.9%
Changes related to information confidentiality	10.9%
Changes related to information processing speed	8.7%
Utilization rate of IT service functions by business	6.5%
Actual price customer paid for received IT services	6.5%
Accuracy of service operation functions' forecast	6.5%
Weighted average of the impact of aggregated risks	2.2%
Other: *MTBF*	2.2%
Competitiveness of the IT service	0.0%
Part 6 Quality of IT Systems	
17. Which of the following aspects of the IT system quality do you measure?	
System availability	67.4%
System reliability	41.3%
System problems and errors	39.1%
Security flaws and vulnerabilities	32.6%
Functional defects	28.3%
Performance of technical components	28.3%
Capacity of technical components	28.3%
No measures of the quality of the IT systems that enable the delivery of IT services	15.2%

Interface compliance to standards	13.0%
System's growth without business disturbance	10.9%
Business customization	8.7%
System complexity	4.3%
Other, please describe	0.0%
18. Which of the following IT system quality measures do you collect?	
Number of incidents resolved out of all incidents daily	83.3%
MTRS-mean time to restore system	44.4%
MTBF-mean time between system failures	36.1%
Number of incidents related to problems daily	33.3%
Number of system failures related to component capacity	33.3%
Number of system failures related to component performance	30.6%
MTBSI-mean time between system incidents	25.0%
Incidents related to system's speed to growth	11.1%
System adjustability-business customization	8.3%
Number of prevented problems daily	5.6%
Functional defect density	2.8%
Interface compliance validation	2.8%
System complexity	2.8%
Other: *Number of problems which were solved per business service and the projected number of incidents prevented*	2.8%
Part 7 Measuring IT Service Value, Service Behavior and Employee Morale	
19. Do you measure value of the IT service you offer?	
No, we don't measure service value	56.5%
Business/IT alignment is measured	17.4%
Value creation and value delivery are measured	13.0%
Revenue growth is measured	10.9%
Non-value added activities are identified	8.7%
Value co-creation is measured through revenue growth	6.5%
Yes, through other means: *performance against budget; Periodical surveys from customers*	4.3%
20. Do you measure any of the following aspects of service behavior and employee morale?	
Work performance goals are regularly discussed with employees	67.4%
Customer service is an important criterion of formal performance evaluation	47.8%
Frequent communication with clients is ensured	45.7%
Employees know how the provided service contributes to better performance of the clients	41.3%
Emphases of daily work are on providing excellent service to clients	41.3%
Recognition and rewards are given for providing excellent client service	41.3%
Aim to be flexible when dealing with clients' perspectives	39.1%
Best approach to serve clients are discussed regularly	30.4%
Effort is made by the service provider to be a respected partner to clients	30.4%

Evaluation of how clients were served was a part of the most recent personal performance review	21.7%
Do not measure service behavior	19.6%
Resource quality is measured	10.9%
Resource sustainability to maintain certain level of quality is measured	10.9%
Saturation and sustainability of resource quantity is measured	8.7%
Do not measure employee morale	6.5%
Other	0.0%
Part 8 Closing Questions	
21. In order to improve the overall IT service quality, do you think you should measure: Please prioritize the following from 1-7 where 1 is the most relevant and 7 least relevant.	Mean Rank
Customer satisfaction	1.80
IT service value	3.50
Employee morale	4.00
IT service stability	4.00
Service behavior	4.50
Information system quality	4.92
IT service management process performance	5.28
22. Do you measure the impact of …	
None of these because measuring impact is not feasible	41.3%
The impact of IT service stability ON customer satisfaction	28.3%
The impact of Process performance ON IT service stability	23.9%
The impact of IT service value ON customer satisfaction	19.6%
The impact of service behavior ON customer satisfaction	17.4%
The impact of employee morale ON IT service stability	10.9%
The impact of IS quality ON IT service stability	8.7%
None of these because measuring impact is not beneficial	4.3%
Would you like to contribute any comments about IT service quality?	

AUTHOR BIOGRAPHIES

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